SEPT. 26, 2016 | USD 20

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GENERAL INTEREST
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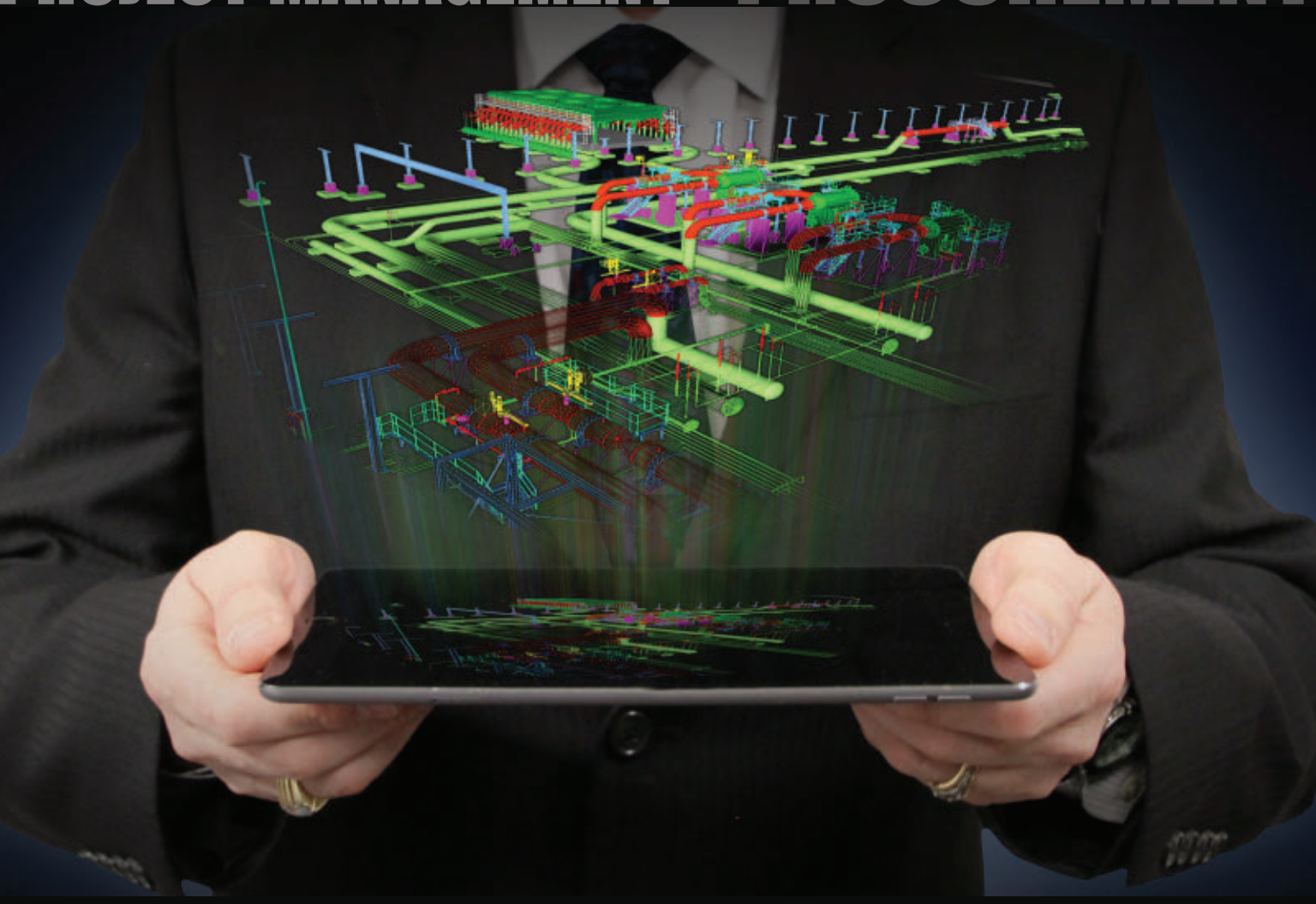
CONSTRUCTION MANAGEMENT
ENGINEERING **GIS** DESIGN
PROJECT MANAGEMENT PROCUREMENT



