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E&P NEWS

Southwestern Focused on Dry Natural Gas Production as Prices Seen Increasing

Southwestern Energy Co. shifted toward producing more dry natural gas in the second quarter as it anticipates a rebound in prices as the winter nears.

The company had been focused on the wet gas window in West Virginia, but shifted more rigs to Northeast Pennsylvania with planned well counts now divided equally between the two states for the remainder of the year.

"As a result of our shift in activity, we have reshaped our capital program to have a flatter profile across the first three quarters before tapering off in the fourth quarter to assure that we invest within our capital plan," said COO Clay Carrell during a call last week to discuss *...cont' pg. 2*

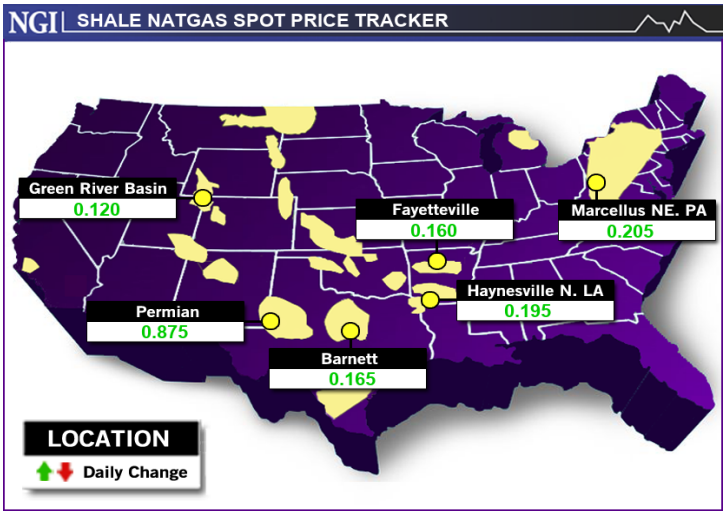
DJ BASIN

Noble Energy Brings Back Curtailed DJ, Permian Volumes

Most of Noble Energy Inc.'s Lower 48 oil and gas volumes that were curtailed as the coronavirus sapped demand are back online as operating costs and netback pricing have improved.

The Houston-based super independent, which issued its results Monday, curtailed 30,000 boe/d net during 2Q2020. Most of the reduced volumes, estimated at 80%, were curtailed in the Denver-Julesburg (DJ) Basin, with the remainder in the Permian Basin's Delaware sub-basin. There were "minimal" curtailments in its third Lower 48 asset, the Eagle Ford Shale.

"With significant improvements to operating costs and netback pricing, the majority of curtailed *...cont' pg. 4*



Trade Date: Aug 03; Flow Date(s): Aug 04

Basin/Region	Range	Avg	Chg	Vol	Deals
Gulf Coast					
Barnett	1.770-1.900	1.875	0.165	108	15
Eagle Ford	1.840-1.990	1.895	0.175	557	67
Haynesville - E. TX	1.800-1.855	1.825	0.150	612	111
Haynesville - N. LA	1.835-1.850	1.840	0.195	223	33
Permian1	0.150-1.650	1.110	0.875	1,661	297
Tuscaloosa Marine Shale	1.920-2.040	1.980	0.255	709	100
Midcontinent					
Arkoma - Woodford	1.750-1.825	1.765	0.040	125	30
Cana - Woodford	1.710-1.785	1.745	0.175	74	18
Fayetteville	1.770-1.850	1.810	0.160	211	39
Granite Wash*	1.635-1.750	1.680	0.115	360	78
Northeast					
Marcellus - NE PA2	1.360-1.480	1.440	0.205	253	71
Marcellus - NE PA: Other3	1.450-1.480	1.460	0.190	184	51
Marcellus - NE PA: Tenn4	1.360-1.395	1.385	0.215	69	20
Marcellus - SW PA/WV	1.330-1.650	1.485	0.160	1,917	309
Utica5	1.400-1.850	1.585	0.075	406	109
Rocky Mountains / West					
Bakken	--	--	--	--	--
Green River Basin*	1.720-1.790	1.760	0.120	745	152
Niobrara-DJ6	1.680-1.710	1.695	0.125	578	85
Piceance Basin*	1.710-1.750	1.725	0.155	266	42
Uinta Basin*	1.710-1.715	1.710	0.140	33	6
San Juan Basin*	1.720-1.805	1.785	0.210	467	100

