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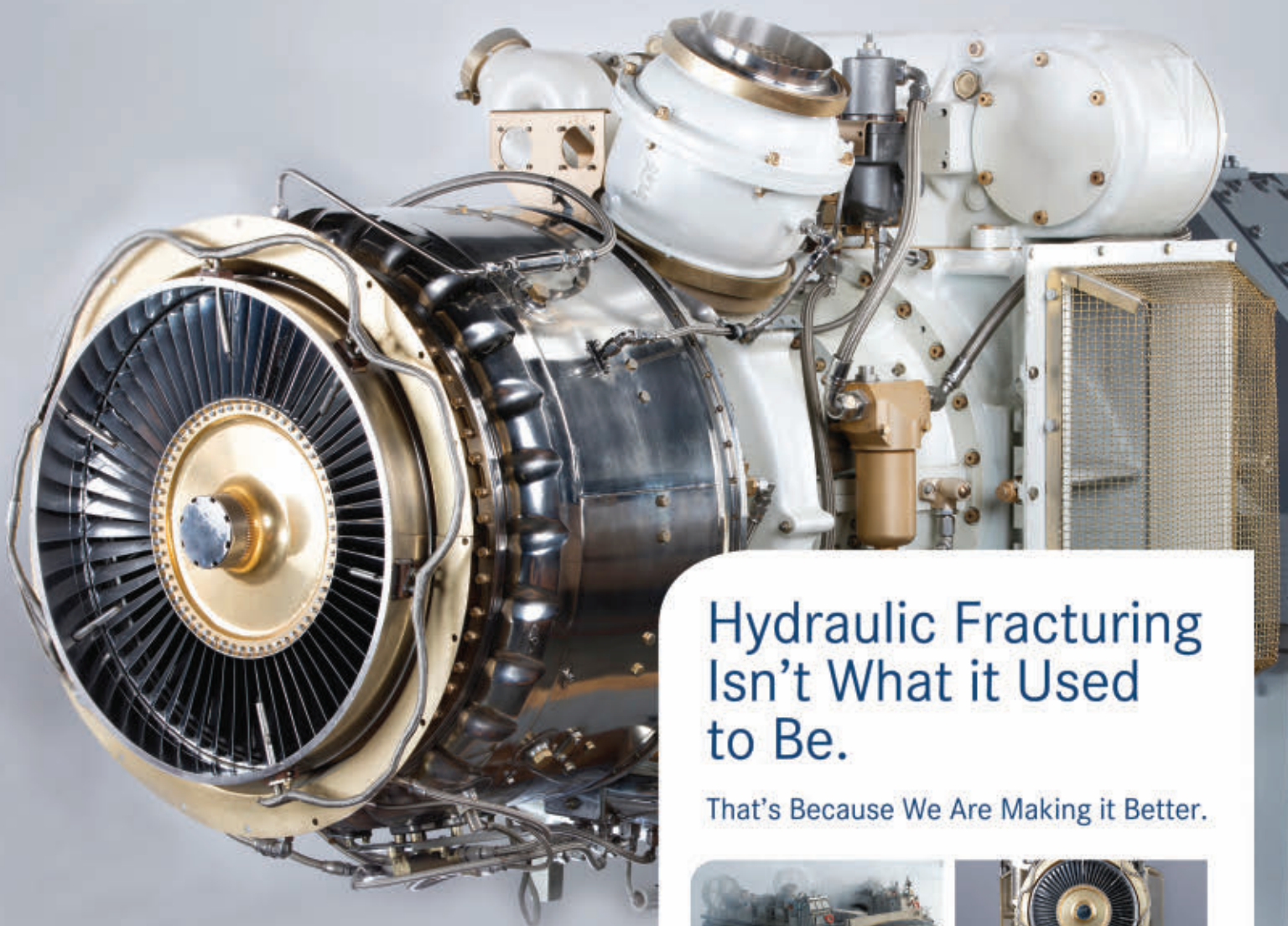
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6 NEWSLETTER

12 LETTERS / CALENDAR

14 JOURNALLY SPEAKING

16 EDITORIAL

26 ADVERTISERS' INDEX

27 STATISTICS

30 MARKET CONNECTION

GENERAL INTEREST



18 Groups troubled over halted work on part of Dakota Access pipeline

Nick Snow

The Obama administration's withdrawal of a permit for construction of the Dakota Access crude oil pipeline when work was already under way is both unprecedented and deeply troubling, the presidents of the American Petroleum Institute and North America's Building Trades Unions said.

18 EIA counts 5,000 DUC wells in major US producing regions

Matt Zborowski

19 Southeast Asia energy security is long-term concern, House panel told

Nick Snow

20 WATCHING GOVERNMENT Why marginal wells matter

20 US officials report progress in developing gas off Israel, Cyprus

Nick Snow

21 IEA: Oil outlook darkened by demand growth slump, production rise

22 EOG, Yates to merge in \$2.5-billion deal

Matt Zborowski

22 Anadarko to buy FMOG's deepwater gulf assets for \$2 billion

Matt Zborowski

23 EIA: North American refiners less profitable than global average

24 LyondellBasell's La Porte complex due HDPE plant

Robert Brelsford

24 Unipetrol wraps cracker repairs at Litvinov petchem complex

Robert Brelsford

25 Staatsolie wraps Suriname refinery expansion

Robert Brelsford

25 EDITOR'S PERSPECTIVE

Producer hostilities cloud prospects for oil-supply accord



COVER

Polish natural gas transmission system operator Gaz System SA hired T.D. Williamson to relocate an 1,115-ft section of 16-in. OD high-pressure pipeline located on a construction site near Warsaw. TDW applied stopple-train technology through a single pipeline opening. TDW also built and tied in a temporary 6-in. pipeline to continue to supply gas to nearby residential customers while the relocation project was under way. Photo from T.D. Williamson.

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GENERAL INTEREST QUICK TAKES**Argentina, UK to seek Falklands oil accord**

The governments of Argentina and the UK have agreed to work toward removal of restrictions on oil and gas work offshore the Falkland Islands. As part of its longstanding claim to sovereignty over the islands, the South American country in 2010 imposed restrictions on movements of ships between it, the Falklands—which it calls the Malvinas—and other islands in the South Atlantic (OGJ Online, Feb. 17, 2010).

The Argentine government, under former President Cristina Fernandez de Kirchner, objected to offshore exploration then reviving under auspices of the government of what the UK considers one of its self-governing offshore territories.

Among results of drilling during that period was the discovery by Rockhopper Exploration PLC of Sea Lion oil field, which is under development (OGJ Online, Sept. 14, 2011). Argentina and the UK fought a 74-day war over the Falklands in 1982 and didn't reestablish diplomatic relations until 1990.

Mauricio Macri, who replaced Fernandez de Kirchner as president last December, has moved to improve relations with the UK. He met with British Foreign Office Minister Alan Duncan during a series of high-level meetings in Buenos Aires this month that yielded an agreement on travel and other issues related to the Falklands and that included the statement about working toward lifting restrictions on oil and gas activity.

In a visit to London before those meetings, Argentine Foreign Minister Susana Malcorra said her government would be willing to pursue joint exploration in the Falklands.

Total exercises preemption rights in Barnett JV

Total E&P USA said it is exercising its preemption right to acquire Chesapeake Energy Corp.'s 75% interest in the jointly held Barnett shale operating properties near Fort Worth. Total already owns the remaining 25% and will become the operator.

Properties include 215,000 net developed and undeveloped acres and 65,000 boe/d in production. Chesapeake of Oklahoma City previously announced its plans to exit the Barnett (OGJ Online, Aug. 22, 2016).

Drilling for new gas wells has diminished in the Barnett shale in recent years. Baker Hughes Inc. reported 4 rigs drilling in the Barnett during August.

Total said the preemption and associated transactions are subject to numerous conditions, including third-party consents. Closing is expected in the fourth quarter.

Chesapeake will pay \$334 million to Williams, the gatherer and processor of 80% of the gas from the Barnett shale properties. Chesapeake is terminating its gathering agreement.

Total will supplement Chesapeake's payment with \$420 million to Williams for a fully restructured, competitive gas-gathering agreement.

In addition, Total will pay \$138 million to be released from three midstream capacity reservation contracts.

Total also holds a 25% interest in the Chesapeake-operated Utica shale joint venture in Ohio. In the Gulf of Mexico, Total holds a 17% interest in Tahiti field and a 33.3% interest in Chinook field. Additionally, Total and Cobalt International Energy plan to explore for oil in the deepwater Gulf of Mexico.

Charger Shale Oil JV targets Permian basin

Charger Shale Oil Co. LLC, Midland, Tex., and funds managed by Oaktree Capital Management LP, Los Angeles, have formed a joint venture targeting 100 horizontal well locations across multiple horizons in the Permian basin.

Before Oaktree's pledge of \$600 million in an initial equity commitment a "runway commitment" of a further \$300 million, Charger had secured more than 40,000 acres in the Delaware basin with capital from managers and other investors. The company has closed on the initial acreage and plans to expand development to more than 85,000 acres.

Charger's leaders are former key executives of Tall City Exploration (TCE), which acquired and developed more than 34,500 acres and held a further 48,000 prospective acres. TCE sold those properties for \$1.2 billion in two transactions in 2014 and 2015.

Joseph Magoto, former president of TCE, is chief executive officer and president of Charger. He said Charger's goal is to assemble more than 100,000 acres and prove 1,500 locations.

Oklahoma, EPA shutting down 32 disposal wells

Oklahoma state and US Environmental Protection Agency regulators said 32 disposal wells in northeastern Oklahoma must shut down following the discovery of a fault line believed to have caused a 5.3-magnitude earthquake on Sept. 3.

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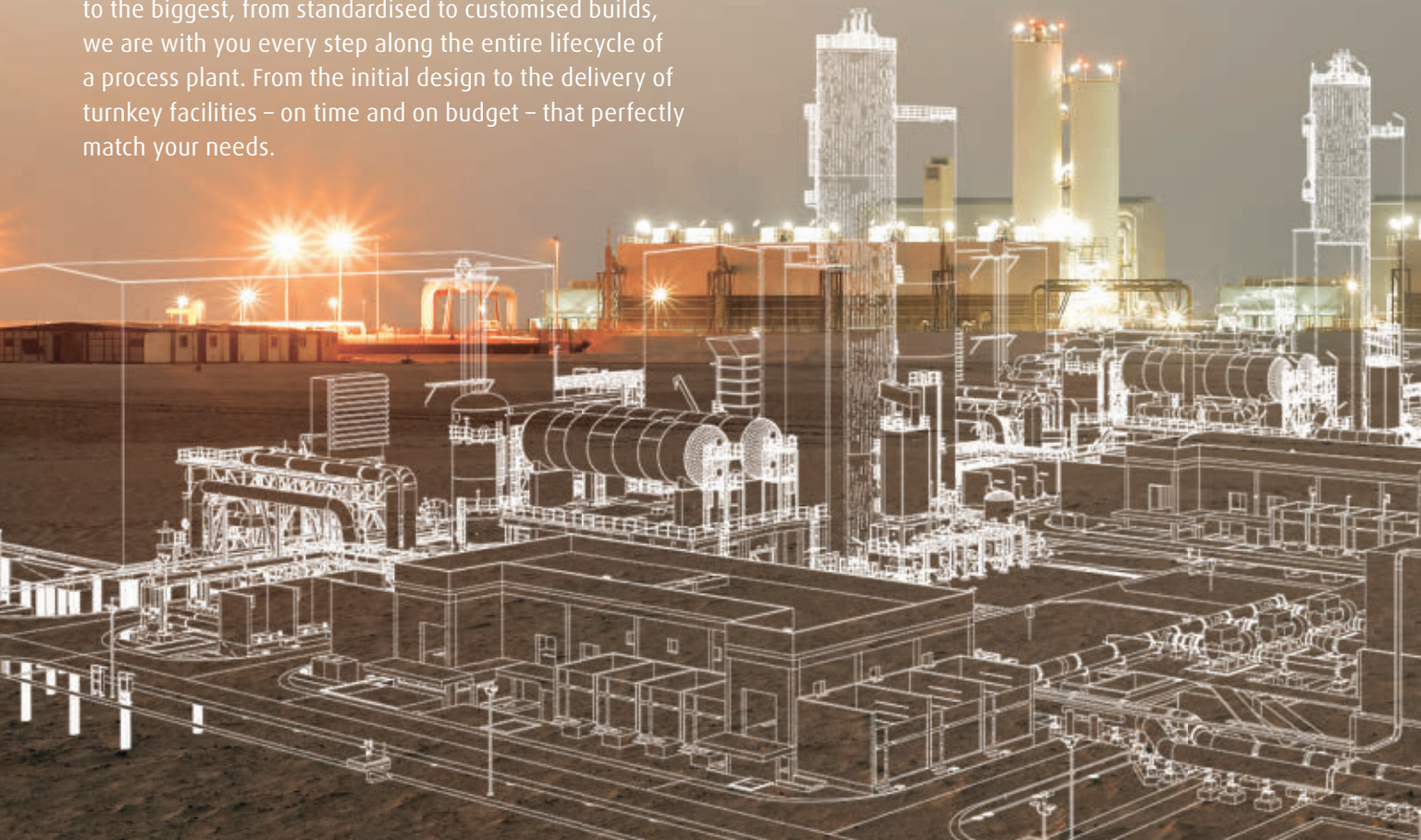
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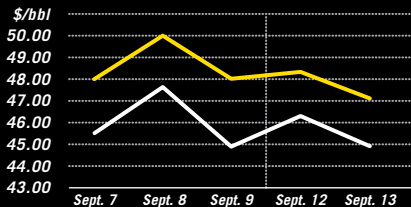
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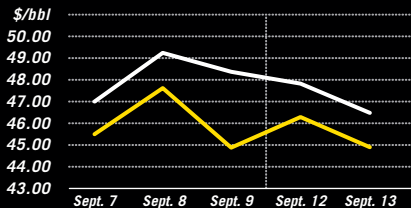
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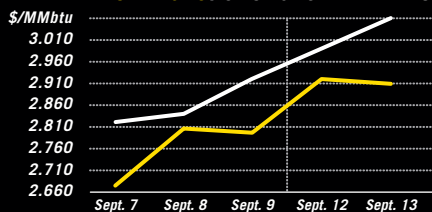
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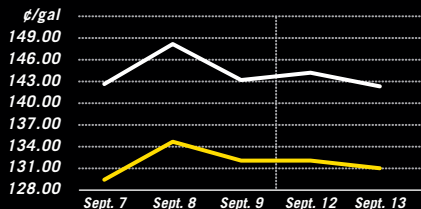
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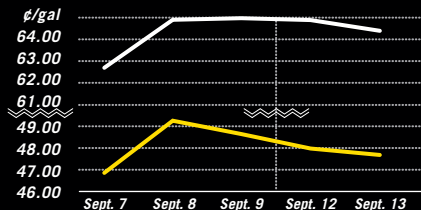
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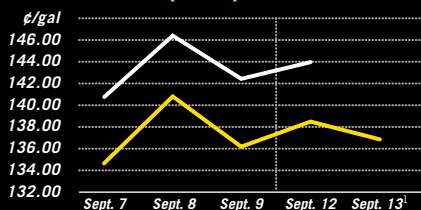
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¹Not available ²Reformulated gasoline blendstock for oxygen blending
³Nonoxygenated regular unleaded