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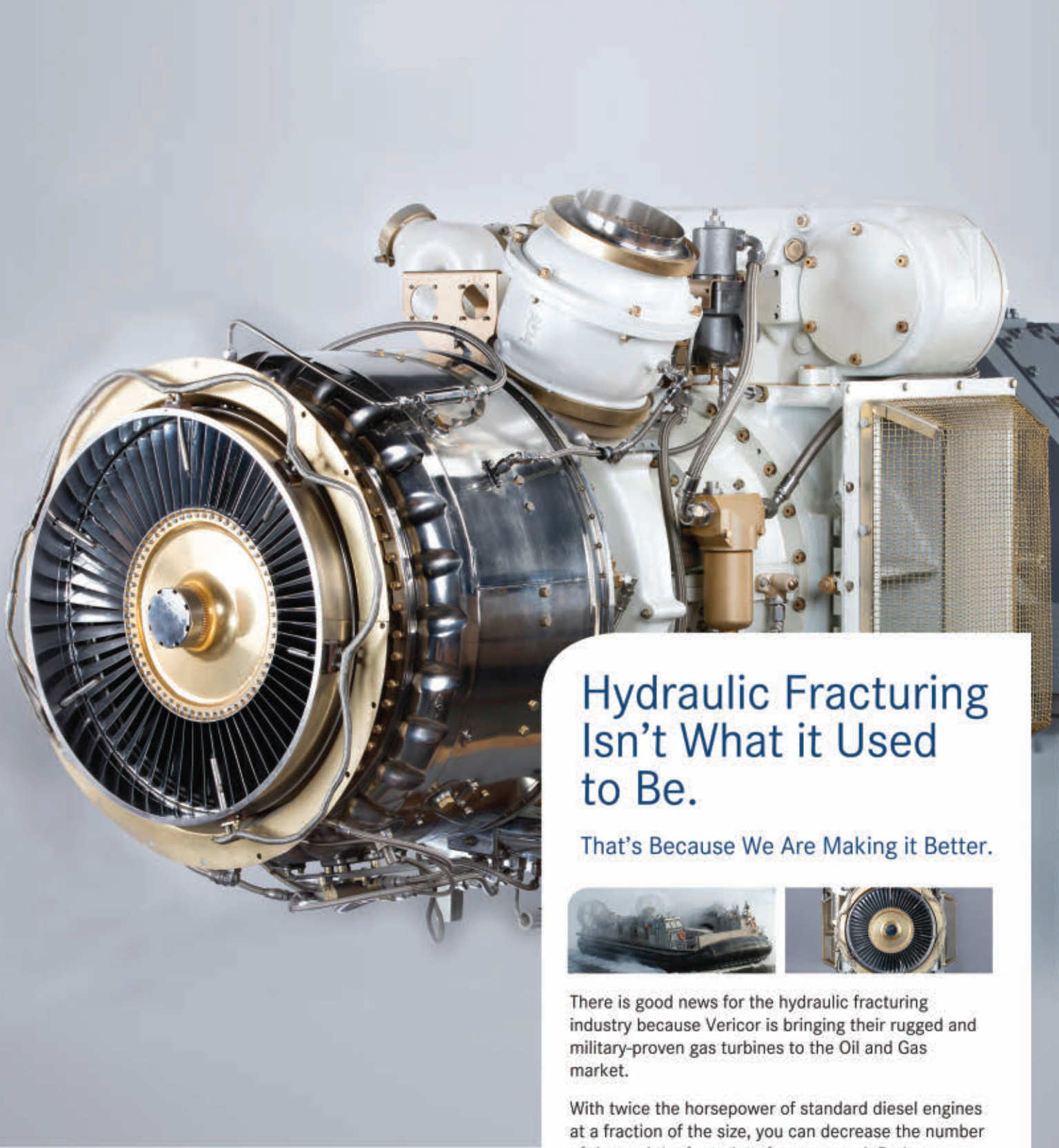
Sept. 26, 2016 | Volume 114.9c

GENERAL INTEREST

COVER

Kinder Morgan Inc. *hired STATS Group Ltd. to undertake a now-completed leak-tight double block and bleed isolation on a 30-in. OD segment of its high-pressure carbon dioxide pipeline system, which extends 500 miles from southwestern Colorado to Denver City, Tex. The project included installation of full-bore inline valves and retrofitting of pig launchers and receivers, part of a larger initiative to make the nonpiggable pipeline piggable. Photo from STATS Group.*



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Stan Terry, (713) 963-6208, stant@pennwell.com
Grace Jordan, (713) 963-6291, gracej@pennwell.com

Australia / New Zealand
Mike Twiss, Miklin Business Services, Unit 15, 3 Benjamin Way, Rockingham, Western Australia 6168; Tel +61 8 9529 4466, Fax +61 8 9529 4488
Email: miklinbusiness@bigpond.com

Brazil / South America
Jim Klingele, (713) 963-6214, jimk@pennwell.com
1455 West Loop South, Suite 400, Houston, TX 77027

Canada
Stan Terry, (713) 963-6208, stant@pennwell.com

France / Belgium / Spain / Portugal / Southern Switzerland / Monaco
Stefy Picoitti Thompson, Tel: +33(0)4 94 70 82 63; Cell: +33(0)6 21 23 67 02, stefaniat@pennwell.com.

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Italy
Ferruccio Silvera, Viale Monza, 24 20127 Milano Italy; Tel:+02.28.46 716; E-mail: info@silvera.it

Japan
e.x.press sales division, ICS Convention Design Inc. 6F, Chiyoda Bldg., 1-5-18 Sarugakucho, Chiyoda-ku, Tokyo 101-8449, Japan, Tel: +81.3.3219.3641, Fax: 81.3.3219.3628, Masaki Mori, E-mail: Masaki.Mori@ex-press.jp

China / Korea / Singapore / Asia-Pacific
Michael Yee, 19 Tanglin Road #05-20, Tanglin Shopping Center, Singapore 247909, Republic of Singapore; Tel: 65 9616.8080, Fax: 65.6734.0655; E-mail: yfyee@singnet.com.sg

United Kingdom / Scandinavia / Denmark / The Netherlands / Middle East
Graham Hoyle, 10 Springfield Close, Cross, Axbridge, Somerset BS26 2FE, Phone: +44 1934 733871 Mobile: +44 7927 889916, grahamh@pennwell.com or ghms@btinternet.com

West Africa
Dele Olaoye, Flat 8, 3rd Floor, Oluwatobi House, 71 Allen Ave., Ikeja Lagos, Nigeria; Tel: +234 805 687 2630; Tel: +234 802 223 2864; E-mail: dele.olaoye@q-she.com

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Sept. 26, 2016

GENERAL INTEREST QUICK TAKES

API: US petroleum demand fell slightly in August

According to data from the American Petroleum Institute, total US petroleum deliveries, a measure of petroleum demand, moved up 1.6% in August from the same period last year to average 20.1 million b/d. These were the highest August deliveries since 2007.

