JULY 18, 2016 | USD 20

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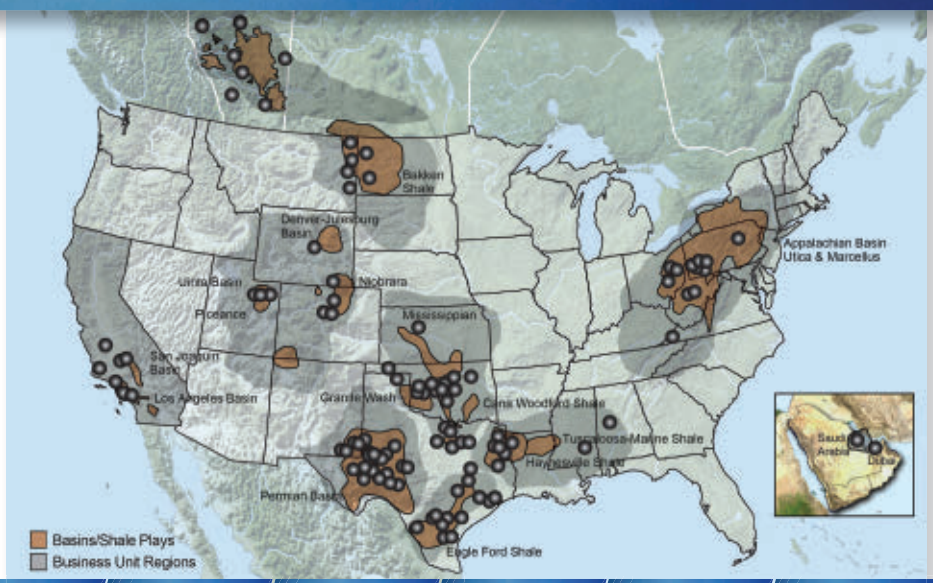

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NORTH EAST	✓	✓	✓	✓	✓	✓
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GENERAL INTEREST

COVER

Dunkerque LNG's *regasification terminal in Dunkirk, France, a turnkey project carried out by TS LNG, a consortium comprising Techint Engineering & Construction and SENER engineering and technology group, received its first LNG cargo July 8, initiating its commissioning phase. Commercial operations are slated to begin mid-September. Dunkerque has three 190,000 cu m storage tanks and an average natural gas sendout of 13 billion cu m/year. Photo from Dunkerque LNG.*

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- Mobility
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July 18, 2016

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GENERAL INTEREST QUICK TAKES

Alberta adds incentives to royalty reform

The government of Alberta has added incentives for enhanced recovery and "emerging resources" to its oil and gas royalty reforms (OGJ Online, Apr. 22, 2016).

The enhanced recovery program sets a flat royalty of 5% on crude oil, natural gas, and natural gas liquids produced by tertiary or secondary recovery for periods, to be set case by case, up to 90 months. After that, normal rates under the new royalty framework apply.

Determination of benefit periods and other program details will differ for tertiary and secondary-recovery projects.

Projects must receive approval from the Alberta Energy Regulator on or after Jan. 1, 2017; involve injection of materials approved by the energy minister; produce more hydrocarbons from a reservoir than could be produced via base recovery; demonstrate that costs are "significantly greater" than those of base-recovery operation; and provide a net royalty benefit to the government over the life of the project.

To qualify for the incentive, projects involving water and gas injection must be in reservoirs not previously subjected to those methods.

The emerging-resources incentive is designed to encourage producers "to open up new oil and gas resources in higher-risk and higher-cost areas that have large resource potential."

Wells receiving benefits under the program will be subject to a royalty rate of 5% until their combined revenue equals combined cost allowances, to be set well by well.

In an approved project, no more than the first 15% of the total projected well inventory can receive benefits.

Time limits will apply.

To receive benefits, a project must be "in the public interest," according to the energy minister, and promise large potential, be early in development, show strong likelihood of commerciality, and provide a net royalty benefit to the government.

Cowen: E&P spending fall revised downward

Following Barclays' downward revisions to its 2016 global and regional exploration and production spending outlook, another investment bank, Cowen & Co., revised lower its E&P spending forecasts last published in January (OGJ Online, Mar. 18, 2016).

In its midyear E&P spending update, Cowen now estimates global expenditures to fall 24% compared with a 16% decline in its January survey. The downward revisions were primarily driven by larger spending cuts from North America-focused E&Ps and major international oil companies (IOC).

In this update, Cowen expects US spending to decline 45%, reflecting oil prices of $40/bbl and natural gas prices of $2.50/MMbtu. This was down from a 22% estimate at the time of January's survey, which was based on $48.5/bbl oil and $2.50/MMbtu gas. Canada spending is expected to fall 33% compared with an earlier estimate of an 18% falloff.

Survey of international spending reveals a 19% decline compared with an initial estimate of 14% in January. The Middle East remains an area of stability while the largest negative revisions come from large IOCs, Latin America, and the Asia Pacific region, excluding China. Latin America is still the weakest region, where spending is expected to decline 30%.

IOCs and independents are projected to have spending declines of 24% this year, while other independents are expected to spend 45% less. This compares with prior decline estimates of 10% and 17%, respectively.

Assuming oil and gas future prices of $50/bbl and $3/MMbtu in 2017, Cowen expects an increase in global spending next year, mainly driven by North America, while international spending will likely remain depressed due to slower recovery in offshore activity and large participants, namely the Middle East and Russia, with little change to budgets over the 2015-18 timeframe.

Harvest in new deal for Venezuelan assets

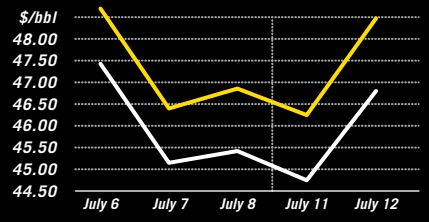
Harvest Natural Resources Inc. has reached an agreement to sell its Venezuelan interests and continues to seek a buyer for its remaining exploration and production holdings, which are in Gabon (OGJ Online, Mar. 30, 2015).

The company and a wholly owned subsidiary, HNR Energia BV, have entered a complex agreement with private investment firm CT Energy Holding SRL for the transfer of Harvest's Venezuelan properties, held through equity affiliate Petrodelta SA.

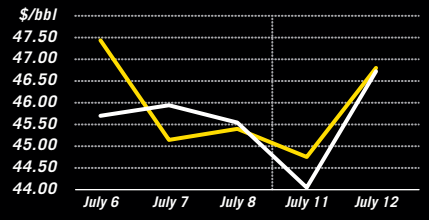
Petrodelta produces about 43,000 b/d of oil from six fields in eastern Venezuela.

The new deal settles obligations Harvest incurred in a deal with CT Energy last June that provided funding needed to

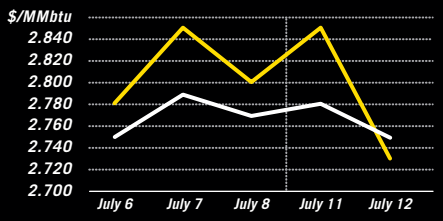
ICE BRENT / NYMEX LIGHT SWEET CRUDE



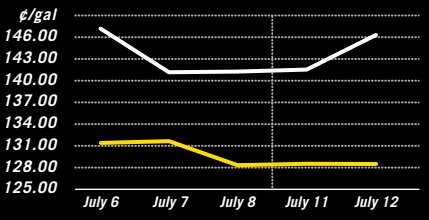
WTI CUSHING / BRENT SPOT



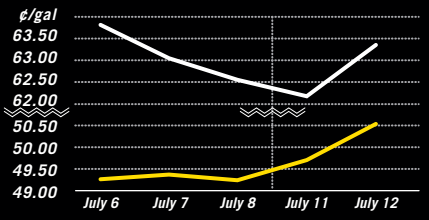
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



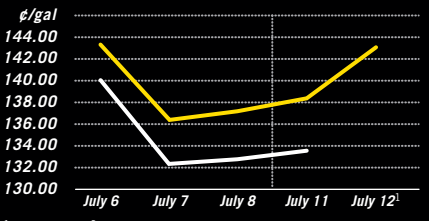
ICE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



NYMEX GASOLINE (RBOB)[2] / NY SPOT GASOLINE[3]



[1]Not available [2]Reformulated gasoline blendstock for oxygen blending [3]Nonoxygenated regular unleaded

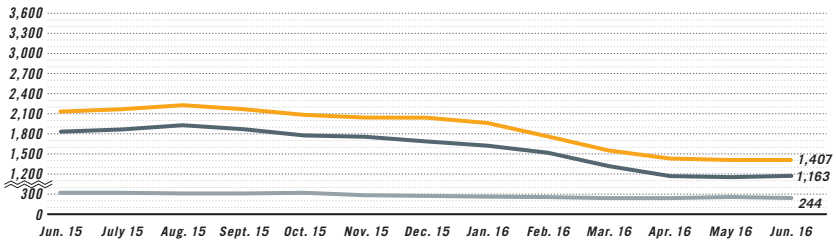
US INDUSTRY SCOREBOARD — 7/18

Latest week 7/1	4 wk. average	4 wk. avg. year ago[1]	Change, %	YTD average[1]	YTD avg. year ago[1]	Change, %
Product supplied, 1,000 b/d						
Motor gasoline	9,760	9,524	2.5	9,380	9,035	3.8
Distillate	3,913	3,856	1.5	3,763	4,008	(6.1)
Jet fuel	1,758	1,574	11.7	1,593	1,542	3.3
Residual	249	195	27.7	298	202	47.5
Other products	4,832	4,758	1.6	4,923	4,771	3.2
TOTAL PRODUCT SUPPLIED	20,512	19,907	3.0	19,957	19,558	2.0
Supply, 1,000 b/d						
Crude production	8,611	9,598	(10.3)	8,946	9,389	(4.7)
NGL production[2]	3,509	3,181	10.3	3,410	3,100	10.0
Crude imports	7,995	7,165	11.6	7,831	7,234	8.3
Product imports	2,456	2,316	6.0	2,148	2,090	2.8
Other supply[2 3]	2,334	2,296	1.7	2,072	2,323	(10.8)
TOTAL SUPPLY	24,905	24,556	1.4	24,407	24,136	1.1
Net product imports	(1,356)	(1,328)	—	(1,746)	(1,538)	—
Refining, 1,000 b/d						
Crude runs to stills	16,551	16,202	2.2	16,122	16,132	(0.1)
Input to crude stills	16,796	16,946	(0.9)	16,331	16,368	(0.2)
% utilization	91.8	94.0	—	89.6	91.2	—

Latest week 7/1	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	524,350	526,573	(2,223)	465,763	58,587	12.6
Motor gasoline	238,876	238,998	(122)	217,952	20,924	9.6
Distillate	148,939	150,513	(1,574)	137,461	11,478	8.4
Jet fuel–kerosine	40,241	40,247	(6)	42,621	(2,380)	(5.6)
Residual	40,043	40,171	(128)	40,554	(511)	(1.3)
Stock cover (days)[4]			Change, %		Change, %	
Crude	31.7	31.9	(0.6)	28.3	12.0	
Motor gasoline	24.5	24.6	(0.4)	22.9	7.0	
Distillate	38.1	39.4	(3.3)	35.7	6.7	
Propane	97.2	89.0	9.2	94.0	3.4	
Futures prices[5] **7/8**			**Change**		**Change**	**Change,%**
Light sweet crude ($/bbl)	46.15	48.28	(2.13)	57.92	(11.77)	(20.3)
Natural gas, $/MMbtu	2.78	2.88	(0.10)	2.81	(0.03)	(1.0)

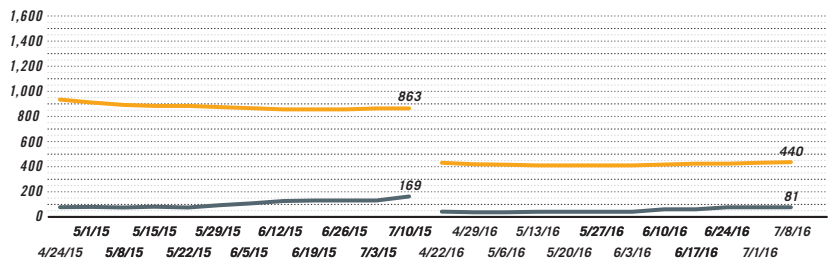
[1]Based on revised figures. [2]OGJ estimates. [3]Includes other liquids, refinery processing gain, and unaccounted for crude oil. [4]Stocks divided by average daily product supplied for the prior 4 weeks. [5]Weekly average of daily closing futures prices.
Source: Energy Information Administration, Wall Street Journal

BAKER HUGHES INTERNATIONAL RIG COUNT: TOTAL WORLD / TOTAL ONSHORE / TOTAL OFFSHORE



Note: Monthly average count

BAKER HUGHES RIG COUNT: US / CANADA



Note: End of week average count

sustain Petrodelta's operations and made CT Energy a 16.8% shareholder of Harvest.

At closing, CT Energy will deliver to Harvest $80 million in cash and a 6-month note for $12 million. It will cancel $30 million in debt and surrender its Harvest stock, recently worth $4.247 million, and warrants Harvest carries as a liability of 9.564 million.