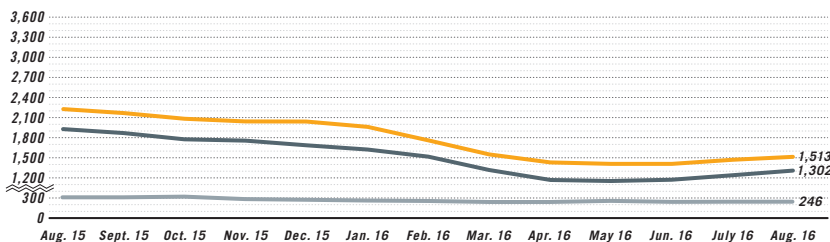
US INDUSTRY SCOREBOARD — 9/19

Latest week 9/2	4 wk. average	4 wk. avg. year ago ¹	Change, %	YTD average ¹	YTD avg. year ago ¹	Change, %
<i>Product supplied, 1,000 b/d</i>						
Motor gasoline	9,632	9,337	3.2	9,462	9,146	3.5
Distillate	3,701	3,706	(0.1)	3,748	3,927	(4.6)
Jet fuel	1,755	1,655	6.0	1,630	1,568	4.0
Residual	319	237	34.6	304	210	44.8
Other products	5,300	5,282	0.3	4,978	4,886	1.9
TOTAL PRODUCT SUPPLIED	20,707	20,217	2.4	20,122	19,737	2.0
<i>Supply, 1,000 b/d</i>						
Crude production	8,523	9,260	(8.0)	8,831	9,387	(5.9)
NGL production ²	3,599	3,252	10.7	3,447	3,146	9.6
Crude imports	8,205	7,638	7.4	7,942	7,320	8.5
Product imports	2,213	2,173	1.8	2,176	2,109	3.2
Other supply ^{2,3}	2,444	2,384	2.5	2,206	2,334	(5.5)
TOTAL SUPPLY	24,984	24,707	1.1	24,602	24,296	1.3
Net product imports	(1,699)	(1,569)	—	(1,720)	(1,556)	—
<i>Refining, 1,000 b/d</i>						
Crude runs to stills	16,772	16,627	0.9	16,273	16,197	0.5
Input to crude stills	17,088	16,922	1.0	16,504	16,437	0.4
% utilization	93.1	93.7	—	90.4	91.4	—

Latest week 9/2	Latest week	Previous week ¹	Change	Same week year ago ¹	Change	Change, %
<i>Stocks, 1,000 bbl</i>						
Crude oil	511,357	525,870	(14,513)	457,998	53,359	11.7
Motor gasoline	227,793	232,004	(4,211)	214,547	13,246	6.2
Distillate	158,135	154,753	3,382	150,903	7,232	4.8
Jet fuel-kerosine	41,841	41,034	807	42,715	(874)	(2.0)
Residual	39,586	40,026	(440)	38,612	974	2.5
<i>Stock cover (days)⁴</i>						
			Change, %		Change, %	
Crude	30.5	31.5	(3.2)	27.8	9.7	
Motor gasoline	23.7	24.0	(1.3)	23.0	3.0	
Distillate	42.7	41.1	3.9	40.7	4.9	
Propane	105.3	116.2	(9.4)	91.7	14.8	
<i>Futures prices⁵ 9/9</i>						
			Change		Change	Change, %
Light sweet crude (\$/bbl)	45.96	45.13	0.83	46.73	(0.77)	(1.6)
Natural gas, \$/MMBtu	2.75	2.83	(0.08)	2.68	0.06	2.4

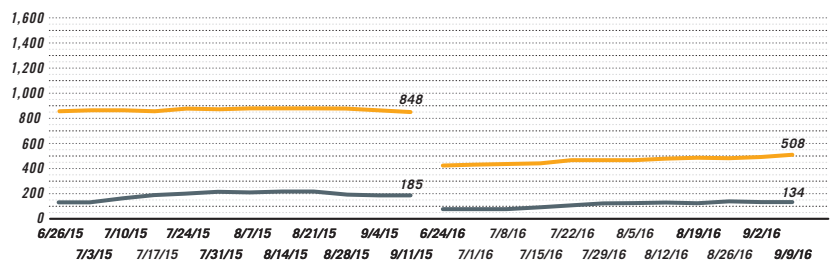
¹Based on revised figures. ²OGJ estimates. ³Includes other liquids, refinery processing gain, and unaccounted for crude oil. ⁴Stocks divided by average daily product supplied for the prior 4 weeks. ⁵Weekly average of daily closing futures prices.
Source: Energy Information Administration, Wall Street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

The newly discovered fault is near the town of Pawnee, farther east than most previous Oklahoma earthquake activity. The fault has yet to be named.

Jim Marlatt with the oil and gas division of the Oklahoma Corporation Commission said the latest action means wastewater being injected in the area will be reduced to 35,000 b/d from 75,000 b/d. **OGJ**

EXPLORATION & DEVELOPMENT QUICK TAKES

Oil Search, ExxonMobil farm into CNOOC permits

Oil Search Ltd., of Sydney and Port Moresby, has refocused its attention offshore in the Gulf of Papua in a bid to explore areas with potential to support the company's expanding LNG portfolio. Its Papua New Guinea LNG (PNG LNG) joint-venture partner, ExxonMobil Corp., also has joined the project.

Oil Search has entered agreements with CNOOC Ltd. subsidiary Gini Energy Ltd. to acquire 40% interest in each of two deep-water exploration permits 150 km south of Papua New Guinea's capital of Port Moresby. Gini previously had 100% interest in each.

The two contiguous permits, PPL 374 and PPL 375, have a combined area of just fewer than 25,000 sq km. Water depths range 1,000-2,500 m.

ExxonMobil also will acquire 40% interest in the two permits, leaving Gini in possession of 20% share.

Oil Search Managing Director Peter Botten noted that the company undertook a comprehensive study of exploration opportunities in Papua New Guinea during 2015-16. This work identified the Papuan Gulf as an area of high gas potential. Several leads and prospects with the possibility of holding multitrillions of cubic feet of gas have already been identified in the two permits.

Botten acknowledged ExxonMobil's expertise in deepwater exploration and production as a major plus for the coming exploration venture. It is also the first time that Oil Search has worked with CNOOC.

It is not the first time that Oil Search has ventured into the gulf, although the earlier forays were in relatively shallow water. The last program took place several years ago in partnership with Total SA and resulted in the uncommercial Flinders and Hagana gas discoveries about 150 km east of Daru and the Fly River Delta.

The relatively close proximity of the new farm-in permits to the existing PNG LNG Project and proposed Papua LNG Project production plants at Caution Bay 20 km northwest of Port Moresby will be a bonus for development if the exploration program is a successful.

Arctic coalition: Keep Alaska sales in next OCS program

A coalition of 20 Alaskan and national organizations formally launched a campaign urging the US Department of the Interior to keep two oil and gas lease sales offshore Alaska in the next 5-year US Outer Continental Shelf resource management plan.

The effort—which is being led by the Independent Petroleum Association of America and the Alaska Oil & Gas As-

sociation—included a full-page advertisement in several major newspapers in which former US Sec. of Defense William S. Cohen and 19 other former US military officers said omitting the sales would harm the nation's ability to protect its interests and promote cooperation in the Far North.

The Wilderness Society and other Alaska OCS leasing opponents have argued that the oil industry's reduction of operations in the state in response to depressed crude-oil prices shows reduced interest is untrue, said Jeff Eshelman, IPAA senior vice-president for operations and public affairs.

"The oil and gas industry's impact on the economy of the Alaska is well known. What is less well understood is the crucial role it plays in supporting homeland security in the Arctic, so this is a theme that [the campaign] will really emphasize," Eshelman said.

"The breadth of Alaskan organizations which have come together, 16 in total, demonstrates the importance of this issue to our state," AOGA Pres. Kara Moriarty said. "Despite repeated claims to the contrary by environmental groups, Alaskans overwhelmingly support oil and gas development.

"Without the lease-sale option, there is simply no prospect of future investment in the infrastructure which we need," Moriarty said. "I can't stress this enough: Taking lease sales off the table now sends a clear message that the federal government is hanging a 'closed for business' sign on our state, at a time when we are already facing huge budgetary challenges."

Other members of the coalition, the Arctic Energy Center, include the National Ocean Industries Association, the International Association of Geophysical Contractors, the Arctic Slope Regional Corp., and other Alaskan business, labor, and consumer organizations.

A draft of the proposed 2017-22 OCS plan, which DOI released in March, included a 2020 lease sale in the Beaufort Sea and one in the Chukchi Sea in 2022. Oil and gas trade associations and other groups called on the US Bureau of Ocean Energy Management to not remove or modify the lease sales as the comment period for the next 5-year plan closed.

JV gets license for Caspian structure

Central Oil & Gas Co., a joint venture of Lukoil, Gazprom, and KazMunayGas, has received a subsoil use license for the Tsentralnaya structure in the Caspian Sea offshore Russia.

The JV tested light, sweet oil at what it said were commercial rates in the Tsentralnaya-1 exploration well on the structure in 2008 (OGJ Online, June 24, 2008).

The well went to 4,227 m TD in 456 m of water. It's 150 km east of Makhachkala, Dagestan, and a similar distance west of Aktau, Kazakhstan.

The new license has a 27-year term, including a 7-year exploration phase.

Russia's government granted the license under an agreement with the Kazakh government on delineation of the northern Caspian.

Eni, Novatek ink contract for blocks off Montenegro

Italian multinational firm Eni SPA and Russian gas producer OAO Novatek have signed a concession contract with the Montenegrin government for the exploration of four offshore blocks.

Eni will become operator with 50% interest in exploration licenses 4118-4, 4118-5, 4118-9 and 4118-10, and Novatek will hold the other 50%. The blocks collectively cover 1,228 sq km.

The firms jointly submitted their bid for the blocks in 2014 as part of Montenegro's First International Competitive Bid Round. **OGJ**

DRILLING & PRODUCTION QUICK TAKES

CAODC slashes Canadian drilling outlook

The Canadian Association of Oilwell Drilling Contractors has slashed its forecast for 2016 oil and gas drilling from the already pessimistic projection it published last November.

"The oil and gas services industry is facing the most difficult economic time in a generation," CAODC Pres. Mark Scholz said in a statement. "In fact, 2016 will be the worst year in our recorded drilling activity history."

CAODC records begin in 1977.

The association now projects 3,562 wells drilled this year vs. 4,728 in the earlier forecast, 40,252 operating days vs. 56,260 earlier, and a fourth-quarter rig count of 140 vs. 204 earlier.

It cut its estimate of land rigs for which contracts are expected to 671 from 758.

CAODC expects drilling employment this year to be down 69% (34,560 jobs) from the 2014 level. It earlier expected the decline to be 57% (28,485 jobs).

Scholz said regulations and fiscal policies are aggravating problems of a market depressed by low oil prices.

"The introduction of new carbon taxes and higher corporate taxes in Alberta, compounded with federal delays on new pipelines and LNG approvals, are creating significant investment uncertainty in Canada," he said.

Egypt's Nooros field gas output reaches 700 MMcfd

Production has reached 700 MMcfd of natural gas, or 128,000 boe/d, from Nooros field of the Abu Madi West concession in the Nile Delta, reported partners Eni SPA and BP PLC.