"When petroleum demand grows it's a sign the economy is on the right track," said Erica Bowman, API chief economist. "The overall economy showed gains for the seventh time in the year, adding 151,000 jobs in August, which is good news for everyone."

Compared with July, total US petroleum deliveries decreased by less than 0.1%. For year-to-date, total US petroleum deliveries rose 1% compared with the same period last year.

Gasoline deliveries in August reached the highest level on record for that month, up from the prior month, the prior year, and the prior year-to-date. Total motor gasoline deliveries, a measure of consumer gasoline demand, moved up 2.2% from August 2015 to average 9.7 million b/d. Compared with July, total motor gasoline deliveries increased 0.1%. For year-to-date, total motor gasoline deliveries increased 2.4% compared with year-to-date 2015 to a record level near 9.4 million b/d.

Crude oil production increased 0.3% from July, but was down 9.2% from a year earlier to average 8.5 million b/d in August. However, this was the first month since this past March where production increased month over month. This was the third-highest August level since 1985. For year-to-date, crude production was also down 6.1% compared with year-to-date 2015, but was the second highest year-to-date level since 1985.

US total petroleum imports last month averaged 10.7 million b/d, up 2.5% from the prior month and up 9.7% from the prior year. For year-to-date, total petroleum imports also were up 6.9% compared with year-to-date 2015. Crude oil imports increased 9.8% from a year earlier to nearly 8.4 million b/d in August. Compared with July, crude oil imports were 3.6% higher. For year-to-date, crude imports were up 8.1% compared with year-to-date 2015.

Crude oil stocks ended August at 515.1 million bbl—the highest August inventory level in 96 years. Crude stocks were down 4.5 million bbl or 0.9% from the prior month, but were up 57.3 million bbl or 12.4% from the prior year. In August, total motor gasoline stocks ended at 231.2 million bbl, down 2.5% from the prior month but up 7.8% from the prior year. August's total motor gasoline stocks were the highest inventory level for the month for 35 years, but were the lowest inventory level in 2016.

Senate approves Water Resources Development Act

The US Senate passed the 2016 Water Resources Development Act (WRDA) by 95 to 3 votes. Senate Environment and Public Works Committee Chairman James M. Inhofe (R-Okla.) introduced the measure on Apr. 25. The American Petroleum Institute applauded the Senate's Sept. 15 bipartisan action.

"This bill, aimed at maintaining and improving the safety of our nation's ports and harbors, will help ensure that our nation's energy renaissance continues to provide benefits to American consumers while taking steps to improve the environment," API Executive Vice-Pres. Louis Finkel said.

About 40% of all goods transported on US waterways are crude oil or products, Finkel noted. The WRDA would ensure that the Harbor Maintenance Trust Fund has the resources needed to maintain our nation's ports and harbors, Finkel said.

ONGC Videsh to add 11% in Vankorneft in E. Siberia

India's ONGC Videsh Ltd. has signed definitive agreements with OJSC Rosneft to acquire an additional 11% interest in CJSC Vankorneft and therefore interest in Vankor oil and gas condensate field in East Siberia. The acquisition is expected to close by yearend.

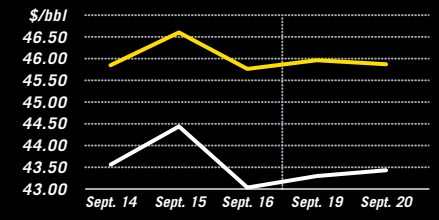
ONGC Videsh, a subsidiary of Oil & Natural Gas Corp. Ltd., acquired an initial 15% interest in Vankorneft in a deal that closed in May after a signing with Rosneft in September 2015.

Rosneft said a separate "ongoing transaction" for Vankorneft involves a 23.9% purchase by a consortium of Indian companies: Oil India Ltd., Indian Oil Corp. Ltd., and Bharat PetroResources Ltd. A heads of agreement was signed in March.

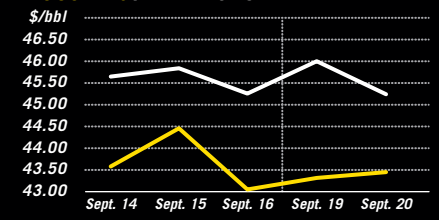
If both proposals are completed, the Indian proportion would rise to 49.9%.

Vankorneft was established in 2004 for development of Vankor field in the Turukhansky district of Krasnoyarsk Territory. Rosneft said Vankor in 2015 produced 22 million tonnes of oil and 8.71 billion cu m of gas. OGJ

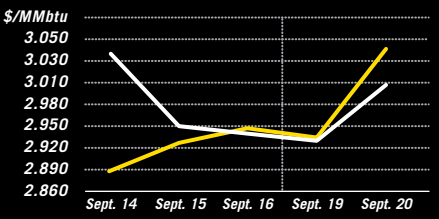
ICE BRENT / NYMEX LIGHT SWEET CRUDE



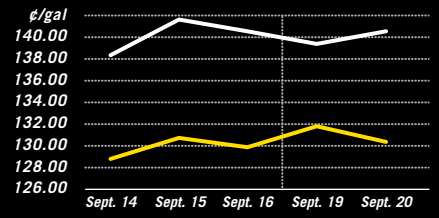
WTI CUSHING / BRENT SPOT



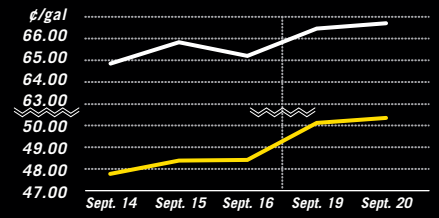
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