Notes: *Table represents fixed-price delivered-to pipeline transactions in USD/MMBtu. These data are comprised of deals that NGI believe represent trading activity in the respective resource plays and may contain gas that was produced from conventional formations. * Denotes a tight sands formation. Volumes may not total due to rounding. For more information, please see NGI's Shale Price Methodology.*

ANALYSIS

Lower 48 Oil Well Productivity Stumbling, Pointing to Bullish Prices in 2021, Says Raymond James

U.S. liquids supply growth may struggle to grow more than 500,000 b/d a year as Lower 48 well productivity, particularly in the Permian Basin, declines, according to research by Raymond James & Associates Inc.

The analyst team led by Marshall Adkins on Monday said its current base case production forecast for the United States assumes 10% well productivity gains in 2019 and 5%/year in perpetuity. The base case also assumed higher oil prices, rig and well counts in the coming years. The U.S. drilling activity is forecast based on what *...cont' pg. 6*

CANADA

Alberta Launches Campaign to Clear Backlog of Depleted, Inactive Wells

The Alberta government launched a long-range campaign last week to make oil and gas companies pay for cleaning up a generations-old and growing backlog of 96,969 depleted and inactive wells.

Energy Minister Sonya Savage announced a stiffened polluter-pay policy that requires producers to devise five-year cleanup plans and act on them under supervision by the Alberta Energy Regulator (AER).

The policy grants landowners the right to nominate discarded wells on their property for prompt cleanups. Oil and gas firms would have to justify postponing action on the requests.

The cleanup backlog includes 21% of 456,729 Alberta wells licensed since 1914 that grew through an environmental loophole. Producers have been able to cap depleted bores, instead of permanently plugging and reclaiming them, by paying token lease rentals.

"Farmers and other private landowners deserve a voice in the reclamation process, to ensure industry brings their land back toward its original condition — enhancing safety and their ability to repurpose their land," said property rights lawyer Keith Wilson. "This is a positive step forward on an issue that is important to many Albertans."

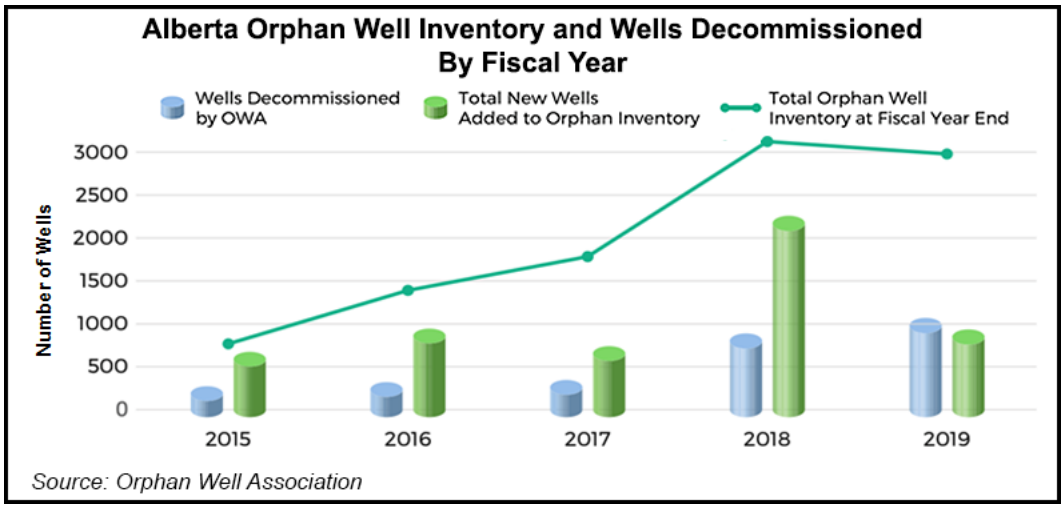
Unlike fossil fuel producer jurisdictions in the United States, Alberta has a split-title property regime that fosters conflict. About four-fifths of oil and gas resources are Crown or provincial government-owned. Industry access to leased drilling targets has priority over surface rights owners, who have had little or no control over wells and cleanups.