CT Energy will receive 51% interest in Harvest-Vinccler Dutch Holding BV, through which HNR Energia owns the Venezuelan interests.

Harvest has tried to sell its Venezuelan interest in the past and briefly sought international arbitration last year, saying resistance by the government impeded transactions and contributed to its liquidity problems. At the time, it said it was exploring restructuring options.

In Gabon, Harvest holds 66.667% operated interest in a production sharing contract covering a 680,000-acre offshore block.

If it doesn't find a buyer, the company said, it will "operate and develop those assets in the ordinary course of business." OGJ

EXPLORATION & DEVELOPMENT QUICK TAKES

GeoPark logs Jacana discovery in Colombia

The Jacana 3 appraisal well drilled by GeoPark Ltd. on Colombia's Llanos 34 block flowed 1,650 b/d of 15° gravity oil with 1% water cut through a 43/64-in. choke at 50 psi wellhead pressure during a 7-day test. The well was drilled to 11,008 ft TD and produces from the Cretaceous Guadalupe formation. GeoPark said further production history will determine the stabilized flow rate of the well.

The Jacana 3 was spudded in mid-June (OGJ Online, June 15, 2016). Jacana oil field was opened with Jacana 1, which flowed 1,880 b/d of 14.9° gravity oil with a water cut of 1.9% in September 2015 (OGJ Online, Sept. 2, 2015). The field is currently producing 5,700 b/d of oil from two wells, the company said. Jacana field lies southwest of large Tigana oil field on Llanos 34 block onshore Colombia. The block was erroneously reported as offshore in a previous story.

GeoPark has plans to drill six wells on the block this year, two of which will be exploration wells. The operator holds 45% operating interest in the 82,000-acre Llanos 34 block.

North Sea Brasse sidetrack finds 25-m oil column

The Faroe Petroleum PLC-operated Brasse sidetrack well (31/7-1A) reached a TD of 2,530 m, encountering a 25-m gross oil column and 6-m gross gas column at the Brasse discovery on license PL740 in the Norwegian North Sea.

The objective of the sidetrack was to appraise the southeastern portion of the hydrocarbon-bearing structure previously identified by the main discovery well (OGJ Online, June 16, 2016).

Results based on extensive coring, wireline logging, and sampling show that the well has encountered oil and gas in good quality Jurassic reservoir sandstones, similar to those in the main well, and provide important information about the reservoir distribution in Brasse, the firm says.

The hydrocarbon-bearing interval in the well was found to be at a similar pressure level to the hydrocarbon-bearing interval in the initial discovery well. Total gross volumes of recoverable hydrocarbons are estimated at 28-54 million bbl of oil and 89-158 bcf of gas.

The Brasse discovery is 13 km south of the Brage field platform in which the company holds 14.3% working interest, 13 km to the east of the Oseberg Sor field platform, and 13 km to the southeast of the Oseberg field platform.

Faroe and 50-50 partner Point Resources AS will now begin assessing options for the discovery.

Idemitsu takes development step off Vietnam

Idemitsu Oil & Gas Co. Ltd. has moved toward development of oil and gas discoveries on two blocks offshore Vietnam with the award of a preliminary contract to Aker Solutions (OGJ Online, June 7, 2013).

Aker will provide front-end engineering design for possible developments designated Sao Vang and Dai Nguyet on Blocks 05-1b and 05-1c about 350 km southeast of Ho Chi Minh City.

Idemitsu will use the FEED work to make an investment decision about development. The blocks are in the Nam Con Son basin, which is productive at Dai Hung and Lan Tay/Lan Do natural gas fields.

Idemitsu and partners drilled the first exploratory well on the blocks in 2007 under a production-sharing contract with Vietnam Oil & Gas Group (Petrovietnam).

After shooting additional seismic surveys, the group confirmed an oil and gas accumulation with a well drilled in 2010 and made further discoveries with two wells drilled in 2012 and 2014.

Idemitsu is operator with 35% interest. JX Nippon Oil & Gas Exploration Corp. holds 35%, and Teikoku Oil (Con Son) Co. holds 30%. OGJ

DRILLING & PRODUCTION QUICK TAKES

BHI: Global rig count up 2 in June

The worldwide rig count for June averaged 1,407 active units, up 2 month-over-month and down 729 year-over-year, according to Baker Hughes Inc. data. Outside North America, however, drilling activity continued to decline in every region following a May in which all but one region's count increased (OGJ Online, June 10, 2016).

Latin America—that one region—led the way in June with a 10-unit drop 178 rigs working, a year-over-year decline of 136 compared with the region's June 2015 average. Argentina lost 8 units to 63, down 42 year-over-year. Venezuela fell 7 units to 53, down 13 year-over-year. Mexico dropped 2 units to 20, down 31 year-over-year.

The Asia-Pacific region, which jumped 11 units in May, fell

8 units in June to 182, down 33 year-over-year. Indonesia and Thailand each dropped 3 units month-over-month and 7 units year-over-year to respective averages of 16 and 12. Australia also relinquished 3 active rigs, averaging 3, down 12 year-over-year. Offshore China fell 2 units to 29, up 5 year-over-year.

Partially offsetting those losses in Asia-Pacific was India, which jumped 6 units to 108, a 5-unit year-over-year decline.

Europe dropped 4 units to 91, down 22 year-over-year. The only region to record multiple-unit losses was Sakhalin. The large island off eastern mainland Russia decreased 2 units to 8, down 2 from its year-ago average.

Africa also dropped 4 units, settling at an average of 87, down 16 year-over-year. Algeria posted the only multiple-rig loss, falling 2 units to 53, up 2 year-over-year.

The Middle East decreased 2 units to 389, down 12 from the region's June 2015 average. Oman dropped 3 units to 66, down 5 year-over-year. Iraq lost 2 units to 41, down 12 year-over-year. Egypt also decreased 2 units, down 15 year-over-year. Meanwhile, Pakistan rose 3 units to 30, up 13 year-over-year. Saudi Arabia edged up a unit to 124, up 3 from its year-ago average.

Seven Generations to expand Montney acreage

The planned acquisition of "bolt-on" acreage in the Lower Triassic Montney resource play of British Columbia from Paramount Resources Ltd. will enable Seven Generations Energy Ltd. to increase well lengths in an expanded drilling program, the buyer said.

Seven Generations, Grande Prairie, Alta., agreed to buy 99,200 net acres of Montney land from Paramount, Calgary, in a deal worth about $1.9 billion (Can.). The consideration includes $475 million cash, 33.5 million shares of Seven Generations stock, and assumption of $584 million of Paramount's debt.

The acquired land produces about 30,000 boe/d of gas and liquids and holds proved reserves of 199 million boe. When the deal is complete, Seven Generations will hold 517,300 net acres in the Montney area. The acquisition will add 205 proved, undeveloped drilling locations to the 305 Seven Generations reports now and enable the company to expand its liquids-rich Kakwa River Project in a play it calls Nest.

"We now plan to drill longer wells in the Upper and Middle Montney formation," said Marty Proctor, Seven Generation president and chief operating officer. "In addition, we expect to add significant potential resource in shallower and deeper formations across our expanded lands."

The acquisition will add 245 MMcfd of gas processing capacity to the 510 MMcfd of capacity Seven Generations already has and increase its pipeline takeaway capacity to 847 MMcfd from 607 MMcfd.

Output begins from FPSO at Lula Central off Brazil

Petroleo Brasilierio SA (Petrobras) started oil and gas production on July 7 from the Cidade de Saquarema floating production, storage, and offloading unit as part of the Lula Central project in the presalt Santos basin.

Production well 8-LL-81D-RJS flowed at a stabilized rate of 30,000 b/d on July 11. Anchored in 2,120 m of water, the FPSO can process as much as 150,000 b/d of oil, compress 6 million cu m/day of gas, and store as much as 1.6 million bbl of oil (OGJ Online, Dec. 22, 2015).

The Central Lula project encompasses 18 wells, split evenly between production and injection. Lula field on Block BM-S-11 is operated by Petrobras with 65% interest in partnership with Royal Dutch Shell PLC unit BG E&P Brasil Ltda. 25% and Petrogal Brasil SA 10%.

The Cidade de Saquarema FPSO is the second production system to begin operations in the presalt this year following the February startup of the Cidade de Marica FPSO from the Lula Alto area of Lula field (OGJ Online, Feb. 16, 2016).

Six FPSO vessels are currently operating in Lula field. The other four are Cidade de Angra dos Reis at the Lula field pilot, Cidade de Paraty at the Lula Northeast pilot, Cidade de Mangaratiba at the Iracema South area, and Cidade de Itaguai at the Iracema North area.

Petrobras's presalt oil and gas production recorded a monthly increase of 8% in June to 1.24 million boe/d. Oil production from the area reached 1.087 million b/d on June 30. OGJ

PROCESSING QUICK TAKES

US shale gas supports Ineos UK plant expansion

Ineos AG, Rolle, Switzerland, is planning a multimillion-pound investment at subsidiary Ineos Oxide's manufacturing site at Saltend, near Hull, UK, to expand production of a specialized solvent to be made from a main feedstock of US shale gas-derived ethylene produced at Ineos' operations in Grangemouth, Scotland.

The proposed expansion will add another 100,000 tonnes/year of capacity at an individual Hull plant dedicated to production of ethyl acetate, a high-demand solvent used in pharmaceuticals, cosmetics, inks, and flexible packaging, Ineos said.

Commissioned in 2001 and purchased from BP Chemicals Ltd. in April 2008, the Hull ethyl acetate plant already is operating at its full-design capacity of 250,000 tpy, Ineos said.

The project is scheduled to be completed, with new capacity on stream, by yearend 2017.

Details regarding the precise capital investment required for the project were not disclosed.

Expansion plans for Hull are supported by Ineos' $1-billion program to import price-advantaged US shale ethane supplies into Scotland as part of its move to revive and sustain its European refining and petrochemical businesses (OGJ Online, Mar. 30, 2016).

The Hull manufacturing plant will receive ethylene shipments from Ineos' Grangemouth petrochemical plant via an existing 151-km ethylene pipeline that runs from Teesside, UK, to Saltend.

Enable Midstream commissions Oklahoma gas plant

Enable Midstream Partners LP, Oklahoma City, has fully commissioned a second cryogenic natural gas processing plant at its Bradley processing complex in Grady County, Okla.

Designed to expand gathering and processing capabilities for customers in central Oklahoma's SCOOP and STACK plays, the 200-MMcfd Bradley II plant is the company's ninth processing plant to be connected to its superheader processing system, a large-diameter pipeline system that has combined capacity to handle about 1.7 bcfd of gas production from the Anadarko basin, Enable said.

Alongside supporting growth along the superheader system, the Bradley II plant also will provide gas supply to Enable's interstate and intrastate transportation pipelines for delivery to the US Midcontinent and Southeast downstream markets, said Rod Sailor, Enable's president and chief executive officer.

A further expansion of the superheader system is to include the 200-MMcfd Wildhorse cryogenic gas processing plant in Garvin County, Okla.

Enable said it expects the Wildhorse plant to be in service sometime in late 2017.

The company previously let a contract to CB&I, Houston, to provide engineering and procurement of equipment and process modules for Bradley II, which also is equipped with CB&I's proprietary NGL-MAX gas processing technology (OGJ Online, Sept. 16, 2014).

Enable commissioned the 200-MMcfd Bradley I plant during first-quarter 2015, according the company's latest annual report.

Gas plant serves Oklahoma STACK producers

Kingfisher Midstream LLC, a venture of Houston-based Asset Risk Management LLC (ARM Energy) subsidiary ARM Midstream and HPS Investment Partners LLC, New York, has commissioned a natural gas processing plant in Lincoln, Okla., as part of the Phase-1 development of its processing-and-gathering system for producers in Oklahoma's STACK play.

Designed to help alleviate production bottlenecks in the region, the 60-MMcfd cryogenic gas processing plant entered full commercial operation in early July, ARM Energy said.

Alongside the Lincoln processing plant, Phase 1 of the system features more than 100 miles of high and low-pressure gas gathering pipeline; more than 100 miles of crude gathering lines; 50,000 bbl of crude oil storage; condensate stabilization; six crude oil truck-loading stations; and 15,000 hp of compression.

Still in the development stage, Phase 2 of the project will include an additional 200 MMcfd of gas processing capacity, incremental gas and crude-gathering capability, and expanded market connectivity.

Phase 1 of Kingfisher Midstream system's design is configured to serve STACK producers in Oklahoma's Kingfisher County, and via additional plant expansions, producers in Blaine, Logan, Garfield, and Canadian counties, according to a Sept. 8, 2015, release from ARM Energy.

Upon announcing the project, which is anchored by a long-term commitment of more than 100,000 net acres dedicated to Kingfisher Midstream, ARM Energy said it would make an initial capital investment of about $180 million.

The company has yet to disclose details regarding either costs or startup timeframes for future phases of the project. OGJ

TRANSPORTATION QUICK TAKES

LNG Canada postpones FID for Kitimat project

The LNG Canada joint venture has elected to delay a final investment decision (FID) for the project to be built near Kitimat, BC, citing "global industry challenges, including capital constraints." A decision had been planned for yearend.