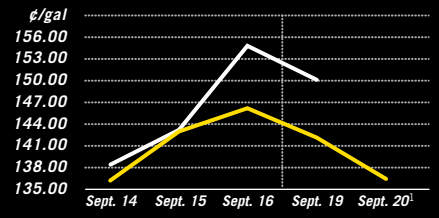
ICE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



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



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

US INDUSTRY SCOREBOARD — 9/26

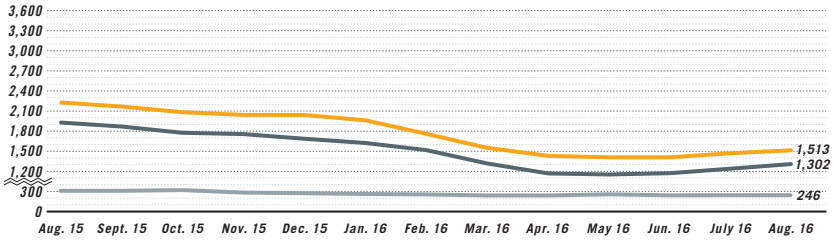
Latest week 9/9	4 wk. average	4 wk. avg. year ago[1]	Change, %	YTD average[1]	YTD avg. year ago[1]	Change, %
Product supplied, 1,000 b/d						
Motor gasoline	9,543	9,157	4.2	9,461	9,141	3.5
Distillate	3,648	3,602	1.3	3,734	3,915	(4.6)
Jet fuel	1,708	1,663	2.7	1,631	1,575	3.6
Residual	367	190	93.2	305	208	46.6
Other products	5,340	4,891	9.2	4,994	4,865	2.7
TOTAL PRODUCT SUPPLIED	20,606	19,503	5.7	20,125	19,704	2.1
Supply, 1,000 b/d						
Crude production	8,497	9,202	(7.7)	8,821	9,380	(6.0)
NGL production[2]	3,606	3,254	10.8	3,452	3,149	9.6
Crude imports	8,173	7,426	10.1	7,946	7,317	8.6
Product imports	2,220	1,934	14.8	2,177	2,097	3.8
Other supply[2 3]	2,462	2,379	3.5	2,219	2,338	(5.1)
TOTAL SUPPLY	24,958	24,195	3.2	24,615	24,281	1.4
Net product imports	(1,699)	(1,569)	—	(1,720)	(1,556)	—
Refining, 1,000 b/d						
Crude runs to stills	16,739	16,505	1.4	16,286	16,197	0.5
Input to crude stills	17,088	16,780	1.8	16,521	16,437	0.5
% utilization	93.0	92.8	—	90.5	91.4	—

Latest week 9/9	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	510,798	511,357	(559)	455,894	54,904	12.0
Motor gasoline	228,360	227,793	567	217,387	10,973	5.0
Distillate	162,754	158,135	4,619	153,963	8,791	5.7
Jet fuel–kerosine	42,749	41,841	908	41,077	1,672	4.1
Residual	40,583	39,586	997	38,988	1,595	4.1
Stock cover (days)[4]			Change, %		Change, %	
Crude	30.5	30.5	—	27.8	9.7	
Motor gasoline	23.9	23.7	0.8	23.7	0.8	
Distillate	44.6	42.7	4.4	42.7	4.4	
Propane	102.4	105.3	(2.8)	93.5	9.5	

Futures prices[5] 9/16			Change		Change	Change,%
Light sweet crude ($/bbl)	44.34	45.96	(1.62)	45.16	(0.82)	(1.8)
Natural gas, $/MMbtu	2.92	2.75	0.17	2.68	0.23	8.7

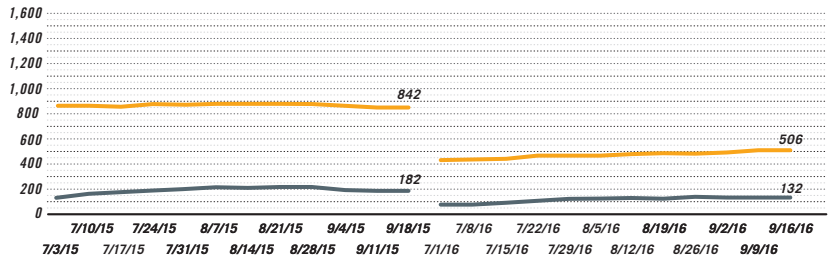
[1]Based on revised figures. [2]OGJ estimates. [3]Includes other liquids, refinery processing gain, and unaccounted for crude oil. [4]Stocks divided by average daily product supplied for the prior 4 weeks. [5]Weekly average of daily closing futures prices.
Source: Energy Information Administration, Wall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

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



Note: Monthly average count

BAKER HUGHES RIG COUNT: US / CANADA



Note: End of week average count

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EXPLORATION & DEVELOPMENT QUICK TAKES

Engie makes gas, oil find near Gjoa in North Sea

The Norwegian Petroleum Directorate reported a gas and oil discovery by Engie E&P Norge AS.

Well 36/7-4, referred to as Cara, was drilled 6 km northeast of Gjoa field by the Transocean Arctic semisubmersible in 349 m of water. It encountered a 50-m gas column and a 60-m oil column in the Agat formation. NPD said reservoir quality ranges from "very good" in the top section to "good" in the lower section. NPD said the well was formation tested and the maximum production rate was 1.3 million cu m/day through a 76/64-in. nozzle opening with "very good" production and flow properties. Extensive data and samples were collected, NPD said. Engie cited wireline logging and successful core runs.