The output benchmark comes just 13 months after the discovery and follows drilling of the Nidoco North 1X exploration well and the Nidoco North West 4 development well.

Later this month, the Nidoco W-2 exploration well is expected to spud to test a western segment of the field. Another exploration well, the BSW-1 (Barakish), was spudded in April to test an analogous but separate reservoir north of Nooros (OGJ Online, June 9, 2016).

Development wells, including the Nidoco North West 5 well spudded on May 7, are expected to increase production over the course of 2016. By spring of 2017, production capacity is expected to reach 160,000 boe/d.

Gas and condensate produced from Nooros are sent to Abu

Madi's treatment system, 25 km from the discovery.

Eni through its subsidiary IEOC holds 75% interest in Abu Madi West, and BP holds the remaining 25%. Nooros is operated by Belayim Petroleum Co. (Petrobel), a joint venture of IEOC and state partner Egyptian General Petroleum Corp.

Eni says production costs from Nooros are among the lowest in its portfolio because of "the mature operating environment and the conventional nature of the project."

More Weizhou oil wells start flow in S. China Sea

CNOOC Ltd. has brought the Weizhou 6-9/6-10 comprehensive adjustment project on stream. The oil field is in the Beibu Gulf in the South China Sea in 35 m of water.

The latest adjustment project includes one wellhead platform. One well produces 850 b/d. The adjustment project is expected to reach production of 3,800 b/d in 2018.

CNOOC operates Weizhou with 100% interest. The development of a series of fields is being brought on stream in stages.

CNOOC started production from Weizhou 6-12 oil field in 2013. Two development wells were drilled from a wellhead platform in about 29 m of water (OGJ Online, Mar. 27, 2013).

Ophir starts gas flow in central Kalimantan

Ophir Energy PLC, London, has started production from Kerendan natural gas field in central Kalimantan, Indonesia.

The region's first commercial hydrocarbon production began at 3-5 MMscfd, flowing to a 155-Mw power plant 3 km away being commissioned by Indonesian National Power Co. After commissioning of the plant, Kerendan output will be 5 MMscfd, restricted by nearby power needs.

Gas output will increase to 20 MMscfd after completion of a transmission line to Tanjung later this year.

Ophir said 122 bcf of Kerendan gas is covered by an existing sales agreement. It estimates the field has a contingent resource of 458 bcf gross not covered by contract.

The company holds 70% operated interest in the Bangkanai production-sharing contract (PSC) encompassing the field. PT Saka Bangkanai Kalimantan holds 30% equity interest.

Ophir also holds interests in nearby the nearby Northeast and West Bangkanai PSC areas, which it says have structures analogous to Kerendan. **OGJ**

PROCESSING QUICK TAKES

SOCAR wraps planned maintenance at Baku refinery

State Oil Co. of Azerbaijan Republic (SOCAR) has resumed operations following more than a month of scheduled maintenance at its Heydar Aliyev, formerly New Baku, refinery at Baku in Azerbaijan.

Part of SOCAR's ongoing modernization and expansion program for Heydar Aliyev, the planned turnaround, which began in early August, included a series of routine maintenance and repair works as well as equipment installations and upgrades at the refinery's No. 21 primary processing unit, No. 31 catalytic

reformer, No. 43 coker, and No. 55 catalytic cracker, SOCAR said.

All units taken offline during the maintenance period have been restarted, with the refinery resuming normal output as of Sept. 14, SOCAR said.

Due to be completed in stages through 2019-20, the Heydar Aliyev modernization and upgrading program will expand the refinery's crude processing capacity to about 7.5 million tonnes/year from its current 6 million-tpy capacity, resulting in 100% production of fuels that meet Euro-5 quality standards as well as high-quality raw feedstock to be transported via pipeline to an associated ethylene and polyethylene plant operated by SOCAR subsidiary Azerikimya Production Union (OGJ Online, Mar. 16, 2016).

The refinery revamp follows the Jan. 1, 2015, shutdown and subsequent merger of processing activities at SOCAR's Az-erneftiyag refinery with those of the nearby Heydar Aliyev refinery as part of the company's plan to eliminate economically inefficient production activities and management structures associated with the operation of two separate refineries (OGJ Online, Dec. 29, 2014).

SOCAR also has advanced its previously announced plan to add a 400,000-tpy grassroots bitumen plant as part of the Heydar Aliyev refinery overhaul (OGJ Online, Sept. 18, 2015).

In early August, Austria-based Porner Ingenieur GMBH began preliminary activities for construction of the bitumen plant, which will be the first unit under the refinery modernization program to be commissioned, SOCAR said.

The new bitumen plant is scheduled for startup in mid-2018, the company said.

Irving closes Whitegate refinery purchase

Irving Oil Ltd., Saint John, NB, has closed its purchase of the 71,000-b/d Whitegate refinery near Cork, Ireland, from Phillips 66 (OGJ Online, Aug. 3, 2016).

Irving said it plans to continue full operation of the refinery and maintain the existing workforce.

Whitegate is Ireland's only refinery.

Ineos lets contract for Chocolate Bayou LAO unit

Ineos Oligomers, a division of Ineos AG, Rolle, Switzerland, has let a contract to Jacobs Engineering Group Inc., Pasadena, Calif., to design and build a linear alpha olefin (LAO) unit at Ineos Olefins & Polymers USA's Chocolate Bayou petrochemical complex in Alvin, Tex.

Jacobs will provide engineering, procurement, and construction services for the 420,000-tonne/year unit based on Ineos Oligomers' proprietary and differentiated LAO technology, the service provider said.

Scheduled for startup in November 2018, the LAO unit comes as part of Ineos' plan to help meet rising demand for LAO in the US Gulf Coast (USGC) and abroad, Jacobs said.

A value of the contract was not disclosed.

The contract award follows Ineos' announcement in May

that it had taken final investment decision on the Chocolate Bayou LAO unit, which alongside the company's existing LAO units in Joffre, Alta., and Feluy, Belgium, will contribute to an aggressive expansion of its international LAO business (OGJ Online, May 17, 2016).

The LAO unit at Ineos' Chocolate Bayou site—which already houses two ethylene crackers and provides ready access to the USGC ethylene pipeline network—also will supply growing USGC polyethylene capacity, as well as provide feedstock to enable the company's long-term polyalphaolefin capacity growth to support demand for high-performance synthetic lubricants.

Ineos has yet to reveal how much it will spend to complete the Chocolate Bayou project.

TRANSPORTATION QUICK TAKES

Gazprom, Nogaholding to cooperate in LNG

Gazprom and Nogaholding of Bahrain have signed a memorandum of understanding to cooperate in liquefied natural gas.

Nogaholding is the investment and business development arm of Bahrain's National Oil and Gas Authority (NOGA).

In December, Nogaholding and NOGA signed project agreements for an LNG regasification terminal in the Hidd industrial area of Bahrain with a consortium of Teekay LNG Partners, Samsung C&T, and Gulf Investment Cooperation.

The terminal is to be owned and operated by Bahrain LNG WLL, a joint venture of Nogaholding 30% and the Teekay-Samsung-GIC group 70%. Initial capacity is to be 400 MMscfd. A doubling of capacity is possible.

The project will include a floating storage unit, offshore LNG receiving jetty and breakwater, an adjacent regas platform, pipelines from the platform to shore, an onshore receiving facility, and an onshore nitrogen production facility.

GS Engineering & Construction has the engineering, procurement, and construction contract.

Rio Grande LNG gets FTA export authorization

NextDecade LLC has received US Department of Energy authorization to export LNG from its proposed Rio Grande LNG liquefaction plant in Brownsville, Tex., to Free-Trade Agreement countries. DOE authorized export of 27 million tonnes/year (tpy) of LNG—equivalent to about 3.6 bcfd of natural gas—for a 30-year term subject to ongoing regulatory approvals.

NextDecade announced in November 2015 it had signed nonbinding agreements for the sale of 14 million tpy of LNG to customers in Asia and Europe. The company says it now has agreements in place for 30 million tpy.

NextDecade expects to receive US Federal Energy Regulatory Commission approval for Rio Grande LNG in 2017 with initial LNG exports shipping by yearend 2020.

CB&I is performing front-end engineering design and engineering, procurement, and construction of the project, which includes as many as six 4.5 million-tpy liquefaction trains (OGJ Online, May 14, 2015). **OGJ**

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

SEPTEMBER 2016

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

Oil & Gas Anti-Corruption Compliance Exchange, Houston, web site: oilgasanticorruption.com/ **20-21**.

Center for Offshore Safety Forum, Houston, web site: www.centerforoffshoresafety.org/Events/2016%20COS%20Forum **20-21**.

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

2016 Deloitte Oil & Gas Conference, Houston, web site: www2.deloitte.com/us/en/pages/energy-and-resources/events/oil-and-gas-conference.html **21**.

IADC Drilling HSE&T Europe Conference & Exhibition, Amsterdam, web site: www.iadc.org/event/euro-hset-2016/ **21-22**.

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**.

Operational Excellence in Refining & Petrochemicals, Houston, web site: www.opexin-refiningandpetrochem.com **26-28**.

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**.

US-China Oil & Gas Industry Forum (OGIF), Tysons Corner, Va., web site: www.cvent.com/d/hfqw6c **27-29**.

Flexible & Cost Effective Well Site Facilities Onshore 2016, Houston, web site: www.facilities-design-onshore.com **28-29**.

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**.

SPE African Health, Safety, Security, Environment & Social Responsibility Conference & Exhibition, Accra, Ghana, web site: www.spe.org/events/en/2016/conference/16hsea/homepage.html **4-6**.

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 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**.

Natural Gas for High Horsepower Summit, Chicago, web site: www.hhpsummit.com/ **11-13**.

OilComm Conference & Exposition, Houston, web site: www.oil-comm.com/ **11-13**.

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**.

Permian Basin International Oil Show, Odessa, Tex., web site: www.pboilshow.org **18-20**.

The 37th Oil & Money Conference, London, web site: www.oiland-money.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**.

IADC Well Control Europe Conference & Exhibition, Copenhagen, web site: www.iadc.org/event/2016-well-control-europe/ **19-20**.

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

USAAE/IAEE North American Conference, Tulsa, web site: www.usaae.org/usaae2016/ **23-26**.

Arctic Technology Conference (ATC), St. John's, Newfoundland & Labrador, web site: www.arctictechnology-conference.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 Oil-field Engineering with Polymers Conference, London, web site: oilfieldpolymers.nace.org/ **25-27**.

Produced Water Quality Recycling & Reuse, Denver, web site: www.produced-water-quality-recycling-reuse-rockies.com/ **26-27**.

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

SPE Annual Caspian

- Technical Conference & Exhibition, Astana, Kazakhstan, web site: www.spe.org/events/en/2016/conference/16ctce/homepage.html **1-3.**
- 4th Iran Europe Oil & Gas Summit, Berlin, web site: www.iran-summit.com/1-3.
- 2nd International Conference & Expo on Oil & Gas, Istanbul, web site: oil-gas.omics-group.com/ **2-3.**
- 7th Annual Summit Operational Excellence in Oil & Gas, Houston, web site: www.opex-inoilandgas.com **7-9.**
- 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.**
- International Conference on Oil, Gas & Petrochemistry, Dubai, web site: www.waset.org/conference/2016/11/dubai/ICOGP **16-17.**
- 21st Annual Oil & Gas of Turkmenistan (OGT) Conference 2016, Ashgabat, web site: ogt.theenergyexchange.co.uk/ **16-17.**
- Project Financing in Oil & Gas, London, web site: www.smi-online.co.uk/energy/uk/conference/Project-Financing-in-Oil-and-Gas **21-22.**
- EIC Connect Oil & Gas Conference & Exhibition, Manchester Central, UK, web site: www.the-eic.com/EIC-Connect/OilGas/About-theEvent.aspx **22-23.**
- International Conference on Shale Oil & Gas Engineering, London, web site: www.waset.org/conference/2016/11/london/ICSOG **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.oshafetyconference.org/Events/ugm/Osha2016/default.aspx **29-30.**
- OSEA2016 Exhibition & International Conference, Marina Bay Sands, Singapore, web site: www.osea-asia.com **Nov. 29-Dec. 2.**
- SPE Thermal Well Integrity & Design Symposium, Banff, Alta., web site: www.spe.org/events/en/2016/symposium/16twid/homepage.html **Nov. 29-Dec. 1.**
- 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 Oil Reserves & Power Issues, Hong Kong, web site: www.waset.org/conference/2016/12/hong-kong/ICORPI **5-6.**
- 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.**
- Kurdistan-Iraq Oil & Gas Conference & Exhibition, London, web site: www.cwckio.org/conference/ **5-7.**
- SPE/AAPG Africa Energy & Technology Conference, Nairobi City, Kenya, web site: www.spe.org/events/en/2016/conference/16afrc/homepage.html **5-7.**
- 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&Opendiv=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.**
- IADC Critical Issues Middle East Conference & Exhibition, Dubai, web site: www.iadc.org/event/critical-issues-me-2016/ **13-14.**
- 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-\(1\)](http://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.offshorwestafrica.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**
- International Conference on Oil & Gas Projects in Common Fields, Amsterdam, web site: www.waset.org/conference/2017/02/amsterdam/ICOGPCF **7-8.**
- Cuba Oil & Gas 2017 Summit, Havana, web site: www.cubaoilgas-summit.com/ **7-9.**
- 7th Basra Oil & Gas International Conference & Exhibition, Basra, web site: www.basraoilgas.com/Conference/ **8-11.**
- SPE Canada Unconventional Resources Conference, Calgary, web site: www.spe.org/events/en/2017/conference/17urc/homepage.html **15-16.**
- SPE Canada Heavy Oil Technical Conference, Calgary, web site: www.spe.org/events/en/2017/conference/17hoc/homepage.html/ **15-16.**
- NAPE Summit, Houston, web site: napeexpo.com/shows/about-the-show/summit **15-17.**
- International Conference on Petroleum & Petrochemical Engineering, London, web site: www.waset.org/conference/2017/02/london/ICPPE **16-17.**
- 19th International Conference on Oil, Gas & Petrochemical Engineering (ICOGPE 2017), Venice, web site: www.waset.org/conference/2017/02/venice/ICOGPE **16-17.**
- Society of Petroleum Engineers (SPE) Reservoir Simulation Conference, Montgomery, Tex., web site: www.spe.org/events/rsc/2017/ **20-22.**
- Australasian Oil & Gas Exhibition & Conference (AOG), Perth, web site: aogexpo.com.au/ **22-24.**
- LNG Summit, Houston, web site: lng-usa.com/ **23-24.**
- Nigeria Oil & Gas Conference & Exhibition, Abuja, web site: www.cwcnog.com/ **Feb. 27-Mar. 2.**
- MARCH 2017**
- International Conference on Oil, Gas & Petrochemical Engineering, Rome, web site: www.waset.org/conference/2017/03/rome/ICOGPE **5-6.**
- Society of Petroleum Engineers (SPE) 20th Middle East Oil & Gas Show & Conference (MEOS), Manama, Bahrain, web site: meos17.com/ **6-9.**