Andy Calitz, LNG Canada chief executive officer, said the partners are examining "a range of options to move the project forward towards a positive FID." However, they cannot confirm when a decision will be made, and in the coming weeks, will continue key site preparation activities while working together with participants, stakeholders, and First Nations to define a revised path forward to FID.

"LNG Canada remains a promising opportunity," the JV partners said. "It has strong stakeholder and First Nations' support, has achieved critical regulatory approvals, has important commercial and engineering contracts in place to design and build the project, and through its pipeline partner Coastal Gas Link, has received necessary environmental approvals and First Nations support along the pipeline right-of-way."

The LNG Canada group comprises Royal Dutch Shell PLC with 50% interest, PetroChina Co. Ltd. 20%, Mitsubishi Corp. 15%, and Korea Gas Corp. 15%.

Southern Co. buys half of SNG pipeline from KMI

Southern Co. has acquired a 50% equity interest in the Southern Natural Gas (SNG) pipeline system from Kinder Morgan Inc., which will continue to operate the system.

SNG is a 7,600-mile pipeline system connecting supply basins in Texas, Louisiana, Mississippi, Alabama, and the Gulf of Mexico to Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, and Tennessee. SNG is a principal transporter of gas to Alabama, Georgia, and South Carolina, which are part of one of the fastest-growing gas demand regions in the US, the companies said.

The agreement also commits the companies to cooperatively pursue specific growth opportunities to develop gas systems for the venture.

Inclusive of existing SNG debt, the transaction equates to an SNG total enterprise value of about $4.15 billion, implying a value of $1.47 billion for Southern Co.'s 50% share. The companies expect to complete the transaction in this year's third quarter or early in the fourth quarter. OGJ

Houston and $50 oil

BOB TIPPEE
Editor

In the far-flung oil and gas industry, all those roads that eventually lead to Houston are getting bumpy.

City leaders validly boast about diversification of the Houston economy. But when oil and gas markets sour, Houston still puckers. It might be in recession.

"It's a close call," says Jesse Thompson, a business economist at the Federal Reserve Bank of Dallas, Houston branch.

In the Dallas Fed's quarterly publication Southwest Economy, Thompson reports that the Houston Business Cycle Index indicates the Houston economy contracted in the second quarter last year, returned briefly to growth, then retreated again.

The index is broad and timely, reflecting employment, unemployment, real retail sales, and wages. Data revisions delay an official judgment about recession.

Signs aren't good.

"While Houston overall managed to tread water in 2015," Thompson writes, "this year may prove a greater challenge with several forecasts of continuing contraction."

Employment mixed

In employment, economic diversification masks the crush everyone in the oil and gas industry knows has occurred.

Between December 2014 and March 2016, Houston job losses overall totaled only 718. But the manufacturing category was down more than 31,000 jobs, mining nearly 20,000, and professional and business services more than 8,000.

Big gains came in leisure and hospitality, nearly 21,000 jobs; health, more than 16,000; retail, more than 12,000; and state and local government, more than 10,000.

According to Thompson, "core energy-related industries"—including oil and gas extraction, support activities for mining, certain types of manufacturing, and selected scientific and technical services—shed 55,000 jobs.

Capital expenditures for goods essential to the oil and gas supply chain, such as equipment, pipe, chemicals, and software, especially affect Houston's manufacturing and scientific and technical industries.

"Nationally," Thompson writes, "those purchases are projected to fall roughly 40% in 2016 after a similarly large decline in 2015 as firms attempt to retain cash and outlast low oil and gas prices."

The economist cites a Haynes & Boone estimate that of 81 bankruptcies of oil and gas companies last year, 12 were filed in the federal court district encompassing Houston. In the first quarter this year, seven oil and gas bankruptcies were filed in the district out of 27 nationwide.

In another type of diversification, Houston's world-scale refining and petrochemicals industries help offset upstream contraction.

Of construction worth an estimated $164 billion in 266 new chemical and related projects across the industry, about one third is planned in or near Houston. That work accounted for many of the 5,500 construction jobs added in Houston from December 2014 to October 2015, according to Thompson. Commercial and residential real estate augmented the increase.

Construction cuts since last October, however, have all but erased those gains.

Most chemical projects are to be completed between the second half of this year and 2018. Some will continue until 2021. Some will be cancelled or delayed.

"As the first round of new Houston-area plants is completed later this year and in 2017, blocks of construction jobs will disappear," Thompson predicts.

Predictably, commercial office and residential real estate indicators are sagging. Commercial office space under construction has begun to fall, and concessions are increasing for office and apartment rents.

Construction starts for single-family houses fell 10% in the first quarter of the year.

While industries other than upstream oil and gas remain buoyant, the balance of forces is downward for Houston. The unemployment rate rose from 4.3% in December 2014 to 5% in March 2016, while the labor force continued to grow, although at a diminishing pace.

"With Houston's core energy-related industries still hemorrhaging jobs, construction activity beginning to decline, and layoffs suppressing demand for goods and services, Houston's economy will likely weaken further this year," Thompson writes.
The $50/bbl threshold

Gloomy? Yes.But a year and a half ago, crude at $50/bbl panicked Houstonians whose livelihoods depend on upstream oil and gas.

Now it makes them smile—or at least not frown so much. OGJ

■ *Denotes new listing or a change in previously published information.*

JULY 2016

International Conference on Oil, Gas & Coal Technology, Zurich, web site: waset.org/conference/2016/07/zurich/ICOGCT **21-22.**

World Congress on Petroleum & Refinery, Brisbane, web site: petroleum.omicsgroup.com/ **21-23.**

AUGUST 2016

SPE/AAPG/SEG Unconventional Resources Technology Conference (URTeC), San Antonio, web site: www.urtec.org/ **1-3.**

Society of Petroleum Engineers (SPE) Nigeria Annual International Conference & Exhibition, Lagos, web site: connect.spe.org/spenc/naice/naice2016/ **2-4.**

International Conference on Oil Reserves & Estimation Techniques, Seattle, web site: waset.org/conference/2016/08/seattle/ICORET **8-9.**

NAPE Expo, Houston, web site: napeexpo.com/shows/about-the-show/houston/ **10-11.**

EnerCom's The Oil & Gas Conference-2016, Denver, web site: www.theoilandgasconference.com/ **14-18.**

4th International Conference on Petroleum Engineering, London, web site: www.petroleumengineering.conferenceseries.com/ **15-17.**

IADC/SPE Asia Pacific Drilling Technology Conference & Exhibition, Singapore, web site: www.spe.org/events/apdt/2016/ **22-24.**

GeoBaikal 2016: Expand Horizons, Irkutsk, Russia, web site: www.eage.org/event/index.php?eventid=1433&Opendivs=s3 **22-26.**

SPE Asia Pacific Hydraulic Fracturing Conference, Beijing, web site: www.spe.org/events/aphf/2016/pages/general/call_for_papers.php **24-26.**

2nd International Congress & Expo on Biofuels & Bioenergy, Sao Paulo, web site: biofuels-bioenergy.conferenceseries.com/ **29-31.**

15th European Conference on the Mathematics of Oil Recovery (ECMOR XV), Amsterdam, web site: www.eage.org/event/index.php?eventid=1416&Opendivs=s3 **Aug. 29-Sept. 1.**

Offshore Northern Seas, Stavanger, web site: www.tofairs.com/expo.php?fair=103366 **Aug. 29-Sept. 1.**

2nd International Congress & Expo on Biofuels & Bioenergy, Sao Paulo, web site: biofuels-bioenergy.conferenceseries.com/ **29-31.**

SEPTEMBER 2016

Second Applied Shallow Marine Geophysics Conference, Barcelona, web site: www. Eage.org/event/index.php?eventid=1421&Opendivs=s3 **4-8.**

EAGE First Conference on Geophysics for Mineral Exploration and Mining, Barcelona, web site: www.eage.org/event/?eventid=1420 **4-8.**

European Association of Geoscientists & Engineers (EAGE) First Conference on Geophysics for Mineral Exploration & Mining, Barcelona, web site: www.eage.org/event/index.php?eventid=1420&Opendivs=s3 **4-8.**

22nd European Meeting of Environmental and Engineering Geophysics, Barcelona, web site: www.eage.org/event/index.php?eventid=1419&Opendivs=s3 **4-8.**

SPE Offshore Europe, Aberdeen, web site: www.offshore-europe.co.uk/ **5-8.**

SPE Intelligent Energy Conference, Aberdeen, web site: www.intelligentenergyevent.com/ **6-8.**

NACE Egypt Corrosion Conference, Cairo, web site: egyptcorrosion.nace.org/ **6-8.**

AAPG SEG International Conference & Exhibition 2016, Cancun, web site: www.aapg.org/publications/blogs/events/article/articleid/23667/increase-your-exposure-exhibition-and-sponsorship-opportunities-available/ **6-9.**

AAPG SEG 2016 International Conference & Exhibition, Cancun, web site: www.aapg.org/events/conferences/ice/announcement/articleid/20311/aapg-seg-2016-international-conference-exhibition-cancun **6-9.**

23rd Annual India Oil & Gas Review Summit & International Exhibition, Mumbai, web site: www.oilgas-events.com/india-oil-gas **9-10.**

International Conference on Chemical Engineering, Phoenix, web site: chemicalengineering.conferenceseries.com/ **12-14**.

Geomodel 2016, Gelendzhik, Russia, web site: www.eage.org/event/index.php?eventid=1448&Opendivs=s3 **12-15.**

ESOPE International Exhibition & Symposium for the Pressure Equipment Industry, Paris, web site: www.esope-paris.com/ **13-15.**

SPE Deepwater Drilling & Completions Conference, Galveston, Tex., web site: www.spe.org/events/ddc/2016/ **14-15.**

2nd Annual IoT in Oil & Gas, Houston, web site: energyconferencenetwork.com/iot-in-oil-and-gas-2016/**14-15.**

Rio Oil & Gas Expo & Conference, Rio de Janeiro, web site: www.whereinfair.com/rio-oil-gas-expo/rio-de-janeiro/2016-Sep/ **14-16.**

International Conference on Oil & Gas Transportation, Zurich, web site: waset.org/conference/2016/09/zurich/ICOGT **15-16.**

Turbomachinery & Pump Users Symposium, Houston, web site: tps.tamu.edu/event-info **15-17.**

Iran International Petroleum Congress (IIPC), Tehran, web site: www.iranpetroleumcongress.com/ **19-21.**

The CWC World LNG & Gas Series: Asia Pacific Summit, Singapore, web site: asiapacific.cwclng.com/ **20-23**.

SPE Liquids-Rich Basins Conference—North America, Midland, Tex., web site: www.spe.org/events/lrbc/2016/ **21-22.**

International Conference on Petroleum Industry & Energy, Los Angeles, web site: www.waset.org/conference/2016/09/los-angeles/ICPIE **22-23**.

Eastern Section, American Association of Petroleum Geologists 2016 Annual Meeting, Lexington, Ky., web site: www.esaapgmtg.org/ **25-27.**

Corrosion Technology Week 2016, Houston, web site: ctw.nace.org/ **25-29**.

SPE Annual Technical Conference & Exhibition (ATCE), Dubai, web site: www.spe.org/atce/2016/ **26-28.**

SPE Annual Technical Conference & Exhibition, Dubai, web site: www.spe.org/events/calendar/ **26-28.**

3rd Annual Unconventional Production & Well Site Facilities Design, Onshore 2016, Houston, web site: www.facilities-design-onshore.com/program/ **28-29.**

Global Oil & Gas South East Europe & Mediterranean Conference, Athens, web site: www.oilgas-events.com/Global-Oil-Gas-Black-Sea-Mediterranean-Conference/ **28-29.**

International Conference on Petroleum & Petrochemical Engineering, London, web site: www.waset.org/conference/2016/09/london/ICPPE **29-30.**

International Conference on Geophysics, Vancouver, web site: geophysics.conferenceseries.com/ **29-30.**

OCTOBER 2016

ICOGPE 2016: 18th International Conference on Oil, Gas & Petrochemical Engineering, Barcelona, web site: www.waset.org/conference/2016/10/barcelona/ICOGPE **3-4.**

Kazakhstan International Oil & Gas Conference (KIOGE) 2016, Almaty, Kazakhstan, web site: kioge.kz/en/conference/about-conference **5-6.**

USEA 9th Annual Energy Supply Forum, Washington, DC, web

Redefining 'normal'

Relief from crude oil prices below $30/bbl is welcome—but not the beginning of a return to normalcy. Events surrounding the crash from which prices now struggle to recover are redefining "normal" for the oil and gas industry.

Markets for oil and natural gas have changed fundamentally. Abundance has replaced scarcity. Unconventional resources, especially shales, make crude promptly available from many sources. With good reason, the Organization of Petroleum Exporting Countries has abandoned supply management. Now all producers must consider price effects when deciding whether to bring new supply to market.

Demand restraint

Demand growth, meanwhile, faces persistent restraint. This partly reflects ever-improving oil-use efficiency and economically motivated fuel-switching. But antioil politics also nibbles at consumption. While economic forces will preclude achievement of radical, "leave it in the ground" goals, a prejudice against fossil energy undergirds official decision-making, manifest in automatic resistance to any accommodation to the expanded use of oil, gas, or coal.