The new policy follows a wave of inactive wells deteriorating into orphan wells, deserted by defunct and bankrupt firms. With no solvent owners, orphan wells become cleanup burdens on the AER, the Alberta treasury and corporate survivors.

As of April the Alberta Orphan Wells Association, a cooperative industry and AER group partly funded by a levy on all oil and gas producers, had an inventory of 2,983 deserted wells in need of permanent plugging.

The Explorers and Producers Association of Canada (EPAC) praised the new policy as a path to improved relations with landowners and possibly investors that allows for orderly, gradual inactive well cleanups without bankrupting oil and gas firms.

"This is an innovative and modern approach to ensure continued focus by companies on their responsibilities to local communities," said EPAC President Tristan Goodman, a former senior AER official.



The Petroleum Services Association of Canada predicted the new policy would become a job creator, with the mandatory five-year cleanup programs pulling field contractor firms out of a slump caused by the Covid-19 pandemic. ■

Southwestern Focused on Dry Natural Gas Production as Prices Seen Increasing

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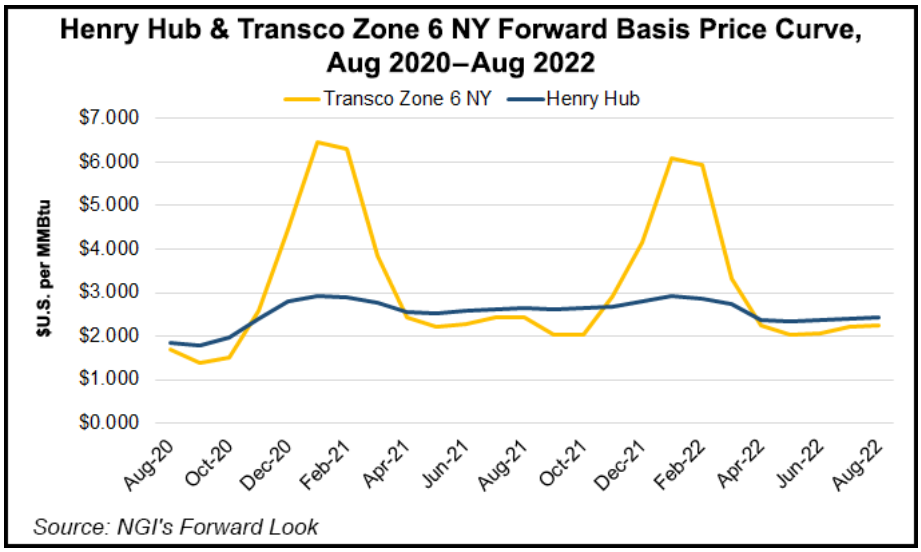
second quarter results. "Total equivalent production in the second half is unchanged with lower natural gas liquids and oil production offset by higher natural gas production all associated with the shift in activity that began in the second quarter."

The shift has also prompted Southwestern to tighten its production guidance range from 830-865 Bcfe to 843-861 Bcfe. Capital guidance was lowered slightly at the high end and is now forecast at $860-915 million.