The well was drilled to a vertical depth of 2,702 m subsea, and was terminated in the Asgard formation in the Lower Cretaceous. The licensees will consider a tie-in to existing infrastructure in Gjoa field (OGJ Online, Nov. 8, 2010).

Engie has 30% as does Idemitsu Petroleum Norge. Tullow Oil Norge AS has 20% as does Wellesley Petroleum AS.

Well 36/74 is the first exploration well in PL 636, which was awarded in APA 2011.

Wintershall makes small oil find in North Sea

The Norwegian Petroleum Directorate said Wintershall Norge AS had a "minor" oil discovery in the course of recently drilling four wells in the North Sea.

Dolphin Drilling Ltd.'s Borgland Dolphin semisubmersible rig drilled all four wells southeast of Vega field in 373 m of water. The wells were not formation-tested, but extensive data and samples were collected.

Wintershall said potential development options include tie-ins to existing fields.

NPD said well 35/11-20 A encountered a total oil column of 33 m in Heather formation sandstone, of which 19 m were of good reservoir quality. Due to technical issues, it was not possible to reach the Brent group and Cook formation.

Well 35/11-20 B encountered a total oil column of 46 m in Heather formation sandstone, of which 29 m were of moderate reservoir quality. A total oil column of 19 m was encountered in the Tarbert formation in the Brent group, of which 10 m were of moderate reservoir quality. It was terminated in the Statfjord group in the Early Jurassic.

The 35/11-19 S had to be abandoned due to technical issues. The 35/11-20 S was drilled 50 m southwest and encountered an 8-m oil column in Heather sandstone with poor reservoir quality. NPD said they were the second, third, fourth, and fifth exploration wells in PL 248 F.

According to NPD figures on the drilling program, the 35/11-20 B had the longest measured depth below the sea surface at 5,083 m, and the longest vertical depth at 4,055 m.

Eni's Laarich East-1 well in Tunisia flows 2,000 b/d

Eni SPA reported that the Laarich East-1 well in Tunisia's Makhrouga-Laarich-Debbech (MLD) license encountered hydrocarbons in sandstone layers of Silurian and Ordovician age after reaching a final depth of 4,111 m.

Production tests revealed a delivery capacity of 2,000 b/d of oil, confirming the upside potential of the concession identified in the recent 3D geophysical survey carried out on the permit.

Drilling on Laarich East-1, about 5 km from the concession's oil treatment center, began in June. The well is already connected to production. Further exploration activity in Tunisia continues with the drilling of additional prospects identified through 3D seismic.

Laarich East-1 is part of Eni's nearfield strategy of conducting exploration activity in proximity of existing infrastructure with available spare capacity.

Eni and Tunisian state-owned Tunisian Co. of Petroleum Activities (ETAP) each holds 50% interest in the MLD license, which lies in the Sahara desert, 700 km south of Tunis.

Eni's Tunisian exploration and production activity dates back to the 1960s, when the giant El Borma oil field, still operating today, was discovered. The firm's equity production in the country currently is 11,000 boe/d.

Shell drills dry hole offshore Nova Scotia

Shell Canada Ltd. has advised partner Suncor Energy Inc. that drilling of the first exploration well on the Shelburne basin 250 km offshore Halifax, NS, has been completed and is noncommercial.

As a result, Suncor in the third quarter will write off its share of the well's cost, which, under the commercial terms of the firm's farm-in agreement, is expected to be $105 million (Can.) aftertax.

Joint venture participants in the deepwater project are operator Shell Canada with 50% interest, ConocoPhillips Canada East Coast Partnership 30%, and Suncor 20% (OGJ Online, June 11, 2014). OGJ

DRILLING & PRODUCTION QUICK TAKES

CNOOC starts oil flow from Enping 18-1 off China

China National Offshore Oil Corp. Ltd. reported startup of oil production from Enping 18-1 oil field in the Pearl River Mouth basin of the South China Sea.

CNOOC cited production of 2,010 b/d from three wells in 90 m of water. The firm is using Enping 24-2 facilities and mentioned regional development with Enping 23-1, 23-2, and 23-7.

CNOOC recently said it began production from the "comprehensive adjustment project" of the Weizhou 6-9/6-10 oil field in the Beibu Gulf in the South China Sea, with one well producing 850 b/d. CNOOC built one wellhead platform in 35 m of water.

CNOOC has 100% interest.

The Arab Republic of Egypt

Ministry of Petroleum and Mineral Resources

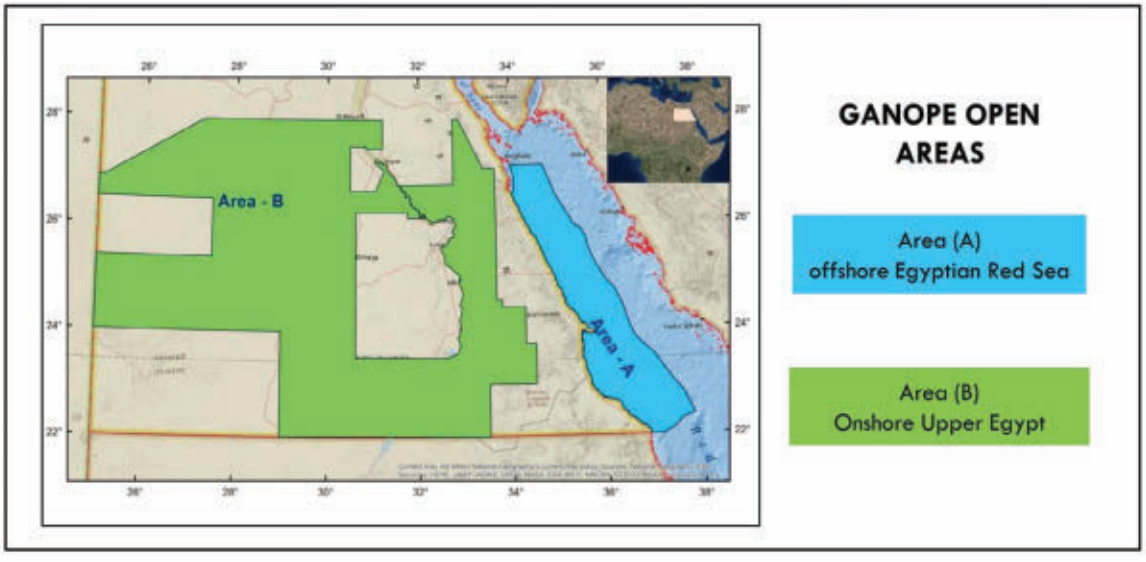
Ganoub El Wadi Petroleum Holding Company