Gas scores highest in political acceptability, of course. Despite upstart demonization of methane, gas demand will grow as a replacement for coal in power generation and as fuel for electricity needed to supplement solar and wind. NGL supplies will grow, too, competing with oil. Energy-equivalent values of oil and gas, all but decoupled for many years, will tend to converge anew at the light end of the oil-product barrel.

A swing of oil and gas markets back to scarcity seems very unlikely without a cataclysmic loss of production. Supply disruption from war or rebellion can happen at any time but is not a healthy or lasting way for markets to balance.

Other changes will steer oil-market recovery in uncharted directions.

Two years of broad-axe cuts to capital spending and payrolls have shrunk the upstream industry. Scores of bankruptcies are deleveraging independent producers. Costs have plunged—but not enough to offset capacity cuts resulting from contraction of the capital base and scuttling of equipment and workers. With one geographic exception, the upstream oil and gas industry will emerge much smaller than before and unable to perform as much work as it could when crude prices were twice their current levels—or more.

The exception is the oil-producing Middle East. Iraq, despite security problems, now produces more than 4 million b/d of crude. Iran is raising output after escaping international sanctions, producing an average 3.66 million b/d in June, according to the International Energy Agency. And the more-stable supply powers of the Persian Gulf—Kuwait, Saudi Arabia, and the United Arab Emirates—maintained or increased drilling during the price slump while rig counts plummeted elsewhere.

Even in those countries, the slump had lasting effects. Facing budget problems, Saudi Arabia and the UAE, joined by Bahrain and Oman, crossed a portentous political threshold by announcing plans to at least partly dismantle consumption subsidies.

Saudi changes

Saudi Arabia went further. In April, the government disclosed a plan to expand manufacturing and lower the kingdom's reliance on crude production. Fiscal pressure rooted in the crude-price slump helps explain these moves. But other motives, certain only to royal insiders, probably are at work. From the Saudi perspective, the future must seem to involve less security from the US, more menace from Iran, and growing exertion by consuming-nation governments to curb the use of oil. Saudi Arabia thus might even be switching strategically from defense of resource-based revenue streams for future generations to liquidation of reserves in support of investment in industries with greater long-term promise. An extra advantage of such a strategy, and the implicit price weakness, is the fiscal distress it imposes on adversaries more dependent on crude sales.

Whatever the motive, the locus of Saudi policy is moving away from the wellhead and deflating official concern about the value of crude. That change has rocked OPEC. And its effects count forcefully among other reasons to believe the oil market has endured more than an ordinary price cycle that happened to be tougher than most. OGJ

site: https://www.usea.org/event/usea-9th-annual-energy-supply-forum **6.**

International Conference on Geosciences, Orlando, web site: geosciences.conferenceseries.com/ **6-7.**

Cyber Security for Critical Assets LATAM, Rio de Janeiro, web site: www.criticalcybersecurity.com/latam/ **6-7.**

23rd World Energy Conference, Istanbul, web site: www.wec2016istanbul.org.tr/ **9-13.**

International Conference on Oil Reserves & Energy Management, New York, web Site: www.waset.org/conference/2016/10/new-york/ICOREM **10-11.**

The 2016 API Tank, Valves, & Piping Conference & Expo, Las Vegas, web site: www.api.org/events-and-training/calendar-of-events/2016/tvp **10-13.**

SEG International Exhibition and 86th Annual Meeting, Dallas, web site: www.seg.org/web/annual-meeting-2016/ **16-21.**

International Conference on Oil Reserves & Production, London, web site: www.waset.org/conference/2016/10/london/ICORP **17-18.**

The 8th Saudi Arabia International Oil & Gas Exhibition (SAOGE), Dammam, web site: www.saoge.org/ **17-19.**

SPE Well Construction Fluids 2025 Forum: Meeting the Challenges, Dubai, web site: www.spe.org/events/16fmel/ **17-19.**

2016 Fall Committee on Petroleum Measurement Standards Meeting, Los Angeles, web site: www.api.org/Events-and-Training/Calendar-of-Events/2016/fallcopm **17-21.**

The 37th Oil & Money Conference, London, web site: www.oilandmoney.com/ **18-19.**

Society of Petroleum Engineers (SPE) African Health, Safety, Security, Environment & Social Responsibility Conference & Exhibition, Accra, Ghana, web site: www.spe.org/events/hsea/2016/ **18-20.**

SPE Latin America & Caribbean Heavy Oil & Extra Heavy Oil Conference, Lima, web site: www.spe.org/events/laho/2016/ **19-20.**

Arctic Technology Conference (ATC), St. John's, Newfoundland & Labrador, web site: www.arctictechnologyconference.org/ **24-26.**

SPE Russian Petroleum Technology Conference & Exhibition, Moscow, web site: www.spe.org/events/rpc/2016/ **24-26.**

SPE North America Artificial Lift Conference & Exhibition, The Woodlands, Tex., web site: www.spe.org/events/alce/2016/ **25-27.**

SPE Asia Pacific Oil & Gas Conference & Exhibition (APOGCE), Perth, web site: www.spe.org/events/apogce/2016/ **25-27.**

The 10th Element Oilfield Engineering with Polymers Conference, London, web site: oilfieldpolymers.nace.org/ **25-27.**

Bottom of the Barrel Technology Conference (BBTC) Middle East & Africa 2016, Manama, web site: www.bbtc-mena.biz **26-27.**

International Conference & Expo on Oil & Gas, Rome, web site: oil-gas.conferenceseries.com/ **27-28.**

Gulf Safety Forum (GSF) 2016, Doha, web site: www.gulfsafetyforum.com/ **30-31.**

23rd Africa Oil Week Africa Upstream Conference 2016, Cape Town, web site: www.oilgas-events.com/Find-an-Event/Africa-Oil-Week/ **Oct 31-Nov 04.**

NOVEMBER 2016

2nd International Conference & Expo on Oil & Gas, Istanbul, web site: oil-gas.omics-group.com/ **2-3.**

The Abu Dhabi International Petroleum Exhibition & Conference, (ADIPEC), Abu Dhabi, web site: www.adipec.com/ **7-10.**

RefComm Mumbai 2016, Mumbai, web site: refiningcommunity.com/refcomm-mumbai-2016/ **7-11.**

International Petroleum Technology Conference (IPTC), Bangkok, web site: www.iptcnet.org/pages/about/future-dates.php **14-16.**

4th East Africa Oil & Gas Summit & Exhibition, Nairobi, web site: eaogs.com/**15-17.**

21st Annual Oil & Gas of Turkmenistan (OGT) Conference 2016, Ashgabat, web site: ogt.theenergyexchange.co.uk/ **16-17.**

International Conference on Shale Oil & Gas Engineering, London, web site: www.waset.org/conference/2016/11/london/ICSOGE **24-25.**

5th International Conference on Petroleum Geology & Petroleum Industry, Dubai, web site: petroleumgeology.conferenceseries.com/ **24-25.**

Oil & Gas Safety & Health Conference 2016 OSHA Exploration & Production, Houston, web site: www.oshasafetyconference.org/Events/ugm/Osha2016/default.aspx **29-30.**

Society of Petroleum Engineers (SPE) Middle East Artificial Lift Conference & Exhibition, Manama, Bahrain, web site: www.spe.org/events/meal/2016/ **Nov. 30-Dec. 1.**

DECEMBER 2016

International Conference on Energy Engineering & Oil Reserves, Hong Kong, web site: www.waset.org/conference/2016/12/hong-kong/ICEEOR **5-6.**

International Conference on Oil Reserves & Energy Technologies, Hong Kong, web site: www.waset.org/conference/2016/12/hong-kong/ICORET **5-6.**

5th World Congress on Petrochemistry & Chemical Engineering, Phoenix, web site: www.petrochemistry.omicsgroup.com/ **5-7.**

Third EAGE Integrated Reservoir Modelling Conference, Kuala Lumpur, web site: www.eage.org/event/index.php?eventid=1477&Opendivs=s3 **5-7.**

OpEx MENA 2016—Operational Excellence in Oil, Gas & Petrochemicals, Abu Dhabi, web site: www.opex.biz **5-7.**

Oil & Gas Supply Chain Procurement, Houston, web site: energyconference.network.com/oil-gas-supply-chain-procurement-2016/ **6-7.**

SPE Heavy Oil Conference & Exhibition, Kuwait City, web site: www.spe.org/events/hoce/2016/ **6-8.**

Green Forum: Oil, Gas & Petrochemicals, Abu Dhabi, web site: www.greenforum.ae **8.**

ICOGPE 2016: 18th International Conference on Oil, Gas & Petrochemical Engineering, Dubai, web site: www.waset.org/conference/2016/12/dubai/ICOGPE/home/ **26-27**.

JANUARY 2017

Global Oil & Gas Middle East & North Africa Conference, Cairo, web site: www.oilgas-events.com/Find-an-Event/Global-Oil-Gas-Middle-East-North-Africa-(1) **24-26.**

SPE Hydraulic Fracturing Technology Conference, The Woodlands, Tex., web site: www.spe.org/events/hftc/2017/ **24-26.**

NACE International Pipeline Coating Technology Conference, Houston, web site: pipelinecoating.nace.org/ **24-26.**

Offshore West Africa, Lagos, web site: www.offshorewestafrica.com/index.html **24-26.**

2017 API Inspection Summit, Galveston, Tex., web site: www.api.org/Events-and-Training/Calendar-of-Events/2017/inspection **Jan. 30-Feb 2.**

FEBRUARY 2017

7th Basra Oil & Gas International Conference & Exhibition, Basra, web site: www.basraoilgas.com/Conference/ **8-11.**

SPE Canada Heavy Oil Technical Conference, Calgary, web site: www.spe.org/events/en/2017/conference/17choc/homepage.html/ **15-16.**

NAPE Summit, Houston, web site: napeexpo.com/shows/about-the-show/summit **15-17.**

McKinsey: Cars, petrochemicals headed for oil-market 'tug of war'

Demand for liquid hydrocarbons will become a "tug of war between growth in the petrochemical sector and declining demand from passenger cars," predict analysts at McKinsey & Co. in a report suggesting oil demand might peak in 2030.

Overall, the consultancy has lowered its long-term outlook for oil demand to an extent that "warrants a fresh, critical look at energy investments."

Here are highlights of the report by McKinsey analysts Occo Roelofsen, Namit Sharma, Rembrandt Sutorius, and Christer Tryggestad:

- The energy demand growth rate worldwide will slow to 0.7%/year through 2050—30% slower than the firm originally forecast.
- Energy demand will grow in emerging and developing countries and decline in Europe and North America.
- Chemicals will grow twice as fast as energy demand while demand for light vehicles peaks around 2023.
- Demand for electricity will grow at twice the rate of nonelectric energy. Solar and wind will account for almost 80% of net added capacity and 34% of generation by 2050.
- The fossil-fuel share of total energy will decline to 74% in 2050 from 82% at present. Gas will grow at almost twice the rate of total energy demand, while coal peaks by 2025. Oil demand growth will slow to 0.4%/year.
- Carbon dioxide emissions related to energy will flatten and start to subside in about 2035 as efficiency of combustion engines improves, electric vehicles increase in number, and power generation shifts to wind and solar.

Petrochemicals and vehicles

Through 2035, the analysts say, 70% of growth in demand for liquid hydrocarbons will be for petrochemical feedstock.

But global demand growth for petrochemicals soon will fall to 1.2 times the increase in gross domestic product from the traditional 1.3-1.4 times GDP as mature plastics markets become saturated.

Increased plastics recycling and improved plastic-packaging efficiency can slow the rate further.

By 2030, meanwhile, electric vehicles might represent nearly half the new cars sold in China, the European Union, and the US and almost 30% globally, according to a business-as-usual case that for the first time includes adoption of autonomous vehicles and car-sharing.

"If the market penetration of electric, autonomous, and shared vehicles accelerates, oil demand driven by light vehicles could be approximately 3 million b/d lower in 2035 than assumed in the business-as-usual case," the analysts say. Accelerated adoption of light-vehicle technologies and changing plastics demand together might lower oil demand in 2035 by nearly 6 million b/d.

"An important result is that oil demand will peak around 2030 at fewer than 100 million b/d in this scenario," the analysts say.

Structural shifts

Underlying the analysis is an expectation by McKinsey Global Institute (MGI) for a structural lowering of macroeconomic growth.

MGI cites the aging of populations in developed countries, which will lower the share of workers in the total population. With a shrinking labor force leading to "a global macroeconomic downshift" and continuation of a flattening in productivity, GDP growth in the next 50 years will be 40% lower than in the previous half-century.

A growing share of global GDP will be driven by services, which are less energy-intensive than heavy industries. And individual energy-use efficiency will improve.

MTI expects energy intensity of global growth to fall by 50% through 2050.

The McKinsey analysts suggests energy companies respond to the slowdown they see in oil-market growth by identifying "pockets of growth and investment," "value pools across the system," and "shaping moves and new business models required to capture value." OGJ

US Interior finalizes Arctic exploratory drilling regulations

Matt Zborowski
Staff Writer

The US Department of the Interior on July 7 announced final regulations for exploratory drilling activities on the US Arctic Outer Continental Shelf (OCS) that require firms to have plans in place should a safety or environmental issue arise during operations (OGJ Online, Feb. 20, 2015).