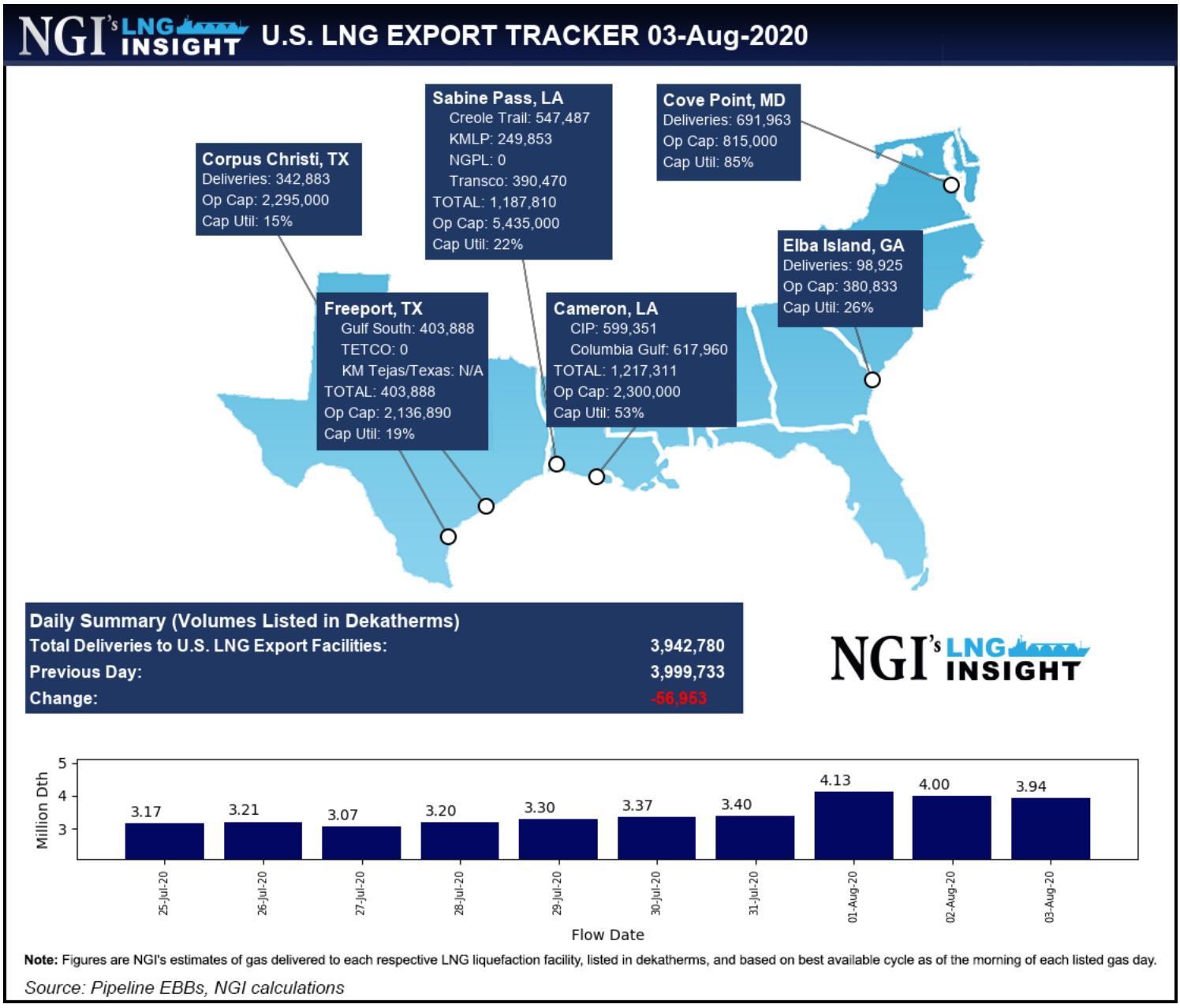
Southwestern produced 201 Bcfe during the *...cont' pg. 3*



second quarter, including 1.7 Bcf/d of natural gas and 79,000 b/d of liquids, compared to production of 186 Bcfe in 2Q2019. The Southwest Appalachia division produced 88 Bcfe in 2Q2020, while the Northeast Appalachia division produced 113 Bcf. The company now expects to drill 45-50 wells and complete up to 45 in each part of the basin this year.

More quarterly earnings coverage by NGI can be found here.

Average realized prices, including transportation costs, declined by 24% year/year in the second quarter to ...cont' pg. 4



$1.65/Mcfe.

Southwestern reported a second quarter net loss of $880 million (minus $1.63/share), compared to net income of $138 million (26 cents) in the year-ago period. The 2Q2020 loss included $655 million of noncash impairments and a $229 million noncash loss on unsettled derivatives. ■

Noble Energy Brings Back Curtailed DJ, Permian Volumes

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volumes were brought back on production by the end of July," management said in its 2Q2020 report.

"Noble Energy's second quarter results reflect strong operational execution against the backdrop of the challenging global economic environment that impacted financial outcomes across our industry," CEO David Stover said.

The company did not hold a conference call because of the pending merger with Chevron Corp., which is scheduled to be completed by the end of the year.