Safety at risk



STEVEN PORUBAN
Managing Editor-News

During what has now become a prolonged downturn for the oil and gas industry, authorities worldwide are keeping their sights set on maintaining high safety standards in oil and gas operations, particularly offshore. At a time when reduced budgets could translate into cost-cutting in all the wrong places, those monitoring industry's safety record are justifiably concerned.

"We're worried. It's our job to be worried," Anne Myhrvold, director general of Petroleum Safety Authority Norway, told a safety lunch during Offshore Northern Seas (ONS) 2016 Exhibition & Conference in Stavanger late last month. "The industry must ensure that constant attention is paid to risk and safety—in every single operation and job," she said.

Safety at risk

"It's our job to challenge you, the industry, when we fear that safety in the industry is going into reverse," Myhrvold said. "Put bluntly, our role is to be the regulator, to ask questions. And that's what we're doing here today by asking whether safety is at risk."

Over the last year in particular, this has been precisely the question being put to industry by PSA Norway: Is safety now at risk?

"We're currently working to determine if accidents, incidents, trends, and results over the past couple of years justify the claim that safety is under threat," Myhrvold stated.

"During this work, we've pursued a discussion with those of you who're responsible for day-to-day operations in the petroleum sector. What do you think about this issue—and what are your reasons for thinking as you do?" she asked.

The very state of awareness that there exists such a question—Is safety at risk?—is as important as probing to answer the question itself, she said. Safety, she said, is not all about "figures, trends, and analyses."

Myhrvold said, "Behind these numbers stand people—colleagues we're all working together to protect, just as much in periods with demanding changes and financial pressures as in the good times."

Looking to the future

Safety could be enhanced, she suggested, through greater efficiency, while "emphasizing that the industry must always have its eye on the future." This could be accomplished by "looking back and learning" from the past, she said.

"At the same time, it's important to learn from what goes well and to identify why it does so," she said, with this challenge: "I would urge everyone to roll up their sleeves and to identify and implement measures which reduce risk."

Myhrvold emphasized that individual companies as well as industry as a whole "would suffer if the petroleum sector failed to keep its eye on the future." She said, "Wrong choices and poor quality could end in disaster."

She said, "I have said before, and will say again, that understanding both the immediate and the long-term consequences of the changes is crucial. Tomorrow will be shaped today. Taking care of expertise and knowledge is the key to a safe future for this industry."

In its annual report published in February, PSA Norway summarized some of the most important challenges thought to face industry in 2016. In the report, Myhrvold used 10 key terms to describe what industry's position should be on these challenges. The terms were concern, efficiency, focus, change, short-termism, robustness, prudence, collaboration, risk, and confidence.

The last of these, confidence, was perhaps the most heavily emphasized. Myhrvold said that while restructuring would continue to make "a clear mark" on operations and safety in Norway and elsewhere, she had confidence in the future.

"It mustn't be forgotten that the industry has a lot of knowledge and experience that can be built on," she said. "Thanks to clear regulatory requirements, enforcement of these demands, and a responsible industry, we have a solid foundation for future work."

She concluded, "But the companies must always accept that safety is a perishable commodity. Yesterday's good results carry no weight on the day an accident strikes." **OGJ**



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Activists' veto power

Activists have received veto power over pipeline projects in the US. Suddenly, infrastructure investments face new risk.

For its Dakota Access Pipeline, Energy Transfer Partners LP has permits and a court opinion rejecting a request for temporary injunction against construction of part of the 1,172-mile project between North Dakota's Bakken play and Paducka, Ill. Yet the Departments of Justice, Interior, and the Army have suspended construction of the segment anyway.

Consultation challenged

The challenge comes from the Standing Rock Sioux Tribe, which has culturally important land near the pipeline route at Lake Oahe on the border of North and South Dakota. In a lawsuit, the tribe says the Army Corps of Engineers didn't consult its officials as required by the National Historical Preservation Act.

Judge James E. Boasberg, of the US District Court for the District of Columbia, disagrees. In a 58-page ruling, he painstakingly describes efforts by Corps officials and archaeologists to engage Standing Rock Sioux officials. Telephone calls weren't returned. Meetings at which Corps officials hoped to make presentations were adjourned prematurely.

When the pipeline company made its first formal permit request—to conduct soil-bore testing over a tiny area accessible by existing roads—other tribes and state officials responded. The Standing Rock Sioux historic preservation officer didn't reply until the day the Corps granted the permit. She then demanded more surveys and tribal monitoring of the surveys and construction, expressing concern for a site almost half a mile from the nearest area likely to have been affected by the test. Allegations that the Corps didn't consult adequately on the soil-bore test formed the basis of the tribe's challenge to subsequent permits. According to Boasberg, however, "The Corps has documented dozens of attempts it made to consult with the Standing Rock Sioux from the fall of 2014 through the spring of 2016 on the permitted [Dakota Access Pipeline] activities."

This is not a case of insensitivity to aboriginal culture. The judge says the record shows ETP changed its route through North Dakota alone 140

times to avoid potential cultural resources and opted to transit "well-trodden ground wherever feasible." It also interrupted work to address concerns about the possibility of harm to important features.

This is instead a single interest group, which happens to be an Indian tribe, straining legality to thwart pipeline construction. Naturally, the tribe enjoys support from environmental groups resisting oil and gas logistics everywhere to discourage production, members of which crowded protests against Dakota Access. The court didn't mention this, but behavior of the Standing Rock Sioux historic preservation officer, Waste' Win Young, on Dakota Access fits a pattern that underscores tribal motivations. In 2015, she used the same argument—insufficient consultation—in South Dakota testimony opposing the Keystone XL pipeline.

Justice, Interior, and the Army acted on Sept. 9, the day Boasberg issued his opinion. In a joint statement, the Army said it wouldn't authorize Dakota Access construction adjacent to or under Lake Oahe "until it can determine whether it will need to reconsider any of its previous decisions regarding the Lake Oahe site under the National Environmental Policy Act or other federal laws." And the agencies said they'd invite Native American tribes to "formal, government-to-government consultations" on adequacy of consultation within existing laws and on the possible need for new legislation. In other words, Standing Rock Sioux officials and their environmentalist friends couldn't block the pipeline by sandbagging consultation under existing statutes, so the administration will consider new statutes.

Stymieing work

ETP calls Dakota Access 60% complete. It has spent \$1.6 billion on the project and has judicial validation of its permitting exertions and cultural prudence. Still it must wait while federal departments invent ways to stymie work and keep Americans from benefiting from new abundance of affordable energy.

Yet again in the imperious presidency of Barack Obama, therefore, law yields to demands of an activist minority, taking with it the economic interests of most Americans. **OGJ**



The Arab Republic of Egypt
Ministry of Petroleum and Mineral Resources



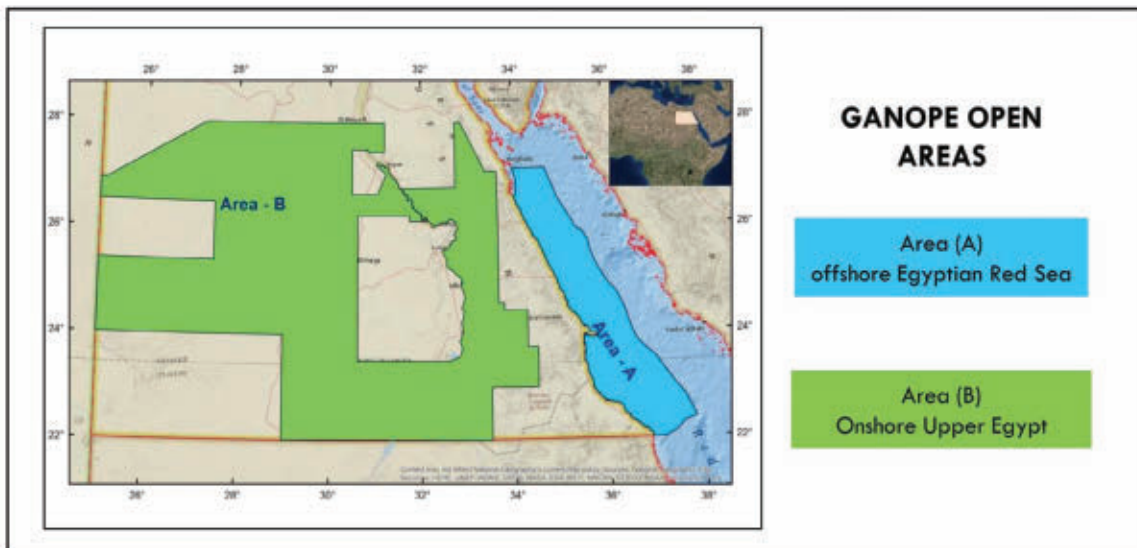
**Ministry of
Petroleum and
Mineral Resources**

Ganoub El Wadi Petroleum Holding Company

Announcement For

**NON-EXCLUSIVE MULTI-CLIENT SEISMIC SURVEY PROJECT, IN
GANOPE OPEN AREAS**

Ganoub El Wadi Petroleum Holding Company requests Geophysical Service Companies and Service providers to propose program to collect new geophysical data and to reprocess and update the existing data. GANOPE OPEN AREAS based on Request for Proposal process (RFP) are divided into two separate regions as follows: Area (A) Offshore Egyptian Red Sea and Area (B) Onshore Upper Egypt as shown in the map and according to Non-Exclusive Multi-Client basis.



Interested Companies can review the technical data. The cost of the RFP documents is Two Thousands (2,000) US\$ and is Non-Refundable, starting from Tuesday, August 9th, 2016 at Ganope Premises:

El Nour Street from El Nozha Street, Nasr City, Cairo, Egypt P.O.B.: 3011 El Horria.

More Information of Ganope Multi-client Project, Ganope Open Area Coordinates and Available Data can be obtained through Ganope website: www.ganope.com

The closing date will be on Thursday, December 15th, 2016 at 12:00 noon, Cairo local time

For more information, please contact:

Ganope Vice Chairman for Agreements and Exploration
Tel.: +202 26910185 Fax: +202 26910184
E-mail : osama.farouk@ganope.net



Groups troubled over halted work on part of Dakota Access pipeline

Nick Snow

Washington Editor

The Obama administration's withdrawal of a permit for construction of the Dakota Access crude oil pipeline when work was already under way is both unprecedented and deeply troubling, the presidents of the American Petroleum Institute and North America's Building Trades Unions said.

"This sets a precedent which ignores the rule of law. It's a unilateral attempt to change rules in the middle of the game that goes beyond pipelines, and could threaten roads, bridges, and other infrastructure projects," API Pres. Jack N. Gerard told reporters during a Sept. 13 teleconference.

"We have never seen a situation like this in the building trades," said NABTU Pres. Sean McGarvey, who also participated. "Our members have been working on this project for 4 months now and have been threatened by busloads not of local people, but protesters from outside.

"We absolutely support full federal investigations into violence against people who simply were trying to get to work. Anything less is intolerable," McGarvey said.

Their remarks came 4 days after the US Departments of Justice and the Interior, as well as the US Army jointly blocked construction of a portion of the proposed 1,172-mile, 30-in. pipeline after a federal district judge rejected the Standing Rock Sioux Indian tribe's request for a preliminary injunction (OGJ Online, Sept. 12, 2016).

In their joint statement, the federal entities said they supported people's rights to assemble and speak freely, but urged everyone involved to avoid violence and promised to deploy resources "to help state, local, and tribal authorities, and the communities they serve, better communicate, defuse tensions, support peaceful protest, and maintain public safety."