The final rule focuses solely on floating vessels within the US Beaufort and Chukchi seas, requiring firms to implement

proper internal controls and planning for oil-spill prevention, containment, and responses—issues identified by previous Interior reports on Royal Dutch Shell PLC's 2012 exploration activities in the Arctic (OGJ Online, Mar. 15, 2013).

The changes complement the final well-control rule released in April (OGJ Online, Apr. 15, 2016). While that rule applies across the entirety of the OCS, including the Arctic, many of the provisions of the final Arctic regulations go beyond the scope of the well-control rule and address the challenges posed by the Arctic operating environment.

Integrated operations plan

Specifically, the final rule requires operators to develop an integrated operations plan addressing all phases of a proposed Arctic OCS exploration program and submit it to the US Bureau of Ocean Energy Management (BOEM) before filing an exploration plan. The regulations require companies to have access to—and the ability to promptly deploy—source-control and containment equipment, such as capping stacks and containment domes, while drilling below or working below the surface casing.

Operators also must have access to a separate relief rig able to drill a timely relief well under the conditions expected at the site in the event of a loss of well control; have the capability to predict, track, report, and respond to ice conditions and adverse weather events; effectively manage and oversee contractors; and develop and implement an oil-spill response plan designed and executed in a manner that accounts for the unique Arctic OCS operating environment, and is supported with the necessary equipment, training, and personnel for oil-spill response on the Arctic OCS.

Interior units BOEM and the Bureau of Safety and Environmental Enforcement developed the regulations with public input from the State of Alaska, North Slope communities, Alaska Native tribes and organizations, industry, and nongovernmental organizations. An environmental assessment, pursuant to the National Environmental Policy Act, was also prepared in conjunction with the rule, and more than 100,000 individual comments were received on the notice of proposed rulemaking.

Interior notes that operators continue to hold a number of active leases in the Beaufort Sea planning area and one in the Chukchi Sea planning area. Over the past year, Shell exited the US Arctic after "disappointing" results from its Burger J exploration well in the Chukchi Sea (OGJ Online, Sept. 28, 2015). Statoil ASA followed suit in November, vacating its own leases in the Chukchi Sea (OGJ Online, Nov. 17, 2015).

Further, the agency in October 2015 cancelled the two potential Arctic offshore lease sales scheduled under the leasing program for 2012-17 (OGJ Online, Oct. 16, 2015).

'An unfortunate turn'

"This is an unfortunate turn by this administration and will continue to stifle offshore oil and natural gas production," said Erik Milito, American Petroleum Institute upstream and industry operations director, in a statement following the rule's publication. "We remain concerned about various regulatory activities related to offshore energy development including today's proposals for Arctic operations.

"The US oil and natural gas industry has a proven track record of working with the federal government to improve offshore safety," he said. "Certain proposed requirements may not improve safety and in fact may inhibit innovation and technological advancements. Any regulations that are published should achieve the objectives of protecting workers and the environment and promoting energy development."

API cited a 2015 report from the National Petroleum Council, conducted at the request of the US Secretary of Energy, that determined oil and gas "exploration and development in the Arctic is extensively regulated," and "progressing offshore development in the Arctic would require around 60 permit types through 10 federal agencies."

Randall Luthi, president of the National Ocean Industries Association, also lamented the prescriptive requirements.

"Despite taking years to write, the rule does not accurately reflect current industry capabilities and includes unnecessary requirements, such as same season relief wells, which may not be needed due to the availability of new response and containment equipment," he commented in a separate statement.

"The offshore industry has shown that oil and natural gas development can be done safely in Arctic conditions," Luthi continued. "Even as we review the provisions of this rule, other countries—including Canada, Greenland, Russia, and Norway—are already taking steps to explore and develop Arctic OCS resources."

Arctic Energy Center spokesperson Lucas Frances noted that "even though the administration has aggressively pursued a policy that restricts oil and gas development, today's regulations do signify its recognition that America's largest energy opportunity—the offshore Arctic—can be explored safely and responsibly." He added that it's critical the administration "now acknowledges the importance of Arctic offshore resources and includes the region in the forthcoming offshore leasing program." OGJ

BHI: US oil rig count records another double-digit increase

Matt Zborowski
Staff Writer

Again boosted by oil-directed units, the tally of active US drilling rigs gained 9 units to 440 during the week ended July 8, marking the fifth time in 6 weeks the overall count has risen, according to Baker Hughes Inc. data (OGJ Online, July 1, 2016).

The count has increased by 32 since its first increase in 41

weeks on June 3, and is down 1,480 units since the overall drilling dive commenced following the week ended Dec. 5, 2014.

BHI also reported that the US rig count in June averaged 417 rigs working, up 9 from the May average and down 444 from the June 2015 average.

In its 2016 Quarterly Well Completion Report, the American Petroleum Institute this week published estimates showing a 69% decline in second-quarter oil well completions compared with year-ago levels.

Exploratory gas well completions in the second quarter fell an estimated 84% year-over-year. So far this year, development well footage has dropped 53% while exploratory well footage has dropped 64%, the report indicates.

Meanwhile, US crude oil production during the week ended July 1 plunged 194,000 b/d compared with the previous week's average, according the US Energy Information Administration's Weekly Petroleum Status Report. The bulk of the weekly drop, however, came from Alaska, which fell 156,000 b/d vs. a Lower 48 decline of just 38,000 b/d.

Total US output during the week averaged 8.428 million b/d, a year-over-year decline surpassing the million-barrel-per-day mark at 1.176 million b/d.

Land, oil rigs set pace

The US oil-directed count jumped by 10 during the week to 351 rigs working, up 35 since May 27. Compared with its peak in BHI data on Oct. 10, 2014, the total is now down 1,258 units.

Natural gas-directed rigs edged down a unit for a second straight week, settling at 88.

Onshore rigs continued their climb, collecting 9 more units for a total of 417. Recording its biggest increase since July 24, 2015, the count of rigs engaged in horizontal drilling jumped by 11 to 343, up 29 units since May 27 and down 1,029 units since a peak in BHI data on Nov. 21, 2014. Directional drilling rigs, meanwhile, dropped for a third consecutive week, relinquishing 2 units to 36.

Offshore rigs and those drilling in inland waters were unchanged for the week at 19 and 4, respectively. The offshore tally remains at its lowest level since Oct. 1, 2010, less than 6 months after the Deepwater Horizon incident.

Among the major oil- and gas-producing states, Texas increased for the sixth straight week, gaining 3 units to 201. The Lone Star State is now up 28 units since May 27 and down 757 units since a peak in BHI data on Aug. 29, 2008.

The Permian rose 4 units to 158, up 24 since May 13. The Barnett increased a unit to 9.

North Dakota and New Mexico each gained 2 units to 28 and 21, respectively. The Williston mirrored the activity of its home state, also with a 2-unit rise to 28.

Oklahoma, Louisiana, and Wyoming each added a unit to reach respective totals of 59, 43, and 8. The Cana Woodford was up 2 units to 28. The DJ-Niobrara and Mississippian each rose a unit to 15 and 5, respectively.

Kansas was the only state to record a loss, with its count halving to 1.

Canada's rig count continued its recent rebound during the week ended July 8, rising 5 units to 81, up 45 since May 6. Gas-directed rigs increased by 3 to 43 while oil-directed rigs increased by 2 to 37. One rig considered unclassified remains operating.

The average Canadian count for June was 63, up 21 from the May average and down 66 year-over-year, according BHI data. OGJ

EIA: Latest STEO forecasts oil market balancing in 2017

Global inventory builds of petroleum and other liquid fuels will average 900,000 b/d in 2016, slowing down from 1.9 million b/d in 2015, according to the July Short-Term Energy Outlook from the US Energy Information Administration. EIA also expects the market to reach balance in 2017, with inventory draws during the second half of the year averaging 300,000 b/d.

EIA now expects global oil consumption to increase 1.4 million b/d in 2016 and 1.5 million b/d in 2017, little changed from the forecast in the June STEO (OGJ Online, June 7, 2016). The growth is mainly driven by countries outside the Organization for Economic Cooperation and Development.

Non-OECD consumption growth was an estimated 1 million b/d in 2015, and it is expected to be 1.3 million b/d in 2016 and 1.5 million b/d in 2017, according to EIA.

"This forecast reflects an upward adjustment to India's consumption growth in 2016 and 2017 of about 100,000 b/d, raising the country's growth to 400,000 b/d annually, mainly as a result of increased use of transportation fuels and of naphtha for new petrochemical projects. China's consumption of petroleum and other liquid fuels is forecast to grow 400,000 b/d in both 2016 and 2017, driven by increased use of gasoline, jet fuel, and hydrocarbon gas liquids (HGL), which more than offset decreases in diesel consumption," EIA said.

Consumption of OECD petroleum and other liquid fuels rose 500,000 b/d in 2015 and is expected to increase 200,000 b/d in 2016 and less than 100,000 b/d in 2017. Consumption growth in the US and South Korea more than offsets decreases in consumption in OECD Europe and Japan in 2016 and 2017.

This forecast also includes a slight downward adjustment to petroleum and other liquids fuels consumption in OECD Europe in 2017 as a result of uncertainty related to the UK's

vote last month to leave the European Union. However, EIA expects that the effect on oil consumption in the forecast period will be largely limited to Europe.

Non-OPEC supply

EIA expects production outside the Organization of the Petroleum Exporting Countries to decline 600,000 b/d in 2016 and 200,000 b/d in 2017, with most of the production declines occurring in the US. Non-OPEC production rose 1.6 million b/d in 2015, driven by the growth in North America.

Forecast total US production of liquid fuels declines 500,000 b/d in 2016 and 100,000 b/d in 2017, as shrinking crude oil production is partially offset by expected growth in HGL production, Gulf of Mexico crude oil production, and liquid biofuels production.

Outside of the US, forecast non-OPEC production declines 100,000 b/d in both 2016 and in 2017. "Although oil companies have reduced investments, most of the cuts have been to capital budgets that largely affect production levels beyond 2017," EIA said.

Among non-OPEC producers outside the US, the largest declines in 2016 are forecast to be in China, while the largest declines in 2017 are in the North Sea and in Russia.

Non-OPEC unplanned supply outages in June were 700,000 b/d—a decrease of 400,000 b/d from the May level—as Canadian oil sands production gradually return from wildfire-related outages that began in May. In June, Canada's unplanned outages averaged 400,000 b/d, about half of the May level.

OPEC supply, oil prices

Gabon rejoined OPEC as of July 1, following a 21-year hiatus from the organization. Gabon currently produces more than 200,000 b/d of crude oil.

With the inclusion of Indonesia and Gabon, OPEC crude oil production averaged 31.8 million b/d in 2015, an increase of 800,000 b/d from 2014, led by Iraq and Saudi Arabia. According to the July STEO, OPEC crude oil production will rise 800,000 b/d in 2016, with Iran accounting for most of the increase. Forecast OPEC production rises by an additional 500,000 b/d in 2017, as major OPEC producers are expected to continue their strategy of maintaining market share.

OPEC non-crude liquids production averaged 6.6 million b/d in 2015, and it is forecast to increase by about 300,000 b/d in both 2016 and 2017, led by Iran and Qatar.

North Sea Brent crude oil prices averaged $48/bbl in June, a $2/bbl increase from May and the fifth consecutive monthly increase since reaching a 12-year low of $31/bbl in January.

Brent crude oil prices are forecast to average $44/bbl in 2016 and $52/bbl in 2017. West Texas Intermediate crude oil prices are forecast to be the same as Brent in 2016 and 2017 OGJ.

Sahara Petrochemicals lets contract for Saudi operations

Robert Brelsford
Downstream Technology Editor

Sahara Petrochemicals Co. has let a contract to Jacobs Engineering Group Inc., Pasadena, Calif., to provide general engineering services at Sahara's various chemical businesses at Al Jubail Industrial City in Saudi Arabia's Eastern Province.

As part of the 3-year contract, Jacobs will deliver engineering, procurement, construction supervision, project management, precommissioning, and commissioning support to a range of small to medium-sized capital projects for Sahara's propane dehydrogenation, polypropylene, chloralkyl, ethylene dichloride, and peripheral utilities installations, Jacobs said.

Jacobs disclosed neither a contract value nor any additional details regarding the specific projects to be included in its scope of work at the petrochemical facilities.

Established in 2004, Sahara is a Saudi joint-stock company that, along with international joint-venture partners, owns, develops, builds, and operates petrochemical manufacturing sites in Al Jubail Industrial City, with its focus on production of ethylene, polyethylene, propylene, polypropylene, and their derivatives.