Ministry of Petroleum and Mineral Resources

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

Dirok field development advances in India

Hindustan Oil Exploration Co. has advanced development of Dirok natural gas field in the Assam Arakan basin south of Digboi, India, by letting a $30 million contract to Expro for a modular gas processing plant (OGJ Online, Oct. 30, 2013).

HOEC has reentered three exploration wells in the field and drilled two appraisal wells to develop reserves estimated at 134 bcf of gas. Other drilling is possible.

Production will be from the Miocene Girujan formation. The company says the field has upside potential in Miocene Tipam and Oligocene Barail strata.

It expects the field to produce at a plateau rate of 20 MMscfd for 15 years during a total economic life of 20 years.

Under a lease-operate-maintain agreement, Expro will handle design, engineering, construction, transportation, installation, and commissioning of a plant able to process as much as 35 MMscfd of wet gas.

In addition to the wells and gas plant, development will include a gas gathering station and pipelines connecting those facilities and the field with partner Oil Industry Ltd.'s facilities at Kusijan.

State-owned Brahmaputra Cracker & Polymer Ltd. will buy the gas for transport to its Assam Gas Cracker complex at Lepetkaka via an existing pipeline.

HOEC, operator, holds 26.882% interest in the license for Block AAP-ON-94/1. OIL holds 44.086%. Indian Oil Corp. Ltd. holds the remainder.

Cobalt gets early termination for gulf drillship

Cobalt International Energy Inc., Houston, has entered into an amendment to its drilling contract with Rowan (UK) Reliance Ltd., an affiliate of Rowan Cos. PLC, providing for the early termination of Cobalt's long-term drilling contract for the Rowan Reliance drillship.

The drilling contract was originally scheduled to terminate on Feb. 1, 2018, and the amendment provides for a contract termination date of Mar. 31, 2017. Cobalt will save 45% of the contract value between the original termination date and the new termination date, or $80 million, and will pay to Rowan the remainder of $98 million.

Cobalt also commits to use Rowan as its exclusive provider of drilling services for 5 years at market rates as determined by normal indices.

Delivered to Cobalt in early 2015, the newbuild ultradeepwater dynamically positioned drillship is capable of operating in 12,000 ft of water and drilling to measured depths of 40,000 ft. It has a 2.5 million-lb hookload capacity and two seven-ram blowout preventer systems.

It has primarily performed appraisal operations at the North Platte Inboard Lower Tertiary discovery in the Gulf of Mexico. Earlier this year, it drilled the Goodfellow No. 1 exploration well that failed to encounter hydrocarbons. OGJ

PROCESSING QUICK TAKES

Sibur expands LDPE, PP capacities at Siberia plant

OOO Tomskneftekhim, a subsidiary of Russian conglomerate PJSC Sibur Holding, Moscow, has completed a project to expand capacity and upgrade the quality of low-density polyethylene (LDPE) and polypropylene (PP) production at its Tomsk manufacturing plant in the eastern part of Western Siberia.

Launched in October 2012 and fully commissioned on Sept. 15, the expansion and upgrading project at Tomsk required a total investment of more than 10 billion rubles net of VAT.

Because As a result of the capacity expansion, LDPE production has increased to 270,000 tonnes/year from 245,000 tpy, while PP production has risen to 140,000 tpy from its previous capacity of 130,000 tpy.

The major upgrade at Tomsk comes as part of Sibur's program to improve the quality and quantity of polymers produced in Russia to help satisfy increased domestic demand and reduce the country's dependence on foreign imports, said Sibur Chairman Dmitry Konov.

Commissioning of the expanded plant follows mechanical completion of reconstruction and modernization works on the LDPE unit, which occurred during Tomsk's annual preventative-maintenance turnaround that ended in early August, Tomskneftekhim said.

The reconstructed LDPE-270 is equipped with proprietary process technology from Basell Polyolefine GMBH, a German unit of LyondellBasell Industries NV, Tomskneftekhim said.

ENOC lets contract for Dubai refinery expansion

State-owned Emirates National Oil Co. (ENOC) of Dubai has let a contract to a division of Technip SA for the design and construction of new processing and ancillary units as part of the main package of subsidiary ENOC Processing Co. LLC's Jebel Ali condensate refinery expansion project (OGJ Online, Aug. 18, 2016).

Technip Italy SPA, Rome, will provide engineering, procurement, and construction services for a 70,000-b/sd condensate processing train, which once completed, will increase Jebel Ali's capacity to 210,000-b/sd from its current 140,000-b/sd capacity, Technip said.