Action condones lawlessness

"Most of this pipeline isn't even on Indian land," Gerard responded. "This sort of action condones lawlessness after all the parties involved in the pipeline's construction got the necessary permits during months of opportunities for input at the federal, state, and local levels from all the stakeholders."

McGarvey said protests against new energy projects in general have become extreme. "We've raised concerns about violence involving projects elsewhere, particularly Tesla's in

California where workers have been threatened," he said.

Meanwhile, the Midwest Alliance for Infrastructure Now (MAIN), a partnership of agriculture, business, and labor entities that supports construction of projects in the Midwest, and the National Association of Manufacturers in Washington protested the Obama administration's action with a newspaper advertisement in several major markets.

"We absolutely need these pipelines," Ross Eisenberg, NAM's vice-president for energy and resources policy, told OGJ. "That's why we're supporting this one and others. We believe projects need to be held to the highest safety and environmental standards, but once these are met, let them be built. That's what this comes down to."

Kelcy Warren, chief executive of Energy Transfer Partners LP, the pipeline project's sponsor, said in a Sept. 13 memorandum to employees that the project is nearly 60% complete, employs more than 8,000 skilled laborers who are constructing it, and has cost more than \$1.6 billion so far. "We intend to meet with officials in Washington to understand their position and reiterate our commitment to bring the Dakota Access Pipeline into operation," he said. **OGJ**

EIA counts 5,000 DUC wells in major US producing regions

Matt Zborowski

Assistant Editor

Estimates by the US Energy Information Administration indicate the August count of drilled but uncompleted (DUC) wells in the seven major US tight oil and shale gas producing regions totaled 5,031, down slightly from the 5,065 counted in July.

The new supplement to EIA's monthly Drilling Productivity Report (DPR) covers inventories in the Bakken, Eagle Ford, Haynesville, Marcellus, Niobrara, Permian, and Utica regions, where 92% of US crude oil production increases

and all US natural gas production increases occurred during 2011-14.

The oil-dominant Bakken, Eagle Ford, Niobrara, and Permian regions altogether tallied 4,117 DUC wells, while the gas-dominant Haynesville, Marcellus, and Utica regions counted the remaining 914. In the oil regions, the estimated DUC well count increased during 2014-15, but declined by about 400 over the last 5 months. The DUC well count in the gas regions has generally been in decline since December 2013.

In the Permian, where the Baker Hughes Inc. tally of active drilling rigs has risen by 66 since May 13, the DUC well inventory recorded the only August increase of the seven regions, gaining 38 from its July total to 1,348. EIA also projects the basin's crude production to rise 22,000 b/d in October from its September total to just fewer than 2 million b/d.

Consistent with its recent oil output projections, the Eagle Ford's DUC well inventory is estimated to have posted the largest decline of the major producing regions in August, dropping 36 to 1,261. For October, oil production is seen falling 46,000 b/d month-over-month and gas production is expected to lose 198 MMcfd month-over-month.

At 701, the Niobrara had an estimated 11 fewer DUC wells in August compared with its July tally. A monthly decline of 8,000 b/d in oil production and 60 MMcfd of gas production is expected for October. The Bakken's DUC well inventory for August was down 4 from its July total to 807. For October, EIA projects a 28,000-b/d drop in oil output and 25 MMcfd drop in gas output.

Using its own data, Oslo-based oil and gas consulting service Rystad Energy separately projects a likely decline in US DUC wells over the next 8-12 months, reflecting the commerciality of DUC horizontal oil wells in a steady \$40-50/bbl crude oil price environment (OGJ, Sept. 6, 2016, p. 67).

In the Marcellus, 642 DUC wells in August were down 16 compared with the July count. Gas output from the shale play is expected to drop 22 MMcfd month-over-month in October to 17.78 bcf. The Haynesville's DUC well inventory fell by 2 in August to 143, and its gas output is projected to drop 34 MMcfd in October to 5.81 bcf. The Utica recorded a 3-DUC well drop in its August count to 129, but its gas production is forecast to rise 2 MMcfd in October to 3.6 bcf. **OGJ**

Southeast Asia energy security is long-term concern, House panel told

Nick Snow

Washington Editor

Southeast Asia's long-term oil and gas security remains uncertain despite current global supply abundance and low prices, the National Bureau of Asian Research's Energy Se-

curity Program director told a US House Foreign Affairs subcommittee.

Energy and national security are synonymous and will remain a key strategic worry for the region's governments, especially China, Japan, South Korea, and India, which are all key powers, Mikkal E. Herberg said during a Sept. 8 hearing of the Asia and the Pacific Subcommittee.

"The governments in Asia remain deeply concerned about heavy dependence on supplies from the Middle East," Herberg said in his written statement. "This dependence is rising as low-cost production rises in the Persian Gulf while at the same time production is declining from many other parts of the world, including sharp recent declines in US unconventional production.

"Asia, especially China, will need to play a greater role in supporting political stability in the Middle East and security of the sea lanes from the Persian Gulf to Asia," he said. "Collaboration between the US and China on security of the Indo-Pacific sea-lanes will be essential to energy security for Asia. This is a key strategic challenge for the US and the rest of oil import-dependent Asia." China recently became the world's largest oil and gas investor as its national oil companies sought overseas supplies, Herberg said. This further accentuates its growing importance in global energy security diplomacy, he noted.

"It is expanding its diplomatic and strategic footprint across the world's key energy exporting regions with important implications for US strategic and foreign policy influence, especially in the Middle East," Herberg said. "The US will need to find ways to work with China to collaborate on our common interests in providing security and strengthening political stability in these key energy exporting regions, including the Middle East, Africa, Central Asia, and Latin America."

Regional cooperation needed

Regional cooperation is paramount as diverse cultures and national boundaries affect much of Southeast Asia's energy infrastructure, but many countries' governments prefer to go-it-alone for now, the subcommittee's chairman observed in his opening statement. "Energy options are limited throughout much of Asia, and the fact remains that regional cooperation will be necessary to overcome the energy shortage conundrum," Rep. Matt Salmon (D-Ariz.) said.

Salmon said the US began shale gas exports by sea this year and is projected to become the world's third-largest LNG supplier within 5 years.

"Asian buyers already have contracted to purchase more than half the US supply of LNG, and will continue to affect global energy policy on a massive scale," Salmon said. "The Asia-Pacific needs American leadership to assist with the security concerns of our partners and allies, to maintain the rule of law and freedom of navigation crucial to energy security, and to provide critical energy supplies and access



**NICK
SNOW**

Washington Editor | Blog at www.ogj.com

Why marginal wells matter

Terminology can seem to trivialize something that is actually quite important. Consider US marginal crude oil and natural gas wells. Individually, they produce 10 b/d of crude or 60 Mcfd of gas or less. Collectively, they matter a lot, a recent Interstate Oil & Gas Compact Commission report showed.

Such wells remain in widespread operation across the US and continue to reliably produce a meaningful share—72.2% of all operating domestic wells—despite current industry challenges, IOGCC's 2015 Marginal Well Report said.

"The time period provided in this particular report is during a dramatic shift in production with extreme price swings for the oil and natural gas industry," noted IOGCC Executive Director Carl Michael Smith. "This report will show the vital role marginal wells play for our nation's energy security and independence."

The report, which included activity in 29 states, is based on data from the association of state oil and gas regulators' marginal well survey that covers production activity for calendar years 2013, 2014, and 2015. It found that marginal, or stripper, wells have contributed more than \$300 billion of production in the form of 2.85 billion bbl of oil and 19.9 billion Mcf of gas over the last 10 years.

"Marginal wells are an integral part of Oklahoma's oil and natural gas landscape," Oklahoma Energy Resources Board Executive Director Mindy Stitt said. "Along with the IOGCC, the OERB and Sustaining Oklahoma

Energy Resources are committed to supporting marginal well owners and operators through both public and professional education."

The report said that the number of producing marginal US wells increased by nearly 24,000, or 3%, since the prior survey in 2012. Marginal production remains a substantial share of domestic oil and gas operations, it added.

'Small business sector'

"Stripper wells are the small business sector of the nation's oil and gas industry. They are frequently family-owned, predominantly in rural areas, and passed down through generations," said National Stripper Well Association Chair Darlene Wallace, who also owns and operates Columbus Oil Co. in Seminole, Okla.

Elimination of such wells in 2015 would have triggered an estimated direct loss of 57,560 oil and gas jobs and \$4.4 billion in direct earnings within the survey states, according to the report, which can be found at IOGCC's web site.

"This important study provides the justification for maintaining access to literally billions of barrels equivalent of reliable oil and gas in the US," Research Partnership to Secure Energy for America Pres. Thomas Williams said. It also could help identify fair tax and regulatory policies for domestic conventional oil and gas wells as well as research and development needs, he said. **OGJ**

to new energy technologies."

Herberg noted that LNG supplies will be important to Asia's ability to make a more rapid shift from coal toward much less carbon intensive gas during the long transition to renewable energy supplies.

"US LNG exports are a key factor in today's much lower LNG prices, along with growing supplies from Australia and elsewhere," Herberg said. "US LNG exports are also extremely important to Asia's ability to diversify its LNG imports away from potentially unstable suppliers and to maintain affordable prices. This is especially important to Japan and South Korea, key US allies in the region and the two largest LNG importers in the world." **OGJ**

US officials report progress in developing gas off Israel, Cyprus

Nick Snow

Washington Editor

Emphasizing that significant challenges remain, two US government officials told two US House Foreign Affairs subcommittees that progress is being made in helping Israel and Cyprus develop their offshore natural gas resources in the eastern Mediterranean Sea.

"The future that I see for the region includes new and old pipelines connecting Israel's offshore resources to Jordan, Egypt, Turkey, and the Palestinian Authority," Amos J. Hochstein, special envoy and coordinator for international energy affairs at the US Department of State, said during the Middle East and North Africa Subcommittees' joint hearing on Sept. 9.

"It includes Cypriot gas exports to Turkey and Egypt, allowing Egypt to satisfy its own power needs and export surpluses to international markets via existing, but now idle, LNG terminals," Hochstein said.

Regulatory certainty, a business

climate that is conducive to investment, contract sanctity, and close cooperation between the government and private sector are still critically important in the eastern Mediterranean, Hochstein said in his written testimony.

“The lack of regulatory clarity and stability cost Israel years in the development of its largest offshore resource. But, despite early challenges, I am now optimistic and confident in the long-term stability of energy development in the region,” he said.

But a second witness warned that continued lower global gas prices and falling demand in Europe suggest that intense competition for customers could develop.

“In the eastern Mediterranean, there are competing proposals to develop pipeline and LNG infrastructure to support regional gas demand—each with a unique set of challenges and each confronted by an increasingly competitive global supply for LNG. At present, the focus appears to be on developing regional gas pipelines,” said Jonathan Elkind, assistant secretary for international affairs at the US Department of Energy.

Many agreements proposed

As Israel considers plans to become an energy exporter, multiple export agreements have been proposed with various countries, he noted in his written testimony.

Noble Energy Inc., which discovered Tamar gas field off Israel in 2009 (OGJ Online, Jan. 19, 2009), signed a sales agreement with two Jordanian companies to provide gas supplies from the field in early 2014, and has letters of intent with at least three Egyptian firms for transport of gas via subsea pipeline to existing LNG facilities for export, as well as Egyptian domestic power generation, Elkind said.

Eni SPA's August 2015 discovery of Zohr gas field (OGJ Online, Aug. 31, 2015), with an estimated 70 tcf of recoverable resources, offshore Egypt may make selling gas to Egypt and using Egyptian LNG facilities more challenging for Israel, he said.

“The Israeli government is also considering the idea of transporting Israeli and Cypriot gas through a new subsea pipeline that would run to mainland Greece, which would be a very long and expensive route, and presumably therefore challenging to construct given current market conditions,” Elkind said. “A consortium led by Noble Energy discovered gas in the Aphrodite field offshore of Cyprus estimated to hold 5 tcf of potential resources. Israeli and Turkish officials have also indicated the time may be right to explore exporting gas to Turkey via pipeline.”

Hochstein said, “Cyprus just concluded a successful third bid round, with bids from companies including ExxonMobil, Qatar Gas, and others. This cycle of exploration and development in the region will continue as long as discoveries continue to be made, expanding potentially to places like Lebanon and Greece.”

He said, “I believe that the eastern Mediterranean remains an underexplored and underdeveloped area, and I fully expect that significant discoveries will continue to be

made there. However, the market is still looking for validation that historic political differences will not get in the way of investment and development.” **OGJ**

IEA: Oil outlook darkened by demand growth slump, production rise

In its September Oil Market Report, the International Energy Agency said a slowdown in global oil demand growth, coupled with rising global oil production and swelling inventories, means the world oil market may take longer than expected to return to balance.

Oil demand growth has eased to 800,000 b/d in this year's third quarter from 1.4 million b/d in the second quarter. Demand growth in China and India are wobbling. Global oil production is still expanding, with the loss from nonmembers of the Organization of the Petroleum Exporting Countries more than making up that from the cartel's producers.

“Supply will continue to outpace demand at least through the first half of next year. Global inventories will continue to grow,” IEA said.

This month's report marked a sharp change in IEA's view of the oil market. In last month's OMR, the agency forecast supply and demand broadly in balance over the rest of this year and expected inventories to fall.