Sahara's affiliates and holdings in Al Jubail Industrial City include the following:

- AL WAHA Petrochemicals Co., a JV of Sahara 75% and Basell Arable lnvestissements SAS 25%, that produces 467,600 tonnes/year of propylene as primary feedstock for the production of 450,000 tpy of polypropylene.
- Tasnee & Sahara Olefins Co. (TSOC), a closed joint-stock company owned by Sahara 32.55%, Saudi Arabia's General Organization for Social Insurance 7%, as well as Tasnee Petrochemicals Marketing Co., National Gulf Co. for PetroChemical Technology, and National Worldwide Industrial Advancement Co. 60.45%, that serves as a holding company for other JVs 75% as well as Saudi Acrylic Acid Co. Ltd. (SAAC) 65%.
- Saudi Ethylene & Polyethylene Co. (SEPC), owned by TSOC 75% and BasellMoyen Orient lnvestissements SAS 25%, produces 284,800 tpy of propylene and 1 million tpy of ethylene, about 80% of which is used as primary feedstock for production of 800,000 tpy of high and low-density polyethylene (OGJ Online, Sept. 3, 2014).
- Sahara & Ma'aden Petrochemicals Co., a 50-50 JV of Sahara and Ma'aden, that operates an integrated chloralkali plant to produce 227,000 tpy of chlorine and 250,000 tpy of caustic soda, and 300,000 tpy of ethylene dichloride.
- Saudi Acrylic Acid Co. (SAAC), owned by Sahara 22%, TSOC 65%, and Tasnee 13%, acts both as a holding company

for investments in certain other JV projects as well owner-operator of all utilities and offsites for the integrated acrylates complex (IAC), including product storage and transportation and port facilities.

- Saudi Acrylic Monomer Co. Ltd. (SAMCO), owned by Sahara 75% and Rohm & Haas (Dow) 25%, operates the IAC's acrylic acid and esters plant to produce 64,000 tpy of glycol acid and 160,000 tpy of butyl acrylates. As feedstock for the plant, SAMCO uses 96,000 tpy of n-butanol from SAAC, 100,000 tpy of propylene from SEPC, and 14,000 tpy of propylene from the S-Chem collective, which includes Saudi Chevron Phillips Co., Jubail Chevron Phillips Co., and Saudi Polymers Co.
- Saudi Acrylic Polymer Co., owned by SAAC 75% and Evonik 25%, operates an IAC plant where it produces 80,000 tpy of super-absorbent polymer from 64,000 tpy of glacial acrylic acid supplied by SAMCO and 24,000 tpy of dry caustic soda from Saudi Arabia Basic Industries Corp. or National Titanium Dioxide Co. Ltd.
- Saudi Butanol Co. (SABUCO), a JV of SACC 33.3%, Saudi Kayan Petrochemical Co. 33.3%, and Sadara Chemical Co. 33.3%, operates IAC's butanol plant to produce 33,000 tpy of n-butanol that is supplied in equal proportions to SAAC, Saudi Kayan and Sadara based on their respective supply of propylene feedstock to SABUCO. OGJ

Independent Russian refinery implements process automation

Robert Brelsford
Downstream Technology Editor

Kuban Oil & Gas Co. has let a contract to Honeywell Process Solutions (HPS), a division of Honeywell International Inc., to provide advanced automated control and safety systems at the 1.5 million-tonne/year AT-5 crude distillation unit (CDU) of subsidiary Ilsky Refinery LLC's refinery in the Seversky district of Russia's Krasnodar Territory.

The Russian independent refiner has completed implementation of HPS's proprietary Experion HS process automation system, which includes a subset of components from the Experion Process Knowledge System (PKS) distributed control system specifically packaged to provide a targeted and robust system for small-to-medium automation projects, Honeywell said.

Tailored to the meet requirements of the AT-5 CDU to enable control and monitoring systems to operate with enhanced stability and reliability, the Ilsky refinery's Experion HS platform includes the following:

- An efficient engineering environment that features applications to allow for enhanced human-machine interface.
- Remote control and monitoring capability.
- Flexible access for data collection.

Alongside technology licensing, HPS also supplied the refinery a complete set of services for building an integrated production control system based on Honeywell's hybrid HC900 controllers, the service provider said.

A value of the contract was not disclosed.

Refinery overview

Initially built as a small bitumen plant to provide materials for local road construction, the Ilsky manufacturing site began a series of reconstruction and new construction works in 2001 as part of a plan to boost crude oil processing capacity in the region.

Designed to upgrade operations for increased production of bitumen as well as straight-run motor fuels, the phased overhaul resulted in the refinery's current configuration, which includes a 120,000-tpy AT-1 CDU, commissioned in 2002; a 300,000-tpy AT-2 CDU, commissioned in 2007; a 300,000-tpy AT-3 CDU, commissioned in 2009; and a 300,000-tpy AT-4 CDU, commissioned in 2010.

In 2013, Ilsky Refinery completed construction of AT-5 CDU, which is equipped to process a blend of low-sulfur feedstock with sour Urals crude.

The company also plans to add an AT-6 CDU, which currently remains in the design stage, Ilsky Refinery said.

Alongside completing a series of major infrastructure projects intended to enable increased processing at the complex, Ilsky Refinery also has purchased property adjacent to its current operations for a four-phased construction and upgrading project in accord with basic provisions of a quadripartite agreement on modernization of Russia's oil processing industry between oil companies; the Federal Antimonopoly Service of the Russian Federation; the Federal Service for Environmental, Technological, and Nuclear Supervision (Rostechnadzor); and the Federal Agency for Technical Regulating and Metrology (Rosstandart) to reequip and upgrade oil processing capacities at Russian Federation refineries (OGJ Online, June 1, 2016).

The project to build and upgrade Il'sky refinery provides for the establishment on the basis of the existing refinery plant complex for deep processing of crude oil, allowing to increase refining depth to a value of not less than 95% and to ensure output, fully meeting the requirements of modern European standards (Euro 5).

As part of the 2011 agreement, Ilsky Refinery will add a deep conversion plant at the refinery to increase its refining depth to no less than 95% as well as to ensure fuel production from the site conforms to Euro 5-quality standards by 2022.

Due to be completed in 2022, the deep conversion plant will include the following processing capabilities:

- Middle-distillate hydrocracking and vacuum gas oil hydrotreating using technology licensed by Honeywell subsidiary UOP LLC.

• Hydrogen production using technology licensed by Linde AG.
• Gas fractionation using technology licensed by Lengiproneftekhim LLC.
• Sulfur recovery using technology licensed by Jacobs Engineering Group Inc.
• Reforming, isomerization, gasoline hydrotreating, and delayed coking, licensing for all of which remains outstanding.

The company plans to expand overall crude processing capacity at the refinery to 5-6 million tpy by conclusion of the project. OGJ

Tatneft commissions unit at Tatarstan refinery

Robert Brelsford
Downstream Technology Editor

PJSC Tatneft, Almetyevsk, Russia, has commissioned a 2 million-tonne/year delayed coking unit at the 9 million-tpy refinery of subsidiary OJSC Taneco's multiphase integrated refining and petrochemical complex in Nizhnekamsk, 250 km from Tatarstan's capital city of Kazan.

The unit, which will enable the refinery to increase its refining depth to 95% and completely eliminate its yield of dark oil products, began operating on July 3, Tatneft said.

Alongside increasing the refinery's output of naphtha, the delayed coker will produce light and heavy coker gas oils for use as feedstock to boost production of finished motor fuels.

Heavy coker gas oils will be further processed at the refinery's hydrocracking unit and, in the future, the catalytic cracking unit startup of a heavy coker gas oil hydrotreater, according to a June presentation from Tatneft.

The delayed coker's production of light coker gas oil will serve as feedstock for the refinery's diesel fuel hydrotreater, while its 700,000 tpy of petroleum coke output will be used as fuel for power generation at Tatneft's Nizhnekamsk heat and power plant.

Development plans

Located at the refinery's deep conversion plant, the coker comes as part of an ongoing program Tatarstan launched in 2005 to strengthen the country's refining industry (OGJ Online, Aug. 6, 2008), as well as in accordance with basic provisions of a quadripartite agreement on modernization of Russia's oil processing industry between oil companies; the Federal Antimonopoly Service of the Russian Federation; the Federal Service for Environmental, Technological, and Nuclear Supervision (Rostechnadzor); and the Federal Agency for Technical Regulating and Metrology (Rosstandart) to re-equip and upgrade oil processing capacities at Russian Federation refineries (OGJ Online, June 1, 2016).

The first stage of Taneco's complex entered operation in December 2011 with startup of the refinery's nameplate 7 million-tpy CDU-VDU-7, which following a series of upgrades in 2013, increased crude processing capacity by 115% to 9 million tpy.

In March 2014, Taneco commissioned a 2.9 million-tpy hydrocracking unit, also at the deep conversion plant, which enabled the start of Euro 5-quality fuel production from the refinery, according to Tatneft.

Alongside CDU-VDU-7 and the hydrocracker, additional processing capacities now in operation at the complex include:
• Visbreaking: 2.4 million tpy.
• Naphtha stabilization: 1.1 million tpy.
• Base oil (lubes) production: 250,000 tpy.
• Combined sulfur recovery: 139,000 tpy.
• Hydrogen production: 99,000 tpy.

As of June, current units under construction as part of the Taneco's refining complex development plan include a naphtha hydrotreater, a heavy coker gas oil hydrotreater, an isomerization unit, a catalytic reformer, and a catalytic cracking unit.

The catalytic reforming and isomerization units, as well as related offsite installations, are scheduled for startup during this year's second half, Tatneft said.

As part of its second-stage development of the complex, Taneco also began construction at the refinery in 2015 on a crude unit, GDU-VDU-6.

Designed to boost nameplate crude oil processing capacity at Nizhnekamsk to 14 million tpy by 2020, GDU-VDU-6 is due to reach physical completion in 2018, Tatneft told investors in June. OGJ

RasGas wraps low-nitrogen oxide retrofit at Al Khaleej gas plant

Robert Brelsford
Downstream Technology Editor

RasGas Co. Ltd. has completed a decade-long program to cut emissions of nitrogen oxide (NOx) from a series of gas processing installations and related facilities at its LNG operations in Ras Laffan Industrial City, Qatar, north of Doha.

Implemented at RasGas LNG Trains 1-4, Phase 1 of the Al Kaleej Gas Project (AKG-1), and associated utilities, the low-NOx retrofit program has reduced the intensity of NOx emissions from the integrated LNG complex by about 90% from intensity levels at the site in 2006, RasGas said.

Executed in cooperation with Qatar's Ministry of Municipality and Environment to respond to regulatory requirements for lowering emissions, the retrofit program involved implemen-

tation of GE's proprietary dry low-NOx (DLN) combustion technology beginning in 2007 on the complex's gas-fired turbines built before 2005.

Since its implementation, the DLN technology has ensured all applicable combustion units either meet or fall below Qatar's applicable emissions limits, RasGas said.

The retrofit comes as part of a long-term maintenance agreement between RasGas and GE, under which a GE team is responsible for performing all maintenance of GE units at the complex (OGJ Online, Dec. 15, 2010).

Established in 2001 by Qatar Petroleum and ExxonMobil RasGas Inc. to handle gas reserves from Qatar's North field 80 km offshore Ras Laffan, RasGas manages and operates seven LNG trains, two sales gas production facilities, two helium plants, as well as a long-term charter fleet of 27 LNG vessels (OGJ Online, Feb. 24, 2010).

LNG and sales gas capacities of RasGas' operations at Ras Laffan include: LNG Train 1, 3.3 million tonnes/year; Train 2, 3.3 million tpy; Train 3, 4.7 million tpy; Train 4, 4.7 million tpy; Train 5, 4.7 million tpy; Train 6, 7.8 million tpy; Train 7, 7.8 million tpy; AKG-1, 750 MMcfd; and AKG-2, 1,305 MMcfd.

Barzan gas project

RasGas also is managing construction of the previously delayed Barzan gas project, which now is nearing completion, the company said (OGJ Online, Apr. 10, 2009).

While South Korea's Hyundai Heavy Industries Co. has concluded construction activities for Barzan's offshore installations, Japan's JGC Corp. is finalizing work on the project's onshore facilities, which include the now-completed Train 1 and a nearly finished Train 2, RasGas said.

Once in operation, Barzan's Trains 1 and 2 will supply about 2 bcfd of sales gas, most of which will be directed to the power and water sector.

RasGas, however, did not disclose a precise timeframe for Barzan's commissioning. OGJ

Petro Rabigh's refinery due new units

Robert Brelsford
Downstream Technology Editor

Rabigh Refining & Petrochemical Co. (Petro Rabigh), a joint venture of Saudi Aramco and Sumitomo Chemical Co., has let a contract to KT-Kinetics Technology SPA, a unit of Maire Tecnimont SPA, to complete a clean fuels project at Petro Rabigh's 400,000-b/d refinery and chemicals complex in the port city of Rabigh on the Red Sea.

KT-Kinetics Technology will provide engineering, procurement, and construction services for the project, which will include a 17,000-b/d naphtha hydrotreater, a 220 tonne/day sulfur recovery unit, as well as related interconnecting works.

Due for mechanical completion in first-quarter 2019, the project is slated for startup during third-quarter 2019.

Maire Tecnimont valued the EPC contract at about $148 million.

First announced on Oct. 4, 2015, the clean fuels project comes as part the Petro Rabigh Phase II development, a goal of which is to increase the complex's compliance with regional environmental regulations, Petro Rabigh said.