Additional processing units to be added as part of the expansion will include an LPG-naphtha hydrotreater, an isomerization unit, a kerosine hydrotreater, and a diesel hydrotreater, the service provider said.

While Technip confirmed Honeywell UOP LLC, Axens SA, and Maire Tecnimont SPA unit KT-Kinetics Technology SPA will be licensing processing technologies for the project, it disclosed no further details regarding specific technologies to be implemented or additional unit capacities.

Technip valued the EPC contract at $500 million-1 billion.

Scheduled for startup in fourth-quarter 2019, the expanded Jebel Ali refinery will be able to produce Euro 5-quality gasoline, jet fuel, and diesel to help meet rising demand for fuel in

accord with Dubai's national plan for growth through 2021.

At an overall cost of more than $1 billion, the Jebel Ali expansion includes a total of three separate packages, which alongside the main processing package, will cover construction of storage tanks as well as a 31,000-sq ft warehouse.

Suitable contractors currently are being short-listed ahead of the tendering process for the project's final two packages.

Irving Oil's Saint John refinery due maintenance

Irving Oil Ltd. will undertake annual fall turnaround activities starting on Sept. 26 at its 300,000-b/d St. John refinery in the eastern Canadian province of New Brunswick.

Known as Operation Red Fox, this year's turnaround will last for 6 weeks and require an investment of about $135 million (Can.), Irving Oil said.

The turnaround, which will involve 2,400 workers, will include various maintenance and infrastructure projects aimed at increasing the St. John refinery's overall efficiency and performance, according to the operator.

The company did not disclose further details regarding the specific units involved in the project or possible impacts to production during the maintenance period.

Last year, Irving Oil executed the largest turnaround in the privately held company's history at the St. John refinery (OGJ Online, Aug. 20, 2015). The $200-million (Can.) Operation Falcon involved a series of substantial upgrades to numerous unidentified units as part of a program to improve overall safety, reliability, and long-term competitiveness of the refinery. OGJ

TRANSPORTATION QUICK TAKES

PHMSA allows Colonial Pipeline to restart Line No. 1

The US Pipeline and Hazardous Safety Administration gave Colonial Pipeline Co. conditional permission to restart Line No. 1, which was shut down after an estimated 6,000-8,000 bbl of gasoline leaked from it near Shelby, Ala., on Sept. 9.

The conditional approval, which James Urisko, southern region director for PHMSA's Office of Public Safety, issued on Sept. 20, approved construction and operation of a bypass around the affected area as a temporary measure to restore service while Colonial removes the failed segment and develops a comprehensive restart plan that the US Department of Transportation agency ordered earlier (OGJ Online, Sept. 19, 2016).

Following construction and positioning of the 500-ft bypass of pipeline around the leak site on Sept. 20, the oil products pipeline operator performed a successful hydrostatic test to confirm its structural integrity and completed the connection or "tie-in" of the bypass segment to the main line this morning, Colonial Pipeline said on Sept. 21.

"Based on operational progress made overnight and the anticipated schedule of work ahead, Colonial Pipeline projects that Line 1 will be restarted this evening," it indicated.

"Subsequent to restart, it is expected to take several days for the fuel delivery supply chain to return to normal," the company said. "Some markets served by Colonial Pipeline may experience, or continue to experience, intermittent service interruptions. Colonial continues to move as much gasoline, diesel and jet fuel as possible and will continue to do so as markets return to normal."

Portugal ready to take bigger LNG role, official says

Europe could reduce its dependence on Russian gas by some 30% if it used more of Portugal and Spain's LNG import capacity, a Portuguese government official told a Washington audience. It would not even require more pipelines because the two countries' terminals could store LNG and ship it by tanker to eastern Europe and other customers, Portugal's Minister of the Sea Ana Paula Vitorino said at the Atlantic Council on Sept. 14.

The Sines LNG terminal in southern Portugal has a deepwater port that could be a storage and reexport hub if pipelines aren't available, she said. "This would reinforce the role of the North Atlantic as a global LNG leader."

Noting that Portugal and the US are long-time maritime allies, she said the southern European nation also is interested in developing its deepwater oil and gas potential, more offshore wind and wave energy, and offshore methane hydrates.

"There's still a great deal of research and development needed before methane hydrates can be considered economically viable, although the Japanese have been very active in this," Vitorino said. "It's not an exaggeration to say that methane hydrates are seen as the kind of future resource today that shale gas was 15 years ago."

Developing more offshore energy—whether from traditional or renewable sources—will require dealing candidly with affected stakeholders, particularly municipalities, she said. "Many believe this kind of exploration and production can conflict with tourism and other businesses. We're trying to explain these activities' real impacts."

She said, "We're also trying to improve our legal framework to make it more demanding. It's the only way to assure our population that we're doing this in the right way. We don't have the kind of opposition you might see in other European countries because we're moving slowly and cautiously."

Saudi KAD gets big Saudi gas line project

Saudi Aramco has named Saudi KAD, Dammam, the engineering, procurement, construction, and commissioning contractor for pipelines associated with its Master Gas Program Phase II expansion and Fadhili Gas Program (OGJ Online, July 20, 2016). The contracts cover 1,118 km of pipeline spanning a distance of more than 1,000 km, with diameters as high as 56 in. In addition to pipeline construction, the work includes valve stations, metering systems, launcher and receiver stations, fiber optic cables, and road and rail crossings.