Demand

Global oil demand is forecast to grow by 1.3 million b/d in 2016, a downgrade of 100,000 b/d on a previous forecast due to a more pronounced 2016 third-quarter slowdown. Momentum eases further to 1.2 million b/d in 2017 as underlying macroeconomic conditions remain uncertain.

Since peaking at a near 5-year high of 2.3 million b/d in third-quarter 2015, year-over-year global oil demand growth has steadily decreased, easing to 1.6 million b/d in this year's first quarter and to 1.4 million b/d in the second quarter. Third-quarter year-over-year growth has plunged to 800,000 b/d due to dwindling demand growth by Organization for Economic Coordination and Development members, as well as a marked slowdown in India and China.

“Chinese demand growth all but disappeared as the economy continued to restructure and slow, while heavy flooding curbed gains in road transport and ‘blue sky’ policies ahead of September's G20 meeting restrained industrial demand,” IEA said. The agency noted that India's expansion continued to slow sharply, with growth easing to a 16-month low.

In Europe, demand contractions have been seen in July, particularly in Italy, France, Austria, and Finland. Growth momentum in the US has also slowed.

Supply

Global oil supplies dropped 300,000 b/d year-over-year in August on lower non-OPEC output, averaging 96.9 million b/d. Near-record OPEC supply just about offset steep declines from non-OPEC.

Crude oil output from OPEC rose to unprecedented levels in August as Middle East producers ramped up and lifted overall supply to 33.47 million b/d. The biggest increases were from Kuwait and the UAE, which pumped at their highest levels ever. Output from Saudi Arabia held near an all-time high and production from Iran bumped up to 3.64 million b/d. Overall OPEC crude output stood 930,000 b/d above a year ago. Including NGLs, OPEC production was an impressive 1.1 million b/d higher than a year earlier.

Saudi Arabia's vigorous production has allowed it to overtake the US and become the world's largest oil producer.

After two consecutive months of rising supplies, total non-OPEC oil production declined by 300,000 b/d in August to 56.4 million b/d, according to IEA data.

"The US accounted for most of the loss, while maintenance at the [ExxonMobil Corp.]-operated Sakhalin field dropped Russian output to its lowest in more than a year. The massive Tengiz field in Kazakhstan was also operating at reduced levels. North Sea loading schedules indicate that output eased after a bumper month in July," IEA said.

Stocks

OECD total inventories built 32.5 million bbl in July to a new record of 3,111 million bbl. As refinery activities reached a summer peak, crude oil inventories refused to decline until an exceptional storm-related draw hit the US in late August.

Gasoline has started the journey towards more normal levels, at least in the US, while the diesel overhang appears to have stopped growing in the west as barrels move eastwards.

LPG markets are in a glut of their own, with other products—mainly propane—struggling to find outlets in a globally oversupplied gas liquids market.

Chinese implied crude balances showed another strong build in August, after having eased during June and July, as customs data showed exceptionally high crude imports. **OGJ**

EOG, Yates to merge in \$2.5-billion deal

Matt Zborowski

Assistant Editor

EOG Resources Inc., Houston, has agreed to combine with Yates Petroleum Corp., Abo Petroleum Corp., MYCO Industries Inc., and certain other entities.

Under the terms of the deal, EOG will issue 26.06 million

shares of common stock valued at \$2.3 billion and pay \$37 million in cash. EOG also will assume and repay at closing \$245 million of Yates debt offset by \$131 million of anticipated cash from Yates.

Yates is a privately held, independent crude oil and natural gas company with 1.6 million net acres across the western US, with production of 29,600 boe/d net, of which 48% is crude oil, and proved developed reserves of 44 million boe net.

Yates has 186,000 net acres in the Delaware basin in New Mexico, 138,000 net acres in the Northwest Shelf in New Mexico, 200,000 net acres in the Powder River basin, and an additional 1.1 million net acres in New Mexico, Wyoming, Colorado, Montana, North Dakota, and Utah.

EOG says the deal adds an estimated 1,740 net premium drilling locations in the Delaware and Powder River basins, representing a 40% increase. The firm defines a premium drilling location as a direct aftertax rate of return of at least 30% assuming a \$40/bbl flat crude-oil price. EOG plans to commence drilling on the Yates acreage in late 2016 with additional rigs added in 2017.

The Delaware basin acreage, which EOG says is highly prospective for the Wolfcamp, Bone Spring, and Leonard shale formations, brings the combined company's total Delaware position to 424,000 net acres, a 78% increase.

The Northwest Shelf acreage is prospective for the Yeso, Abo, Wolfcamp, and Cisco formations, which EOG says have the potential to contribute additional amounts of premium inventory with application of the firm's completion and precision targeting technologies and low cost structure.

The deal also adds 81,000 net acres from Yates in the core development area of the Powder River basin that is prospective for the Turner oil play. In total, Yates contributes 200,000 net acres in the Powder River, doubling EOG's total position in the basin. EOG says the position has exploration potential for multiple stacked-pay formations. **OGJ**

Anadarko to buy FMOG's deepwater gulf assets for \$2 billion

Matt Zborowski

Assistant Editor

Anadarko Petroleum Corp., Houston, has agreed to acquire the deepwater Gulf of Mexico assets belonging to Freeport McMoRan Oil & Gas (FMOG), a subsidiary of Phoenix-based mining firm Freeport-McMoRan Inc., for \$2 billion.

Effective Aug. 1 and expected to close before yearend, the deal will double Anadarko's ownership in its operated Lucius deepwater development to 49% and add 80,000 boe/d, 80% of which is oil, to the firm's sales-volume guidance.

The acquisition comes as Anadarko lifts Lucius field's

estimated ultimate recovery to more than 400 million boe from the previous 300 million boe given “strong reservoir performance and facility productivity.”

Gross oil sales volumes through the Lucius facility recently surpassed 100,000 b/d. Accounting for the newly acquired assets, Anadarko’s gulf position will have net sales volumes of 155,000 boe/d, 85% of which will be oil.

Al Walker, Anadarko chairman, president, and chief executive officer, noted the deal expands the firm’s gulf infrastructure, adds to its “inventory of low-cost, subsea tieback opportunities, and bolsters optionality with new exploration prospects.”

Lucius field lies on Keathley Canyon Blocks 874, 875, 918, and 919 about 240 miles south of Louisiana’s coast in 7,100 ft of water. Production from the facility began in early 2015 (OGJ Online, Jan. 19, 2015).

“We expect these acquired assets to generate substantial free cash flow, enhancing our ability to increase US onshore activity in the Delaware and DJ basins,” Walker said. Excluding the acquired assets, Anadarko is expected to increase its full-year capital guidance to \$2.8-3 billion, primarily reflecting the increased activity in those onshore basins.

“Our current plans are to add two rigs in each play later this year, and to increase activity further thereafter, with an expectation of more than doubling our production to at least 600,000 [boe/d] collectively from these two basins over the next 5 years,” he said.

Walker expects the rise in activity over that time period to result in a companywide 10-12% compounded annual growth rate in oil volumes in a \$50-60/bbl oil-price environment.

Meanwhile, Freeport McMoRan recently restructured FMOG into an operating division (OGJ Online, Apr. 6, 2016). With the latest divestment, Richard C. Adkerson, FMOG president and chief executive officer, said Freeport-McMoRan now has completed \$6 billion in asset sales for the year as part of its effort to slash debt and direct resources to its copper business. **OGJ**

EIA: North American refiners less profitable than global average

The US Energy Information Administration noted that refinery earnings were lower in this year’s second-quarter compared with the same time last year and are converging among different locations globally.

“North American refiners, which for years were consistently more profitable than other refiners, were less profitable than European refiners and the global average, based on the four-quarter moving average of profits. Changes in the difference between North American and European crude

oil prices are likely contributing to the converging profits,” EIA said.

Driven largely by the decline in crack spreads in the second quarter, 21 of 27 refining companies experienced a year-over-year decline in refining profits, as measured by earnings per barrel processed.

In addition to changes in crack spreads, earnings per barrel reflect transportation costs and other operating expenses. Also, refiners use different crude-oil blends and produce different yields of products, which changes the per barrel earnings among refiners.

The narrowing gap between refiner crude oil acquisition costs for US and global refiners is a key factor driving the convergence in refinery profits. North American refiners enjoyed a large discount to global crude oil prices for several years, measured by the difference between North Sea Brent crude oil prices and the US composite refiner acquisition cost. Since third-quarter 2015, the discount has not widened beyond \$4.50/bbl, reducing the cost advantage of some US refiners.

During 2012-13, rapid increases in US and Canadian crude oil production and insufficient infrastructure to move this oil to refining centers inexpensively contributed to the wide spread between the Brent price and average US refiner acquisition costs. These factors began to reverse in 2014 and 2015, as new pipeline systems increased takeaway capacity from producing areas to refining areas, such as the Bridge-Tex and Cactus pipelines in West Texas and Flanagan South in the Midwest. US crude oil production declines, which began on a year-over-year basis in December 2015, also contributed to a comparatively tighter crude oil market in North America.

In the European market, refiners may be achieving increased refining efficiency by consolidating operations. The European companies included in this analysis reduced distillation capacity by 248,000 b/d in 2015, the fourth consecutive year of reductions. In addition, as Russian, Iranian, and Iraqi crude oil production has increased, some European refiners may be receiving lower-priced crude oil. For example, the price of Mediterranean Urals—a Russian crude oil many inland European refiners process—has on average been more than \$2/bbl less than the price of Brent for most of 2016—the largest sustained price difference since at least 2012. This may also be contributing to higher European refiner profits in recent quarters.

Global crack spreads have remained low in this year’s third quarter, suggesting continued downward pressure on refinery profits. Absent meaningful changes in crude oil and petroleum product price differentials, however, refinery profits will likely display smaller variability across different locations than between 2012 and 2014, EIA said. **OGJ**

LyondellBasell's La Porte complex due HDPE plant

Robert Brelsford

Downstream Technology Editor

LyondellBasell Industries NV has decided to build its recently approved project for a US Gulf Coast high-density polyethylene (HDPE) plant at the company's La Porte, Tex., manufacturing complex along on the south shore of the Houston Ship Channel (OGJ Online, July 29, 2016).

The decision to site the project at its La Porte operations results from its ideal location in terms of feedstock advantage, existing infrastructure for product exports, and its exceptional US Gulf Coast workforce, said Bob Patel, LyondellBasell's chief executive.

In addition to producing ethylene, propylene, linear low-density polyethylene, and low-density polyethylene, the La Porte complex also serves as the company's primary location for its acetyls business, including an integrated chain of manufacturing units that produce methanol, acetic acid, and vinyl acetate monomer.

With construction scheduled to begin in early 2017, startup of the HDPE plant remains on track for 2019, LyondellBasell said.

First announced in July, the project will include a 1.1 billion-lb/year (500,000-tonne/year) HDPE plant that will be the first ever to use LyondellBasell's proprietary Hyperzone PE technology, a cascade-gas phase process based on the company's existing Multizone circulating-reactor technology, the operator said.

Part of LyondellBasell's long-term strategy to take advantage of increased North American shale gas production, the HDPE project follows a series of completed and ongoing projects to expand its chemical business, including ethylene expansions of 800 million lb/year and 250 million lb/year at its LaPorte and Channelview, Tex., plants, respectively,



LyondellBasell has decided to build its recently approved US Gulf Coast HDPE plant at its La Porte, Tex., complex along the Houston Ship Channel. Photo from LyondellBasell.

as well as an 800 million-lb/year expansion currently under way at its Corpus Christi, Tex., complex (OGJ Online, July 28, 2014; May 2, 2014; July 1, 2013).

LyondellBasell's plan to build the world's largest propylene oxide and tertiary butyl alcohol plant at its Channelview complex for startup in 2020 also continues to progress, the company said. **OGJ**

Unipetrol wraps cracker repairs at Litvinov petchem complex

Robert Brelsford

Downstream Technology Editor

Unipetrol AS is preparing for a gradual restart of its 544,000-tonne/year (tpy) ethylene plant in the Chempark Zaluži petrochemical complex in Litvinov, Czech Republic, after completing a more than 10-month reconstruction of the steam cracker, which was shuttered following an August 2015 explosion and ensuing fire at the site (OGJ Online, Dec. 7, 2015).

With repair and reconstruction works at the steam cracker now completed and construction of four pyrolysis furnaces nearing an end, Unipetrol is now in the process of

conducting technological safety tests of the newly rebuilt cracker in preparation for the unit's return to service, it said.

A series of startup tests on individual units at the plant most recently occurred Aug. 30-31, according to Environmental Centre Most for the Ore Mountains, an agency that monitors air quality in the region.

Alongside repairs to existing and construction of furnaces, the steam cracker's \$167.8-million reconstruction program included repairs to damaged chimney flue pipe bridges, wiring, and to the propylene-column safety system; replacement of elements of measurement and control; and isolation and local repair of damaged associated installations.

The reconstruction program follows an internal investigation of the Aug. 13 incident, the results of which led to recommendations and implementation of measures designed to minimize risks of similar incidents in the future, Unipetrol said.

Recently adopted technological measures include installation of new valves in the propylene and ethylene-column safety systems as well as other units that conform to best available control technology standards.

In addition to adopting several organizational measures to increase safety that includes improved procedures for information transmission among operators, the company has developed emergency plans and procedures relating to a variety of potentially high-risk situations.

A project for separation of flammable inventory during an emergency also is now in place.