Petro Rabigh completed mechanical works for the Rabigh Phase 2 ethane cracker expansion in March, which lifted ethane gas processing capacity by 30 MMcfd to 125 MMcfd (OGJ Online, Apr. 26, 2016).

Once fully commissioned, Rabigh Phase 2 project will be able to produce more than 1.3 million tpy of paraxylene as well as a diverse slate of other petrochemical products, including ethylene propylene diene monomer rubber; thermoplastic olefin; methyl methacrylate; and poly methyl methacrylate.

A previously proposed project to add a polyol production unit at the complex remains under engineering study and review, the firm said. OGJ

THE EDITOR'S PERSPECTIVE

Ramadan terrorism refutes assertions of monolithic Islam

by **Bob Tippee**, Editor

How, now, can anyone insist jihadi terrorism springs from a monolithic Islam committed to destruction of the non-Muslim world?

That simplistic view remains alive in radio talk shows. It should make oil and gas professionals cringe.

During a bloody Ramadan just ended, most of about 350 persons killed by Islamic militants were Muslim.

And most of the attacks were in Muslim countries: Turkey, Iraq, Bangladesh, and Saudi Arabia, where one of three bombings hit Medina, burial place of the prophet Muhammad.

Militants had been urging followers to make Islam's holy month, traditionally dedicated to reflection and peace, a time for victory in holy war.

Before Ramadan, the Associated Press reported, Islamic State (IS) leaders were calling for its supporters to attack wherever possible.

That might have influenced timing of the murders of 49 persons in Orlando by a solo gunman allegiant to IS. The atrocity occurred on June 12. Ramadan began June 5.

Why would a vicious group claiming to want to restore the Caliphate so desecrate Ramadan?

A likely explanation is the need for the IS to reassert its ferocity after territorial losses in Iraq. More than that probably is involved.

What's clear is that Muslims have an IS problem at least as dire as everyone else's.

Adherents of the view that IS bloodlust grows irresistibly out of Islam point to passages in the Koran calling for destruction of nonbelievers. Apparently, however, not all Muslims think scripture reflecting seventh century culture and habits of expression should or can be taken literally. Other religions grapple with this problem of deriving contemporary meaning from writings of antiquity.

Not IS. Its barbarism represents, foremost, a violent revolt against modernity, including modern Islam. To see it mainly as a global war against non-Muslims or the West is to ignore horrible evidence to the contrary and to incline toward dangerous responses.

Non-Muslims need to get this right. IS must be stopped. After that, Muslims and everyone else still will inhabit the same planet.

(From the subscription area of www.ogj.com, posted July 8, 2016; author's e-mail: bobt@ogjonline.com)

ADVERTISERS INDEX

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IMPORTS OF CRUDE AND PRODUCTS

	Districts 1-4 7-1 2016	Districts 1-4 6-24 2016	District 5 7-1 2016	District 5 6-24 2016	Total US 7-1 2016	Total US 6-24 2016	Total US 7-3* 2015
	1,000 b/d						
Total motor gasoline	728	899	36	6	764	905	851
Mo. gas. blending comp.	649	734	36	4	685	738	768
Distillate	61	25	0	0	61	25	164
Residual	187	73	64	92	251	165	161
Jet fuel-kerosine	25	40	0	157	25	197	136
Propane-propylene	59	57	12	16	71	73	86
Other	890	1,456	142	91	1,033	1,546	908
Total products	**1,950**	**2,550**	**254**	**362**	**2,205**	**2,911**	**2,306**
Total crude	**7,037**	**6,273**	**1,324**	**1,282**	**8,361**	**7,555**	**7,317**
Total imports	**8,987**	**8,823**	**1,578**	**1,644**	**10,565**	**10,467**	**9,623**

*Revised.
Source: US Energy Information Administration
Data available at PennEnergy Research Center.

EXPORTS OF CRUDE AND PRODUCTS

	Total US 7-1-16	Total US 6-24-16	Total US *7-3-15
	1,000 b/d		
Finished motor gasoline	395	395	366
Jet fuel-kerosine	138	138	144
Distillate	1,305	1,305	1,228
Residual	353	353	390
Propane/propylene	661	661	600
Other oils	1,042	1,042	1,013
Total products	**3,894**	**3,894**	**3,741**
Total crude	**598**	**598**	**571**
Total exports	**4,492**	**4,492**	**4,312**
NET IMPORTS			
Total	6,076	5,974	5,310
Products	(1,689)	(983)	(1,435)
Crude	7,765	6,957	6,745

*Revised.
Source: Oil & Gas Journal
Data available at PennEnergy Research Center.

Additional analysis of market trends is available through **OGJ Online**, *Oil & Gas Journal's* electronic information source, at http://www.ogj.com.

OIL&GAS JOURNAL online research center. PennEnergy research

OGJ CRACK SPREAD

	6-24-16*	6-26-15*	Change	Change, %
	$/bbl			
SPOT PRICES				
Product value	58.49	79.25	(20.76)	(26.20)
Brent crude	47.17	60.84	(13.67)	(22.48)
Crack spread	13.42	18.41	(4.99)	(27.11)
FUTURES MARKET PRICES				
One month				
Product value	62.75	83.17	(20.42)	(24.55)
Light sweet crude	48.14	60.06	(11.92)	(19.84)
Crack spread	14.60	23.11	(8.51)	(36.81)
Six month				
Product value	61.02	76.61	(15.59)	(20.36)
Light sweet crude	50.97	61.76	(10.79)	(17.47)
Crack spread	10.05	14.85	(4.80)	(32.35)

*Average for week ending.
Source: Oil & Gas Journal
Data available at PennEnergy Research Center.

CRUDE AND PRODUCT STOCKS

District	Crude oil	Motor gasoline Total	Motor gasoline Blending comp.	Jet fuel, kerosine	Fuel oils Distillate	Fuel oils Residual	Propane-propylene
	1,000 bbl						
PADD 1	16,950	71,852	66,540	10,017	58,004	9,649	3,790
PADD 2	149,637	51,963	45,505	6,850	28,577	1,454	25,878
PADD 3	273,686	79,815	70,912	14,741	45,936	23,985	52,645
PADD 4	23,698	7,378	5,345	571	3,317	214	[1]2,475
PADD 5	60,380	27,868	25,786	8,062	13,105	4,741	—
July 1, 2016	**524,351**	**238,876**	**214,088**	**40,241**	**148,939**	**40,043**	**84,788**
June 24, 2016	**526,573**	**238,997**	**213,830**	**40,246**	**150,513**	**40,171**	**82,072**
July 3, 2015[2]	**465,764**	**217,952**	**191,840**	**42,621**	**137,461**	**40,554**	**85,724**

[1]Includes PADD 5. [2]Revised.
Source: US Energy Information Administration
Data available at PennEnergy Research Center.

REFINERY REPORT—JULY 1, 2016

District	Refinery operations Gross inputs	Refinery operations Crude oil inputs	Refinery output Total motor gasoline	Refinery output Jet fuel, kerosine	Refinery output Fuel oils Distillate	Refinery output Fuel oils Residual	Refinery output Propane-propylene
	1,000 b/d						
PADD 1	1,136	1,145	3,393	92	325	38	153
PADD 2	3,742	3,740	2,783	243	1,069	52	391
PADD 3	8,754	8,672	2,222	893	2,808	217	988
PADD 4	648	647	345	37	206	7	[1]176
PADD 5	2,647	2,483	1,706	471	543	86	—
July 1, 2016	**16,927**	**16,687**	**10,449**	**1,736**	**4,951**	**400**	**1,708**
June 24, 2016	**17,033**	**16,695**	**10,275**	**1,657**	**5,020**	**427**	**1,673**
July 3, 2015[2]	**16,929**	**16,596**	**9,996**	**1,692**	**5,092**	**426**	**1,618**
	18,307	**Operable capacity**	**92.5**	**utilization rate**			

[1]Includes PADD 5. [2]Revised.
Source: US Energy Information Administration
Data available at PennEnergy Research Center.

OGJ GASOLINE PRICES

	Price ex tax 7-6-16	Pump price* 7-6-16	Pump price 7-8-15
	¢/gal		
(Approx. prices for self-service unleaded gasoline)			
Atlanta	161.1	210.6	262.8
Baltimore	172.6	223.6	266.3
Boston	169.0	213.9	269.3
Buffalo	163.5	224.6	279.8
Miami	158.6	213.6	272.8
Newark	174.0	206.9	257.8
New York	186.5	247.6	296.3
Norfolk	201.5	242.2	246.3
Philadelphia	153.8	222.6	290.3
Pittsburgh	170.8	239.6	287.3
Wash., DC	193.3	235.2	277.3
PAD I avg	173.1	225.5	273.3
Chicago	242.6	291.2	310.8
Cleveland	192.6	239.0	279.8
Des Moines	191.8	242.2	281.8
Detroit	191.2	240.1	279.8
Indianapolis	192.9	241.2	270.8
Kansas City	193.4	229.1	260.8
Louisville	190.9	235.3	300.8
Memphis	197.5	237.3	262.8
Milwaukee	177.0	228.3	286.8
Minn.-St. Paul	184.2	231.2	279.8
Oklahoma City	180.4	215.8	263.8
Omaha	183.4	229.5	261.2
St. Louis	185.5	221.2	279.8
Tulsa	181.4	216.8	260.8
Wichita	183.7	226.1	262.8
PAD II avg	191.2	234.9	276.1
Albuquerque	164.2	201.5	260.4
Birmingham	175.6	214.9	251.4
Dallas-Fort Worth	171.7	210.1	257.1
Houston	177.5	215.9	252.4
Little Rock	170.9	211.1	257.4
New Orleans	168.6	207.1	256.4
San Antonio	171.7	210.1	253.1
PAD III avg	171.5	210.1	255.5
Cheyenne	183.5	225.9	264.9
Denver	195.5	235.9	270.6
Salt Lake City	190.0	237.9	295.4
PAD IV avg	189.7	233.2	276.9
Los Angeles	254.9	313.9	384.0
Phoenix	191.5	228.9	278.4
Portland	188.4	237.9	293.5
San Diego	228.8	287.9	371.0
San Francisco	234.9	293.9	384.0
Seattle	208.0	270.9	261.0
PAD V avg	217.7	272.2	328.6
Week's avg.	**186.9**	**233.5**	**279.5**
June avg.	**188.3**	**234.9**	**276.9**
May avg.	**176.1**	**222.8**	**267.0**
2016 to date	**158.7**	**205.4**	—
2015 to date	**199.4**	**245.7**	—

*Includes state and federal motor fuel taxes and state sales tax. Local governments may impose additional taxes.
Source: Oil & Gas Journal.
Data available at PennEnergy Research Center.

BAKER HUGHES RIG COUNT

	7-8-16	7-10-15
Alabama	1	—
Alaska	8	10
Arkansas	—	4
California	5	12
Land	5	12
Offshore	—	—
Colorado	19	38
Florida	—	1
Illinois	2	2
Indiana	—	—
Kansas	1	10
Kentucky	1	2
Louisiana	43	72
N. Land	16	25
S. Inland waters	4	5
S. Land	5	11
Offshore	18	31
Maryland	—	—
Michigan	—	—
Mississippi	1	4
Montana	—	1
Nebraska	1	2
New Mexico	21	49
New York	—	1
North Dakota	28	70
Ohio	12	19
Oklahoma	59	106
Pennsylvania	13	45
South Dakota	—	—
Texas	201	368
Offshore	—	—
Inland waters	—	—
Dist. 1	15	50
Dist. 2	14	40
Dist. 3	2	17
Dist. 4	10	20
Dist. 5	1	4
Dist. 6	8	21
Dist. 7B	6	4
Dist. 7C	22	36
Dist. 8	108	142
Dist. 8A	7	14
Dist. 9	3	4
Dist. 10	5	16
Utah	4	7
West Virginia	11	18
Wyoming	8	21
Others HI-1	1	1
Total US	**440**	**863**
Total Canada	**81**	**169**
Grand total	**521**	**1,032**
US oil rigs	351	645
US gas rigs	88	217
Total US offshore	19	31
Total US cum. avg. YTD	**488**	**1,134**

Rotary rigs from spudding in to total depth.
Definitions, see OGJ Sept. 18, 2006, p. 46.
Source: Baker Hughes Inc.
Data available at PennEnergy Research Center.

OGJ PRODUCTION REPORT

	[1]7-8-16	[2]7-10-15
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	18	27
Alaska	350	448
California	540	564
Colorado	303	332
Florida	6	7
Illinois	19	26
Kansas	94	124
Louisiana	1,292	1,368
Michigan	13	18
Mississippi	51	69
Montana	56	78
New Mexico	350	417
North Dakota	1,041	1,200
Ohio	67	71
Oklahoma	342	428
Pennsylvania	15	21
Texas	3,550	3,738
Utah	82	102
West Virginia	18	24
Wyoming	199	240
Other states	49	64
Total	**8,455**	**9,366**

[1]OGJ estimate. [2]Revised. Source: Oil & Gas Journal.
Data available at PennEnergy Research Center.