More quarterly earnings coverage by NGI can be found here.

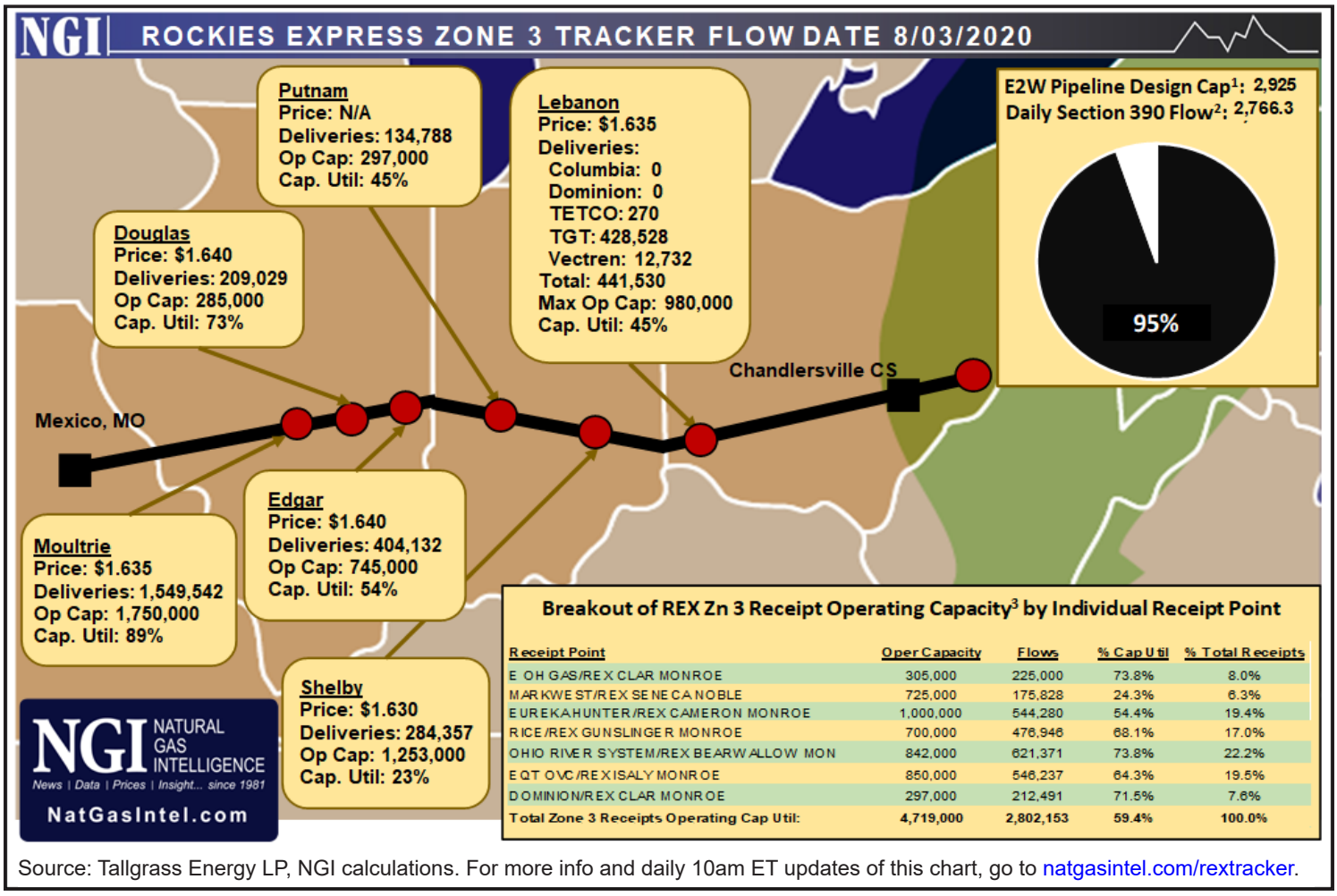
Noble's total sales volumes in 2Q2020 averaged 350,000 boe/d, with the Lower 48 providing the bulk at 248,000 boe/d. West Africa volumes were 50,000 boe/d, while Israel's natural gas-weighted volumes on average totaled 311 MMcfe/d. Oil volumes overall totaled 130,000 b/d.