Unitpetrol said it expects the revamped steam cracker to return to its full production capacity sometime in late October, which is unchanged from a previous timeline revealed to investors in July (OGJ Online, July 28, 2016). **OGJ**

Staatsolie wraps Suriname refinery expansion

Robert Brelsford

Downstream Technology Editor

State oil firm Staatsolie Maatschappij Suriname NV has completed and fully commissioned a 10-year project to more than double crude oil processing capacity at its Tout Lui Faut refining complex about 12 miles south of Suriname's capital city of Paramaribo (OGJ Online, Sept. 9, 2009).

Now equipped to process 15,000 b/d of Surinamese Saramacca crude compared with its previous 7,000-b/d processing capacity, the expanded re-

finery has reached production of more than 1 million bbl combined of premium diesel and gasoline, Staatsolie said.

The production milestone, which the Tout Lui Faut refinery achieved on Aug. 28, occurred over the course of the 8-month period since contractor Saipem SPA's formal handover of the completed expansion project to Staatsolie's management on Dec. 17, 2015, the company said.

Started in February 2012 and designed to help Suriname reduce its dependence on imported fuel products, the Tout Lui Faut expansion previously was due to be commissioned in October 2014 (OGJ Online, Apr. 11, 2014).

Estimated at a cost of \$991 million as of December 2015, the expansion project has faced a series of hurdles since its initial commissioning, which began in mid-2014, Staatsolie told investors in its annual report for 2015, released in late July.

While a large portion of the expanded refinery reached startup and resumed output of its original production slate late during first-quarter 2015, mechanical completion of a plant designed to produce premium diesel and gasoline did not occur until July 2015, delayed in part by an Apr. 30, 2015, construction incident that left one contract employee dead.

The expanded facility's steady production of gasoline and diesel, which was launched on the retail market in fourth-quarter 2015, again was hampered in December amid a series of power interruptions at the refinery as well as an isolated fire that broke out on Dec. 13 at a pipeline flange leading to the vacuum distillation unit (VDU), according to the company.

Following 10 days of scheduled maintenance in April to carry out work aimed at increasing reliability and stability of electricity supply to the refinery, production and exports of diesel and gasoline had steadied, with the company shipping its largest volume of diesel for export to SOL Energy Resources Inc. on May 11. **OGJ**

THE EDITOR'S PERSPECTIVE

Producer hostilities cloud prospects for oil-supply accord

by **Bob Tippee**, Editor

As major oil exporters discuss cutting production to defend crude prices, market watchers should study pilgrims in Mecca. At this year's Hajj, Sept. 9-14, there are no Iranians.

The Saudi and Iranian governments couldn't agree on immigration and security. They are two of three parties essential to coordination of crude oil supply. The other is Russia.

Already bitter relations between Sunni Saudi Arabia and Shiite Iran have worsened recently.

The immigration flap arose after Ali Khamenei, the Iranian supreme leader, said pilgrims from his country stampeded at last year's Hajj succumbed to "murder" born of inadequate security in the host country. He amplified the insult by questioning Saudi Arabia's adequacy as custodian of eminent mosques at Mecca and Medina.

Saudi Arabia's chief cleric responded by calling Iranian Shias Zoroastrians—fire worshippers.

Complicating sectarian hostility were reports that Russian warplanes in mid-August refueled at an Iranian air base during bombing missions against Islamic State targets in Syria. Since World War II, Iran had scorned foreign military presence.

Controversial even within Iran, the Russian landings highlighted recent improvement in relations between Tehran and Moscow.

That cannot please officials in Riyadh. They worry about Shiite control of a geographic crescent spanning Syria and Iraq and linking Iran with the Bekaa Valley of Lebanon, stronghold of Hezbollah proxies of the Islamic Republic.

Syrian President Bashar al-Assad is enlarging the crescent by forcing Sunni residents out of Damascus suburbs into northern Syria and replacing them with Shias from Iraq. Iran supplies some of his weaponry. Assad, of course, has longstanding Russian support.

Against this backdrop, Saudi and Russian officials agreed Sept. 4 to form a working group on oil production. Russian officials will attend an extraordinary meeting of the Organization of Petroleum Exporting Countries in Algeria Sept. 26-28 to discuss production restraint.

But with Riyadh and Tehran stymied on Hajj travel, and with Moscow ever cozier with Saudi antagonists, prospects for agreement on oil supply can be no better than even worse than usual.

(From the subscription area of www.ogj.com, posted on Sept. 9, 2016; author's e-mail: bobt@ogjonline.com)

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IMPORTS OF CRUDE AND PRODUCTS

	— Districts 1-4 —		— District 5 —		— Total US —		
	9-2 2016	8-26 2016	9-2 2016	8-26 2016	9-2 2016	8-26 2016	9-4* 2015
	1,000 b/d						
Total motor gasoline.....	594	781	14	50	608	831	589
Mo. gas. blending comp.....	585	736	13	48	598	784	565
Distillate.....	107	114	0	13	107	127	130
Residual.....	258	130	39	134	297	264	115
Jet fuel-kerosine.....	64	43	0	175	64	218	176
Propane-propylene.....	76	66	13	17	89	83	127
Other.....	849	516	19	79	869	596	775
Total products.....	1,948	1,650	85	468	2,034	2,119	1,912
Total crude.....	5,860	7,278	1,209	1,639	7,069	8,917	7,458
Total imports.....	7,808	8,928	1,294	2,107	9,102	11,035	9,370

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

EXPORTS OF CRUDE AND PRODUCTS

	9-2-16	Total US 8-26-16 1,000 b/d	*9-4-15
Finished motor gasoline	655	549	419
Jet fuel-kerosine	102	225	133
Distillate	968	1,049	1,223
Residual	234	229	414
Propane/propylene	503	644	505
Other oils	1,103	1,582	1,001
Total products	3,565	4,278	3,695
Total crude	501	698	477
Total exports	4,066	4,976	4,172
NET IMPORTS			
Total	5,037	6,060	5,199
Products	(1,531)	(2,159)	(1,783)
Crude	6,568	8,219	6,982

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

CRUDE AND PRODUCT STOCKS

District	Crude oil	— Motor gasoline —		Jet fuel, kerosine 1,000 bbl	— Fuel oils —		Propane- propylene
		Total	Blending comp.		Distillate	Residual	
PADD 1.....	17,183	64,894	58,558	10,348	63,077	10,965	7,171
PADD 2.....	150,374	51,009	44,646	6,558	31,542	1,190	29,186
PADD 3.....	266,830	76,586	68,063	14,128	45,155	22,847	59,051
PADD 4.....	25,979	6,705	4,828	779	3,256	159	¹ 3,718
PADD 5.....	50,990	28,600	26,204	10,028	15,104	4,425	—
Sept. 2, 2016.....	511,356	227,794	202,299	41,841	158,134	39,586	99,126
Aug. 26, 2016.....	525,870	232,004	206,047	41,033	154,753	40,025	98,510
Sept. 4, 2015².....	457,998	214,546	186,990	42,715	150,903	38,613	96,556

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

REFINERY REPORT—SEPT. 2, 2016

District	REFINERY OPERATIONS		REFINERY OUTPUT				
	Gross inputs 1,000 b/d	Crude oil inputs 1,000 b/d	Total motor gasoline	Jet fuel, kerosine	Fuel oils Distillate Residual 1,000 b/d	Propane- propylene	
PADD 1.....	1,145	1,155	3,276	81	341	52	149
PADD 2.....	3,872	3,867	2,622	259	1,127	53	435
PADD 3.....	8,939	8,745	2,278	903	2,715	184	954
PADD 4.....	625	618	316	34	205	12	¹ 192
PADD 5.....	2,698	2,545	1,686	522	644	89	—
Sept. 2, 2016.....	17,279	16,930	10,178	1,799	5,032	390	1,730
Aug. 26, 2016.....	17,009	16,614	10,184	1,751	4,974	369	1,686
Sept. 4, 2015².....	16,368	16,109	9,832	1,662	4,795	402	1,572
	18,436	Operable capacity	93.7 utilization rate				

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

OGJ CRACK SPREAD

	9-9-16*	9-11-15*	Change	Change,
	\$/bbl			%
SPOT PRICES				
Product value	58.48	61.32	(2.85)	(4.64)
Brent crude	47.70	47.89	(0.19)	(0.39)
Crack spread	10.77	13.43	(2.66)	(19.79)

FUTURES MARKET PRICES

	9-9-16*	9-11-15*	Change	Change,
	\$/bbl			%
One month				
Product value	58.98	61.09	(2.11)	(3.45)
Light sweet crude	46.39	45.16	1.23	2.73
Crack spread	12.59	15.93	(3.34)	(20.97)
Six month				
Product value	60.36	62.43	(2.06)	(3.30)
Light sweet crude	49.00	48.36	0.64	1.31
Crack spread	11.37	14.07	(2.70)	(19.19)

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

STATISTICS

OGJ GASOLINE PRICES

	Price ex tax 9-7-16	Pump price* 9-7-16 ¢/gal	Pump price 9-9-15
(Approx. prices for self-service unleaded gasoline)			
Atlanta	159.3	208.7	227.1
Baltimore	165.7	216.7	230.5
Boston	162.7	207.7	236.3
Buffalo	157.1	218.1	242.7
Miami	151.3	206.2	241.6
Newark	171.3	204.2	222.3
New York	179.6	240.7	256.4
Norfolk	194.3	235.0	219.7
Philadelphia	146.9	215.7	246.8
Pittsburgh	164.9	233.7	245.4
Wash., DC	188.3	230.2	240.6
PAD I avg	167.4	219.7	237.2
Chicago	228.9	277.5	305.5
Cleveland	180.0	226.4	215.9
Des Moines	173.2	223.6	277.2
Detroit	174.6	223.5	242.3
Indianapolis	176.3	224.6	215.9
Kansas City	170.7	206.4	241.3
Louisville	179.0	223.4	261.5
Memphis	186.5	226.3	230.0
Milwaukee	165.1	216.4	270.8
Minn.-St. Paul	172.4	219.4	239.4
Oklahoma City	164.0	199.4	204.8
Omaha	168.4	214.5	238.2
St. Louis	173.7	209.4	207.1
Tulsa	169.5	204.9	211.7
Wichita	172.0	214.4	220.3
PAD II avg	177.0	220.7	238.8
Albuquerque	155.5	192.8	244.7
Birmingham	167.1	206.3	212.7
Dallas-Fort Worth	165.3	203.7	213.4
Houston	163.9	202.3	218.6
Little Rock	162.6	202.8	220.8
New Orleans	165.3	203.8	216.5
San Antonio	161.0	199.4	219.5
PAD III avg	163.0	201.6	220.9
Cheyenne	175.0	217.4	263.3
Denver	187.5	227.9	274.3
Salt Lake City	181.5	229.4	278.4
PAD IV avg	181.3	224.9	272.0
Los Angeles	244.9	303.9	352.0
Phoenix	181.5	218.9	235.3
Portland	178.4	227.9	293.5
San Diego	218.9	277.9	345.9
San Francisco	224.9	283.9	335.4
Seattle	198.0	260.9	312.5
PAD V avg	207.8	262.2	312.4
Week's avg.	176.8	223.5	248.3
Aug. avg.	170.1	216.7	264.7
July avg.	178.7	225.4	278.7
2016 to date	162.2	208.9	—
2015 to date	204.3	251.6	—

*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

	9-9-16	9-11-15
Alabama	2	3
Alaska	4	13
Arkansas	—	4
California	5	14
Land	5	13
Offshore	—	1
Colorado	19	32
Florida	—	—
Illinois	2	2
Indiana	—	—
Kansas	—	10
Kentucky	1	2
Louisiana	43	73
N. Land	16	30
S. Inland waters	5	4
S. Land	5	10
Offshore	17	29
Maryland	—	—
Michigan	—	—
Mississippi	4	3
Montana	—	1
Nebraska	—	2
New Mexico	28	48
New York	—	—
North Dakota	28	70
Ohio	14	18
Oklahoma	62	106
Pennsylvania	21	35
South Dakota	—	—
Texas	245	366
Offshore	1	—
Inland waters	—	—
Dist. 1	21	45
Dist. 2	14	39
Dist. 3	4	20
Dist. 4	8	14
Dist. 5	4	5
Dist. 6	8	18
Dist. 7B	5	5
Dist. 7C	23	31
Dist. 8	131	154
Dist. 8A	15	17
Dist. 9	1	3
Dist. 10	10	15
Utah	5	4
West Virginia	10	17
Wyoming	13	24
Others ID-1, NV-1	2	1
Total US	508	848
Total Canada	134	185
Grand total	642	1,033
US oil rigs	414	652
US gas rigs	92	196
Total US offshore	18	31
Total US cum. avg. YTD	485	1,070

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

	9-9-16 1,000 b/d	9-11-15 1,000 b/d
(Crude oil and lease condensate)		
Alabama	17	27
Alaska	430	428
California	530	572
Colorado	306	346
Florida	5	6
Illinois	21	26
Kansas	95	129
Louisiana	1,272	1,393
Michigan	15	18
Mississippi	51	68
Montana	59	77
New Mexico	355	418
North Dakota	1,030	1,192
Ohio	62	75
Oklahoma	279	427
Pennsylvania	15	19
Texas	3,530	3,743
Utah	79	101
West Virginia	20	22
Wyoming	186	235
Other states	48	45
Total	8,405	9,367