US CRUDE PRICES

	7-8-16 $/bbl*
Alaska-North Slope 27°	22.77
Light Louisiana Sweet	40.78
California-Midway Sunset 13°	35.15
California Buena Vista Hills 26°	42.91
Wyoming Sweet	41.66
East Texas Sweet	40.00
West Texas Sour 34°	37.00
West Texas Intermediate	42.00
Oklahoma Sweet	42.00
Texas Upper Gulf Coast	35.75
Michigan Sour	34.00
Kansas Common	41.00
North Dakota Sweet	36.00

*Current major refiner's posted prices except N. Slope lags 2 months. 40° gravity crude unless differing gravity is shown. Source: Oil & Gas Journal. Data available at PennEnergy Research Center.

WORLD CRUDE PRICES

			$/bbl
OPEC reference basket	**Wkly. avg.**	**7-8-16**	**44.31**
		— Mo. avg., $/bbl —	
		Apr.-16	May-16
OPEC reference basket		37.86	43.21
Arab light-Saudi Arabia		38.22	43.48
Basrah light-Iraq		36.62	42.05
Bonny light 37°-Nigeria		41.51	46.85
Es Sider-Libya		40.48	45.83
Girassol-Angola		41.25	46.58
Iran heavy-Iran		36.65	41.67
Kuwait export-Kuwait		36.33	41.60
Marine-Qatar		38.97	44.13
Merey-Venezuela		28.84	34.28
Minas 34°-Indonesia		38.52	48.64
Murban-UAE		42.47	47.12
Oriente-Ecuador		35.04	41.96
Saharan blend 44°-Algeria		42.33	47.73
Other crudes			
Fateh 32°-Dubai		39.00	44.29
Isthmus 33°-Mexico		38.14	44.76
Brent 38°-UK		41.48	46.83
Urals-Russia		39.89	45.08
Differentials			
WTI/Brent		(0.53)	0.01
Brent/Dubai		2.48	2.54

Source: OPEC Monthly Oil Market Report.
Data available at PennEnergy Research Center.

REFINED PRODUCT PRICES

	7-1-16 ¢/gal		7-1-16 ¢/gal
Spot market product prices			
Motor gasoline (Conventional-regular)		No. 2 Distillate Low sulfur diesel fuel	
New York Harbor	145.30	New York Harbor	149.60
Gulf Coast	146.30	Gulf Coast	176.60
		Los Angeles	156.60
Motor gasoline (RBOB-regular)		Kerosine jet fuel	
New York Harbor	160.80	Gulf Coast	142.40
No. 2 heating oil		Propane	
New York Harbor	143.60	Mont Belvieu	50.90

Source: EIA Weekly Petroleum Status Report.
Data available at PennEnergy Research Center.

IHS PETRODATA RIG COUNT

JULY 8, 2016

	Total supply of rigs	Marketed supply of rigs	Marketed contracted	Marketed utilization rate (%)
US Gulf of Mexico	110	54	39	72.2
South America	56	52	42	80.8
Northwest Europe	107	87	70	80.5
West Africa	66	54	30	55.6
Middle East	166	157	124	79.0
Southeast Asia	93	78	34	43.6
Worldwide	832	695	500	71.9

Source: IHS Petrodata
Data available in PennEnergy Research Center

US NATURAL GAS STORAGE[1]

	7-1-16	6-24-16	7-1-15	Change, %
	bcf			
East	654	632	575	13.7
Midwest	764	742	572	33.6
Mountain	202	198	157	28.7
Pacific	313	315	330	(5.2)
South Central	1,246	1,253	1,007	23.7
Salt	354	360	296	19.6
Nonsalt	893	893	711	25.6
Total US	**3,179**	**3,140**	**2,641**	**20.4**
	Apr.-16	Apr.-15	Change, %	
Total US[2]	**2,653**	**1,805**	**47.0**	

[1]Working gas. [2]At end of period.
Source: Energy Information Administration
Data available at PennEnergy Research Center.

BAKER HUGHES INTERNATIONAL RIG COUNT

Region	June 2016 Land	June 2016 Off.	June 2016 Total	June 2015 Total
WESTERN HEMISPHERE				
Argentina	62	1	63	105
Bolivia	6	—	6	4
Brazil	5	9	14	37
Canada	63	—	63	129
Chile	4	—	4	4
Colombia	7	—	7	26
Ecuador	5	—	5	15
Mexico	6	14	20	51
Peru	1	—	1	3
Trinidad	2	3	5	3
US	396	21	417	861
Venezuela	49	4	53	66
Other	—	—	—	—
Subtotal	**606**	**52**	**658**	**1,304**
ASIA-PACIFIC				
Australia	—	3	3	15
Brunei	—	1	1	—
China-offshore	—	29	29	24
India	78	30	108	113
Indonesia	13	3	16	23
Japan	—	1	1	—
Malaysia	—	5	5	8
Myanmar	—	1	1	1
New Zealand	—	—	—	1
Papua New Guinea	1	—	1	3
Philippines	2	—	2	5
Taiwan	—	—	—	—
Thailand	2	10	12	19
Vietnam	—	3	3	3
Other	—	—	—	—
Subtotal	**96**	**86**	**182**	**215**
AFRICA				
Algeria	53	—	53	51
Angola	—	9	9	10
Congo	—	2	2	3
Gabon	—	1	1	4
Kenya	11	—	11	11
Libya	—	1	1	3
Nigeria	2	3	5	10
South Africa	—	—	—	1
Tunisia	—	—	—	2
Other	2	3	5	8
Subtotal	**68**	**19**	**87**	**103**
MIDDLE EAST				
Abu Dhabi	32	16	48	39
Dubai	—	2	2	2
Egypt	18	8	26	41
Iran	—	—	—	—
Iraq	41	—	41	53
Jordan	—	—	—	—
Kuwait	44	—	44	50
Oman	66	—	66	71
Pakistan	30	—	30	17
Qatar	3	4	7	6
Saudi Arabia	106	18	124	121
Sudan	—	—	—	—
Syria	—	—	—	—
Yemen	—	—	—	—
Other	1	—	1	1
Subtotal	**341**	**48**	**389**	**401**
EUROPE				
Croatia	1	—	1	1
Denmark	—	1	1	3
France	—	—	—	—
Germany	3	—	3	2
Hungary	2	—	2	2
Italy	4	1	5	5
Netherlands	—	2	2	6
Norway	—	16	16	19
Poland	4	—	4	7
Romania	3	—	3	8
Turkey	29	—	29	30
UK	1	9	10	12
Other	5	10	15	18
Subtotal	**52**	**39**	**91**	**113**
Total	**1,163**	**244**	**1,407**	**2,136**

Definitions, see OGJ Sept. 18, 2006, p. 42.
Source: Baker Hughes Inc.
Data available at PennEnergy Research Center.

MUSE, STANCIL & CO. GASOLINE MARKETING MARGINS

May 2016	Chicago* ¢/gal	Houston ¢/gal	Los Angeles ¢/gal	New York ¢/gal
Retail price	252.65	205.21	279.82	240.29
Taxes	53.56	38.40	58.06	48.71
Wholesale price	177.50	159.59	190.29	166.42
Spot price	169.28	150.86	157.82	161.23
Retail margin	21.59	7.22	31.47	25.16
Wholesale margin	8.22	8.73	32.47	5.19
Gross marketing margin	**29.81**	**15.95**	**63.94**	**30.35**
April 2016	29.71	11.91	64.51	27.76
YTD avg.	33.30	15.60	75.21	37.24
2015 avg.	36.40	20.71	66.66	39.71
2014 avg.	33.12	25.36	45.25	39.64
2013 avg.	32.33	20.45	35.26	36.05

*Effective December, 2013 retail margins for Chicago no longer include conventional grades.
Source: Muse, Stancil & Co. See OGJ, Oct. 15, 2001, p. 46.
Data available at PennEnergy Research Center.
Note: Margins include ethanol blending in all markets.

PRODUCTION BY REGION

	Oil production June-16 b/d	Oil production July-16 b/d	Oil production change	Gas production June-16 Mcf/d	Gas production July-16 Mcf/d	Gas production change
Bakken	1,042	1,010	(32)	1,665	1,639	(26)
Eagle Ford	1,215	1,152	(63)	6,322	6,111	(211)
Haynesville	47	46	(1)	5,983	5,930	(53)
Marcellus	40	39	(1)	17,507	17,456	(51)
Niobrara	398	384	(14)	4,114	4,037	(77)
Permian	2,020	2,013	(7)	6,968	6,914	(54)
Utica	79	79	--	3,670	3,666	(4)
Total	**4,841**	**4,723**	**(118)**	**46,229**	**45,753**	**(476)**

Source: US Energy Information Administration
Data available in PennEnergy Research Center. **NOTE: No new data at press time.**

DRILLING PRODUCTIVITY REPORT

	New-well oil production per rig* June-16 b/d	New-well oil production per rig* July-16 b/d	New-well oil production per rig* change	New-well gas production per rig* June-16 Mcf/d	New-well gas production per rig* July-16 Mcf/d	New-well gas production per rig* change
Bakken	832	850	18	1,114	1,148	34
Eagle Ford	1,067	1,097	30	3,183	3,225	42
Haynesville	30	31	1	5,458	5,525	67
Marcellus	68	69	1	11,125	11,185	60
Niobrara	925	947	22	2,854	2,928	74
Permian	493	508	15	868	888	20
Utica	345	356	11	7,288	7,408	120
Rig-weighted avg.	**564**	**557**	**(7)**	**2,899**	**2,899**	**—**

*Drilling data through April, projected production through June.
Source: US Energy Information Administration. Data available in PennEnergy Research Center. **NOTE: No new data at press time.**

PROPANE PRICES

	Apr. 2016 ¢/gal	May 2016 ¢/gal	Apr. 2015 ¢/gal	May 2015 ¢/gal
Mont Belvieu	45.70	51.60	54.80	47.00

Source: EIA Weekly Petroleum Status Report
Data available at PennEnergy Research Center.

MUSE, STANCIL & CO. REFINING MARGINS

	US Gulf Coast $/bbl	US East Coast $/bbl	US Mid-west $/bbl	US West Coast $/bbl	North-west Europe $/bbl	South-east Asia $/bbl
June 2016						
Product revenues	61.11	59.57	65.28	67.54	56.75	53.05
Feedstock costs	(48.57)	(50.92)	(48.09)	(45.29)	(49.81)	(48.90)
Gross margin	12.54	8.65	17.19	22.25	6.94	4.15
Fixed costs	(2.46)	(3.41)	(2.76)	(3.22)	(2.76)	(2.15)
Variable costs	(1.03)	(0.94)	(0.87)	(1.29)	(1.27)	(1.51)
Cash operating margin	**9.05**	**4.30**	**13.56**	**17.74**	**2.91**	**0.49**
May 2016	9.27	5.28	12.77	13.31	2.21	0.24
YTD avg.	9.87	3.36	10.45	13.88	2.98	1.42
2015 avg.	11.27	5.52	17.58	22.42	5.99	4.35
2014 avg.	8.50	3.99	19.43	15.04	3.05	2.17
2013 avg.	7.42	2.22	24.96	15.85	3.15	1.97

Source: Muse, Stancil & Co. See OGJ, Jan. 15, 2001, p. 46
Data available at PennEnergy Research Center.

MUSE, STANCIL & CO. ETHYLENE MARGINS

	Ethane ¢/lb ethylene	Propane ¢/lb ethylene	Naphtha ¢/lb ethylene
June 2016			
Product revenues	28.44	49.75	63.01
Feedstock costs	(9.06)	(28.36)	(62.15)
Gross margin	19.38	21.39	0.86
Fixed costs	(6.80)	(8.03)	(9.08)
Variable costs	(2.55)	(2.88)	(3.63)
Cash operating margin	**10.03**	**10.48**	**(11.85)**
May 2016	11.45	7.79	(10.27)
YTD avg.	9.98	10.02	(7.32)
2015 avg.	14.40	20.53	(7.40)
2014 avg.	41.38	31.42	(8.91)
2013 avg.	42.23	33.28	(17.24)

Source: Muse, Stancil & Co. See OGJ, Sept. 16, 2002, p. 46.
Data available at PennEnergy Research Center.

MUSE, STANCIL & CO. US GAS PROCESSING MARGINS

June 2016	Gulf Coast $/Mcf	Mid-continent $/Mcf
Gross revenue		
Gas	2.40	2.36
Liquids	0.54	1.48
Gas purchase cost	2.67	3.16
Operating costs	0.07	0.15
Cash operating margin	**0.20**	**0.52**
May 2016	0.27	0.78
YTD avg.	0.18	0.51
2015 avg.	0.17	0.44
2014 avg.	0.46	1.28
2013 avg.	0.58	1.61
Breakeven producer payment, % of liquids	57%	61%

Source: Muse, Stancil & Co. See OGJ, May 21, 2001, p. 54.
Data available at PennEnergy Research Center.

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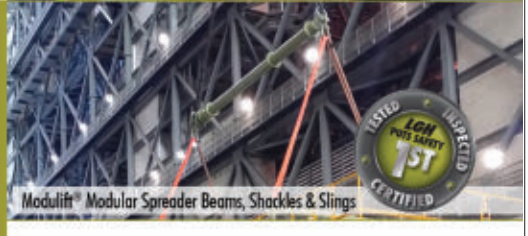

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