Between April and June, the DJ contributed 144,000 boe/d, while the Permian Delaware averaged 63,000, and the Eagle Ford Shale contributed 41,000.

The company operated 1.5 rigs in the quarter, with 1.0 in the DJ and 0.5 in the Delaware. Noble also drilled 16 DJ wells and three in the Delaware. Early in the quarter, 16 DJ wells came online, along with six in the Delaware.

'Top Tier' Leviathan

In the Eastern Mediterranan (Med), combined volumes from the Tamar and Leviathan gas ...cont' pg. 5



Breakout of REX Zn 3 Receipt Operating Capacity³ by Individual Receipt Point

Receipt Point	Oper Capacity	Flows	% Cap Util	% Total Receipts
E OH GAS/REX CLAR MONROE	305,000	225,000	73.8%	8.0%
MARKWEST/REX SENECA NOBLE	725,000	175,828	24.3%	6.3%
EUREKAHUNTER/REX CAMERON MONROE	1,000,000	544,280	54.4%	19.4%
RICE/REX GUNSLINGER MONROE	700,000	476,946	68.1%	17.0%
OHIO RIVER SYSTEM/REX BEARWALLOW MON	842,000	621,371	73.8%	22.2%
EQT OVC/REX ISALY MONROE	850,000	546,237	64.3%	19.5%
DOMINION/REX CLAR MONROE	297,000	212,491	71.5%	7.6%
Total Zone 3 Receipts Operating Cap Util:	4,719,000	2,802,153	59.4%	100.0%

Source: Tallgrass Energy LP, NGI calculations. For more info and daily 10am ET updates of this chart, go to natgasintel.com/rextracker.

projects totaled 1.09 Bcfe/d gross. Volumes fell 23% sequentially, "driven by the demand impacts from the Covid-19 pandemic as well as the normal seasonal weather-based decline experienced in the second quarter," management noted.

Net sales volumes from the two big projects totaled 311 MMcfe/d.

Following its start up at the end of 2019, "the Leviathan field has performed in the top tier of all offshore major projects," management noted. During 2Q2020, "field and facility uptime averaged in excess of 99%."

Noble in July also completed commissioning additional compression onshore at the Ashkelon metering station in Israel, designed to increase the capacity throughput into Egypt via the EMG Pipeline.

Within its West Africa portfolio, Noble's Equatorial Guinea production averaged 50,000 boe/d. Management pointed to solid field performance from its operated Aseng and Alen fields, as well as the nonoperated Alba field and onshore facilities.

Progressing Alen Gas

Despite impacts from the pandemic, the Alen Gas Monetization project "continues to progress toward an early 2021 start-up," management noted. "During July, the shore crossing site preparation for connecting the Alen natural gas pipeline to the onshore facilities continued," with offshore pipe installation on schedule by the end

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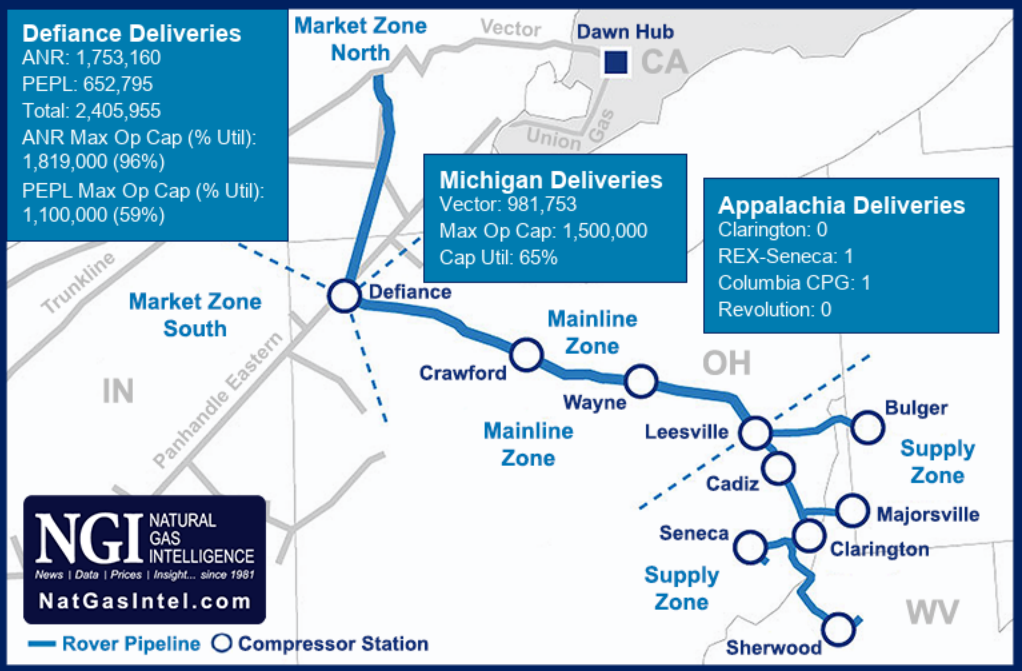
Noble Energy Current Offshore Israeli Assets & Infrastructure