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

US CRUDE PRICES

	9-9-16 \$/bbl*
Alaska-North Slope 27°	37.05
Light Louisiana Sweet	41.25
California-Midway Sunset 13°	36.75
California Buena Vista Hills 26°	47.59
Wyoming Sweet	42.13
East Texas Sweet	39.75
West Texas Sour 34°	37.25
West Texas Intermediate	42.25
Oklahoma Sweet	42.25
Texas Upper Gulf Coast	36.00
Michigan Sour	34.25
Kansas Common	41.50
North Dakota Sweet	33.75

*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

OEPC reference basket	Wkly. avg.	9-9-16 Mo. avg., July-16	43.73 \$/bbl Aug.-16
OEPC reference basket	42.68	43.10	43.10
Arab light-Saudi Arabia	43.14	43.47	43.47
Basrah light-Iraq	41.37	42.01	42.01
Bonny light 37°-Nigeria	45.30	46.35	46.35
Es Sider-Libya	44.00	44.85	44.85
Girassol-Angola	45.09	46.06	46.06
Iran heavy-Iran	41.59	42.17	42.17
Kuwait export-Kuwait	41.37	41.88	41.88
Marine-Qatar	43.53	43.44	43.44
Mery-Venezuela	36.71	36.46	36.46
Minas 34°-Indonesia	41.84	41.26	41.26
Murban-UAE	46.54	46.25	46.25
Oriente-Ecuador	40.72	40.84	40.84
Saharan blend 44°-Algeria	45.30	46.35	46.35
Other crudes			
Fateh 32°-Dubai	42.64	43.58	43.58
Isthmus 33°-Mexico	45.07	44.22	44.22
Brent 38°-UK	45.00	45.85	45.85
Urals-Russia	43.76	44.06	44.06
Differentials			
WTI/Brent	(0.10)	(1.10)	(1.10)
Brent/Dubai	2.36	2.27	2.27

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

US NATURAL GAS STORAGE¹

	9-2-16 bcf	8-26-16 bcf	9-2-15	Change, %
East	812	796	764	6.3
Midwest	928	904	839	10.6
Mountain	224	222	190	17.9
Pacific	313	310	348	(10.1)
South Central	1,160	1,169	1,101	5.4
Salt	280	287	292	(4.1)
Nonsalt	880	883	808	8.9
Total US	3,437	3,401	3,242	6.0
	June-16	June-15	Change, %	
Total US²	3,196	2,656	20.3	

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

REFINED PRODUCT PRICES

	9-2-16 ¢/gal	9-2-16 ¢/gal
Spot market product prices		
Motor gasoline (Conventional-regular)	No. 2 Distillate	
New York Harbor	Low sulfur diesel fuel	
138.00	New York Harbor	139.00
Gulf Coast	Gulf Coast	136.50
134.50	Los Angeles	140.30
Motor gasoline (RBOB-regular)	Kerosine jet fuel	
New York Harbor	Gulf Coast	127.80
145.70		
No. 2 heating oil	Propane	
New York Harbor	Mont Belvieu	45.70
132.30		

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

IHS PETRODATA RIG COUNT

	Total supply of rigs	Marketed supply of rigs	Marketed contracted	Marketed utilization rate (%)
US Gulf of Mexico	105	51	36	70.6
South America	52	45	38	84.4
Northwest Europe	109	87	62	71.3
West Africa	69	52	27	51.9
Middle East	170	159	125	78.6
Southeast Asia	95	80	42	52.5
Worldwide	835	683	487	71.3

Source: IHS Petrodata. Data available at PennEnergy Research Center.

BAKER HUGHES INTERNATIONAL RIG COUNT

Region	Aug. 2016			Aug. 2015		
	Land	Off.	Total	Land	Off.	Total
WESTERN HEMISPHERE						
Argentina	65	—	65	108	—	108
Bolivia	4	—	4	2	—	2
Brazil	5	13	18	39	—	39
Canada	128	1	129	206	—	206
Chile	3	—	3	3	—	3
Colombia	8	—	8	30	—	30
Ecuador	4	—	4	14	—	14
Mexico	7	19	26	41	—	41
Peru	1	—	1	2	—	2
Trinidad	1	2	3	6	—	6
US	465	17	482	883	—	883
Venezuela	50	3	53	72	—	72
Other	2	—	2	2	—	2
Subtotal	743	55	798	1,408		
ASIA-PACIFIC						
Australia	3	3	6	15	—	15
Brunei	—	1	1	1	—	1
China-offshore	—	26	26	25	—	25
India	78	37	115	115	—	115
Indonesia	16	3	19	25	—	25
Japan	—	—	—	—	—	—
Malaysia	—	4	4	9	—	9
Myanmar	—	1	1	1	—	1
New Zealand	—	—	—	—	—	—
Papua New Guinea	1	—	1	4	—	4
Philippines	3	—	3	4	—	4
Taiwan	—	—	—	—	—	—
Thailand	1	12	13	15	—	15
Vietnam	—	5	5	6	—	6
Other	—	—	—	—	—	—
Subtotal	102	92	194	220		
AFRICA						
Algeria	56	—	56	52	—	52
Angola	—	4	4	8	—	8
Congo	—	1	1	1	—	1
Gabon	—	—	—	4	—	4
Kenya	10	—	10	12	—	12
Libya	—	1	1	1	—	1
Nigeria	3	3	6	9	—	9
South Africa	—	—	—	1	—	1
Tunisia	—	—	—	1	—	1
Other	1	2	3	7	—	7
Subtotal	70	11	81	96		
MIDDLE EAST						
Abu Dhabi	28	21	49	38	—	38
Dubai	—	2	2	2	—	2
Egypt	19	8	27	41	—	41
Iran	—	—	—	—	—	—
Iraq	38	—	38	48	—	48
Jordan	—	—	—	—	—	—
Kuwait	47	—	47	46	—	46
Oman	65	—	65	66	—	66
Pakistan	21	—	21	23	—	23
Qatar	3	2	5	9	—	9
Saudi Arabia	107	17	124	120	—	120
Sudan	—	—	—	—	—	—
Syria	—	—	—	—	—	—
Yemen	—	—	—	—	—	—
Other	1	—	1	—	—	—
Subtotal	329	50	379	393		
EUROPE						
Croatia	1	—	1	1	—	1
Denmark	—	—	—	4	—	4
France	—	—	—	—	—	—
Germany	3	—	3	1	—	1
Hungary	1	—	1	2	—	2
Italy	4	—	4	3	—	3
Netherlands	—	3	3	7	—	7
Norway	—	17	17	16	—	16
Poland	8	—	8	7	—	7
Romania	5	—	5	8	—	8
Turkey	31	—	31	28	—	28
UK	—	9	9	12	—	12
Other	5	9	14	20	—	20
Subtotal	58	38	96	109		
Total	1,302	246	1,548	2,226		

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

PRODUCTION BY REGION

	Oil production			Gas production		
	Sept.-16	Oct.-16	change	Sept.-16	Oct.-16	change
	b/d	b/d		Mcf/d	Mcf/d	
Bakken	942	914	(28)	1,572	1,547	(25)
Eagle Ford	1,027	981	(46)	5,753	5,555	(198)
Haynesville	45	45	—	5,844	5,810	(34)
Marcellus	37	36	(1)	17,806	17,784	(22)
Niobrara	369	361	(8)	4,137	4,077	(60)
Permian	1,977	1,999	22	6,863	6,898	35
Utica	69	69	—	3,602	3,604	2
Total	4,466	4,405	(61)	45,577	45,275	(302)

Source: US Energy Information Administration
Data available in PennEnergy Research Center.

DRILLING PRODUCTIVITY REPORT

	New-well oil production per rig*			New-well gas production per rig*		
	Sept.-16	Oct.-16	change	Sept.-16	Oct.-16	change
	b/d	b/d		Mcf/d	Mcf/d	
Bakken	875	896	21	1,189	1,228	39
Eagle Ford	1,153	1,170	17	3,335	3,382	47
Haynesville	31	31	—	5,723	5,803	80
Marcellus	69	69	—	11,583	11,733	150
Niobrara	982	1,004	22	3,097	3,172	75
Permian	539	543	4	902	909	7
Utica	353	361	8	7,849	7,951	102
Rig-weighted avg.	595	605	10	2,804	2,715	(89)

*Drilling data through April, projected production through June.
Source: US Energy Information Administration. Data available in PennEnergy Research Center.

PROPANE PRICES

	June 2016	July 2016	June 2015	July 2015
	\$/gal			
Mont Belvieu	50.70	47.80	36.90	40.90

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

MUSE, STANCIL & CO. REFINING MARGINS

	US Gulf Coast	US East Coast	US Midwest	US West Coast	Northwest Europe	South-east Asia
	\$/bbl					
Aug. 2016						
Product revenues	57.90	55.99	60.89	60.06	53.10	48.77
Feedstock costs	(44.78)	(48.15)	(42.73)	(42.41)	(46.97)	(44.47)
Gross margin	13.12	7.84	18.16	17.65	6.13	4.30
Fixed costs	(2.46)	(3.42)	(2.77)	(3.23)	(2.77)	(2.16)
Variable costs	(1.05)	(0.96)	(0.89)	(1.36)	(1.35)	(1.58)
Cash operating margin	9.61	3.46	14.50	13.06	2.01	0.56
July 2016	7.39	2.66	10.92	13.61	1.75	1.41
YTD avg.	9.53	3.28	11.01	13.74	2.90	1.31
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 OGI, Jan. 15, 2001, p. 46
Data available at PennEnergy Research Center.

MUSE, STANCIL & CO. GASOLINE MARKETING MARGINS

July 2016	Chicago*	Houston	Los Angeles	New York
	¢/gal			
Retail price	243.16	208.48	283.49	238.93
Taxes	52.91	38.40	58.33	48.65
Wholesale price	158.26	149.47	183.19	150.80
Spot price	150.72	141.55	146.16	143.56
Retail margin	31.99	20.61	41.97	39.48
Wholesale margin	7.54	7.92	37.03	7.24
Gross marketing margin	39.53	28.53	79.00	46.72
YTD 2016	38.51	19.00	58.27	37.67
2015 avg.	34.93	17.93	73.33	38.66
2014 avg.	36.40	20.71	66.66	39.71
2013 avg.	33.12	25.36	45.25	39.64
2012 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 OGI, Oct. 15, 2001, p. 46.
Data available at PennEnergy Research Center.
Note: Margins include ethanol blending in all markets.

MUSE, STANCIL & CO. ETHYLENE MARGINS

	Ethane	Propane	Naphtha
	¢/lb ethylene		
Aug. 2016			
Product revenues	37.05	60.13	73.09
Feedstock costs	(7.05)	(24.96)	(58.89)
Gross margin	30.00	35.17	14.20
Fixed costs	(6.81)	(8.05)	(9.10)
Variable costs	(2.76)	(3.14)	(3.98)
Cash operating margin	20.43	23.98	1.12
July 2016	12.17	12.92	(6.73)
YTD avg.	11.56	12.13	(6.19)
2015 avg.	14.59	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 OGI, Sept. 16, 2002, p. 46.
Data available at PennEnergy Research Center.

MUSE, STANCIL & CO. US GAS PROCESSING MARGINS

Aug. 2016	Gulf Coast	Mid-continent
	\$/Mcf	
Gross revenue		
Gas	2.67	2.31
Liquids	0.50	1.28
Gas purchase cost	2.97	3.10
Operating costs	0.07	0.15
Cash operating margin	0.13	0.34
July 2016	0.15	0.44
YTD avg.	0.17	0.48
2015 avg.	0.17	0.44
2014 avg.	0.46	1.28
2013 avg.	0.58	1.61
Break-even producer payment, % of liquids	67%	70%

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

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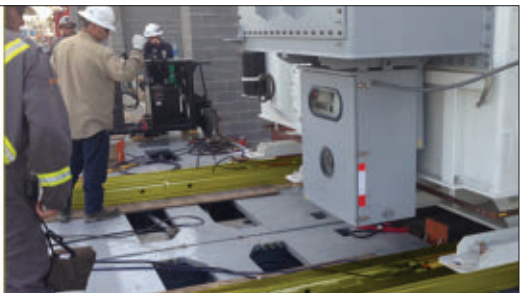
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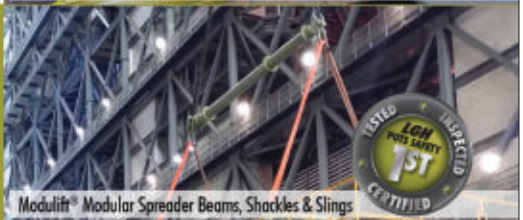
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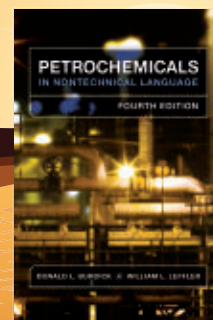
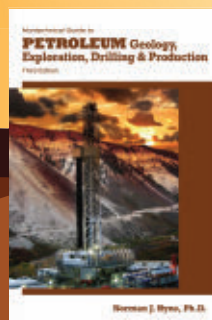
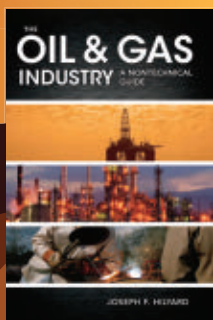
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