Source: Noble Energy

NGI | Rover NatGas Flow Tracker for Gas Day 03-Aug-2020



Rover Receipt Points	Op Cap	Receipt Vol	% Util
BERNE	350,000	320,818	92%
CADIZ-MW	300,000	162,000	54%
CADIZ-ORS	1,070,000	746,314	70%
CLARINGTON-EUREKA	350,000	235,000	67%
CLARINGTON-OVC	300,000	245,646	82%
CRAWFORD-UGS	350,000	0	0%
HARMON CREEK	400,000	181,000	45%
MADISON	400,000	90,200	23%
MAJORSVILLE	400,000	377,167	94%
REVOLUTION	525,000	0	0%
SENECA	800,000	47,972	6%
SHERWOOD	800,000	699,808	87%
SUNDANCE	372,000	278,818	75%
	System Cap*	**TSQ**	**% Util**
Total Rover Receipts	3,250,000	3,384,743	104%
Total Rover Deliveries	3,250,000	3,387,710	104%

*Represents stated full system capacity. All units in dekatherms.

Source: Rover EBB, NGI calculations & estimates

of September.

During the second quarter, Noble also initiated hedge positions for the Alen project to secure global liquefied natural gas revenue for a portion of expected revenue in 2021 and 2022.

U.S. onshore oil price realizations in 2Q2020 before hedges averaged $22.30/bbl, with natural gas liquids pricing of $7.51/bbl. For the U.S. onshore portfolio, Noble fetched a domestic natural gas price of $1.16/Mcf.

In Equatorial Guinea, about 75% of the quarterly oil sales were in May, driving the average realization to $23.87/bbl. Natural gas realizations in Israel averaged $5.00/Mcf.

Net losses in 2Q2020 totaled $408 million (minus 85 cents/share), versus a year-ago loss of $10 million (minus 2 cents). Revenue fell to $571 million from $1.09 billion. Total operating expenses were down year/year at $799 million from $1.06 billion.

Capital expenditures (capex) in 2Q2020 totaled $102 million, including $62 million for U.S. onshore activities and $32 million for the offshore businesses in Israel and West Africa. Capex for the master limited partnership Noble Midstream Partners LP totaled $8 million.

Financial liquidity at the end of the second quarter totaled $4 billion, comprising $324 million of cash on hand and revolver borrowing capacity of $3.7 billion. ■

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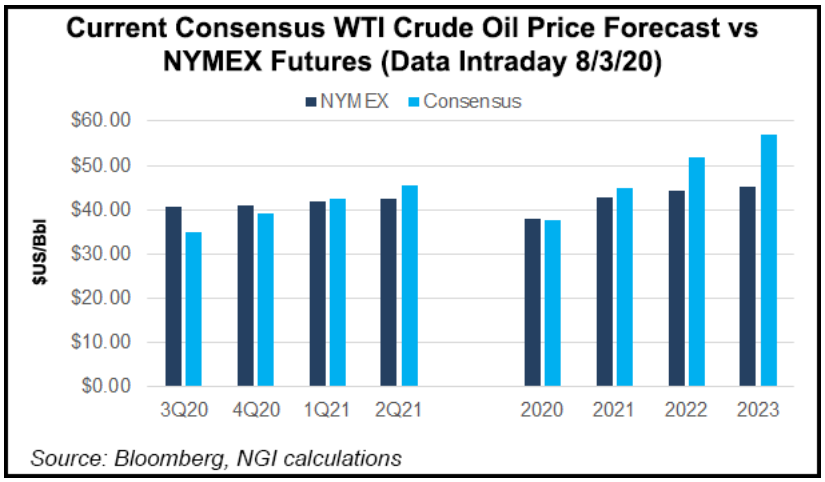
would likely occur at current five-year oil futures strip pricing.

"Specifically, we are assuming the U.S. rig count (and associated fracture count) stays at around 900 total active drilling rigs over the next five years," analysts said. However, even with 5% annual U.S. well productivity gains over the next five years, petroleum liquids supply growth may struggle to grow.

"Given that consensus expectations for U.S. oil supply growth in 2020 are closer to 1.5 million b/d, our estimate of only 350,000 b/d of 2020 U.S. growth is way below consensus and very bullish for oil prices next year," the analysts said.

Meanwhile, liquids supply growth outside the United States is forecast to be limited over the next five years.

"Should U.S well productivity flatten out and global demand growth average even just half of the 2010-2018 average, U.S supply growth would still fall short way short of balancing the oil market at $50/bbl," the Raymond James team said. "All the signs are pointing toward a decline in U.S well productivity, which is very bullish for oil prices."



Beyond the "supply gyrations" of the Organization of the Petroleum Exporting Countries and its allies, the single most important driver of the oil market in the next decade is going to be the trends in U.S. well productivity, according to Raymond James.

The Lower 48 has made wild gains in oil output with the advent of horizontal drilling, but domestic productivity "has actually slowed to mid-teens growth rates in recent years." The Raymond James analysis of monthly production data in 2020 to date indicates a sharp deterioration in domestic well productivity growth.

Falling IP Rates

"So far this year, 30-day initial production rates (IP-30) have grown just 2% in 1Q2019 versus our assumption of 10%," while IPs over 90 days (IP-90) "have actually declined 2% relative to last year."

The decline is attributed in part to stagnant horizontal lateral lengths, sand volumes and fracture stages. In addition, "pressure drawdown consequences from parent-child interference and reservoir communication damage from the 'bigger hammer' approach appear to not only be significant headwinds for productivity growth, but actually provide a solid case for future U.S. well productivity declines."

Meanwhile, as operators venture beyond the core acreage, it is likely there will be more ...cont' pg. 7

negative impacts on domestic well productivity.

operators eventually venture further away from "core" acreage and into less productive rock, it's likely that will have negative effects on U.S. productivity as well.

As to what this could mean to U.S. production, the Raymond James analysts said there likely will be "way below consensus U.S. oil supply growth at current oil prices and activity levels over the next several years... That tells us that U.S. oil prices need to move substantially higher than today's $50/bbl levels."

There was a slight uptick in well productivity during 2019, up 15% from 2018, but it was a one-off, according to the analysts, because the deep-pocketed operators accelerated Permian Basin activity and adopted refined drilling techniques.

"With productivity growth slowing to 11% in 2017 and the assumption that 2018 was likely an anomaly, we entered the year modeling a 10% productivity increase for 2019. After seeing actual Lower 48 production undershoot our model for the first half of this year, our initial 2019 well productivity assumption of a 10% increase now appears way too optimistic."

In a warning for the biggest Lower 48 play of all, the Raymond James analysts said the IP-90 rates in the Permian basin appeared "especially dire." The story is similar in other Lower 48 plays, "except with even more pronounced deterioration."

IP-90s overall were down 2% across the United States. However, Permian IP-90s were down 10% relative to 2018.

"On a sequential quarterly basis, IP-90s in 1Q2019 were 6% lower than in 4Q2018 and a whopping 14% lower than 3Q2018," analysts noted. "Given the Permian accounts for roughly half of all U.S. Lower 48 activity, it's reasonable to assume that U.S. productivity growth will continue to trend in the same direction as the Permian. Should Permian productivity be topping out, the U.S. Lower 48 likely follows." ■

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