At completion of the project in 2018, capacity of the kingdom's Master Gas System will be 12.5 bscfd, Saudi KAD said in a press statement. Aramco has said overall supply of natural gas in Saudi Arabia will expand to 17 bscfd by 2020. OGJ

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

SEPTEMBER 2016

Operational Excellence in Refining & Petrochemicals, Houston, web site: www.opexinrefiningandpetrochem.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.oilandmoney.com/ **18-19.**

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

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.**

USAEE/IAEE North American Conference, Tulsa, web site: www.usaee.org/usaee2016/ **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 Oilfield 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/ICSOGE **24-25.**

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

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

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.cwckiog.com/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&Opendivs=s3 **5-7.**

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

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

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

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

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) **24-26.**

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

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

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

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

FEBRUARY 2017

Gulf of Mexico Oil Spill & Ecosystem Science Conference, New Orleans, web site: web.iagc.org/events/2017-Gulf-of-Mexico-Oil-Spill-and-Ecosystem-Science-Conference-79/details **6-9.**

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/17choc/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**.

SPE 20th Middle East Oil & Gas Show & Conference (MEOS), Bahrain, web site: meos17.com/ **7-9.**

SPE/IADC Drilling Conference & Exhibition, Dublin, web site: www.spe.org/events/dc/2017/ **7-9.**

SPE Latin American & Caribbean Mature Fields Symposium, Salvador, Bahia, Brazil, web site: www.spe.org/events/en/2017/symposium/17lama/homepage.html **15-16.**

SPE Symposium: Iraq—The Petroleum Potentiality & Future of Energy, Amman, Jordan, web site: www.spe.org/events/en/2017/symposium/16abas/homepage.html **15-16.**

15th Global Oil & Gas Turkey, Istanbul, web site: www.global-oilgas.com/Turkey/Home/ **15-16.**

SPE/ICoTA Coiled Tubing & Well Intervention Conference & Exhibition, Houston, web site: www.spe.org/events/ctwi/2017/ **21-22.**

Corrosion 2017 Conference & Expo, New Orleans, web site: nacecorrosion.org/ **26-30.**

SPE Oklahoma City Oil & Gas Symposium, Oklahoma City, web site: www.speokcsymposium.org/ **27-31.**

IADC/SPE Managed Pressure Drilling & Underbalanced Operations Conference & Exhibition, Rio de Janeiro, web site: iadc.org/event/2017-iadcspe-managed-pressure-drilling-underbalanced-operations-conference-exhibition/ **28-29.**

Is this time different?

CONGLIN XU
Senior Editor-Economics

Standard macroeconomic textbooks usually equate lower oil prices in oil-importing countries with a reduction in costs and an increase in real private consumer spending. So, the sharp decline in the global price of crude oil—and hence, in the price of US gasoline—after June 2014 was initially expected to boost the US economy.

However, this traditional wisdom is at odds with the actual data. From second-quarter 2014 until this year's first quarter, average US real economic growth has increased only slightly to 2.2% from 1.8%.

This puzzle was recently studied by Christiane Baumeister of the University of Notre Dame and Lutz Kilian of the University of Michigan. In a new paper entitled, "Lower oil prices and the US economy: Is this time different?" Baumeister and Kilian conclude that the net stimulus of lower oil prices to cumulative US real gross domestic product growth since June 2014 is only 0.12 of a percentage point, which is effectively zero.

Transmission channels

Baumeister and Kilian show that breaking down the components of real GDP reveals a striking discrepancy between sharply reduced average growth in real nonresidential investment, driven by a dramatic fall in oil-related investment, and substantially higher average growth in real private consumption. The supply (or cost) channel of the transmission of oil-price shocks emphasized in the 1980s and 1990s, however, may be safely neglected.

"Lower fuel costs do not appear to provide much of a stimulus to firms that are oil-intensive in production (such as the transportation sector or plastics producers). The few businesses other than refining that are heavily dependent on oil inputs performed only marginally better than the rest of the economy after June 2014, if at all."

In contrast, businesses sensitive to fluctuations in consumer demand, such as tourism and retail sales, did far better than average. Average annual real consumption growth accelerated from 1.9% during 2012 and mid-2014 to 2.9% between third-quarter 2014 and this year's first quarter. Lower oil prices, through promoting private real consumption, have raised real GDP by about 0.7 of a percentage point since June 2014.

The results suggest that the primary channel of the transmission of unexpected oil-price declines must have been higher demand for domestic goods and services, which is consistent with a large share of the oil used by the US economy being used by final consumers rather than firms.

However, this stimulus effect was largely offset by a simultaneous reduction in oil-related private nonresidential investment, reducing real GDP growth by 0.62 of a percentage point. Since June 2014, oil investment has dropped at a rate of 48%/year. Excluding investment in the US oil business, real investment would have increased at a rate of 4.6%, or three times as fast as the actual data.

Is this time different?

In late 1985, a shift in Saudi policies caused a large and sustained decline in the global price of oil in 1986, resulting in an increase in private consumption and a decline in oil-related nonresidential investment—much like today.

However, the decline in oil-related investment after June 2014 was about twice as large as the decline in 1986. The magnitude of this decline is not surprising, Baumeister and Kilian argue, because the cumulative decline in the price of oil after June 2014 was twice as large as that after December 1985, while the share of oil and gas extraction in GDP was about the same in 2014 as in 1985.

Moreover, the price drop in 1986 was caused by developments in the global oil market alone, whereas in 2014-15, it was also associated with a global economic slowdown, which is reflected in a lower growth in US real exports. Had US real exports continued to grow at the same average rate of 3.2%/year as between first-quarter 2012 and second-quarter 2014, Baumeister and Kilian noted, average US real GDP growth after mid-2014 all else equal would have increased to 2.5%. OGJ

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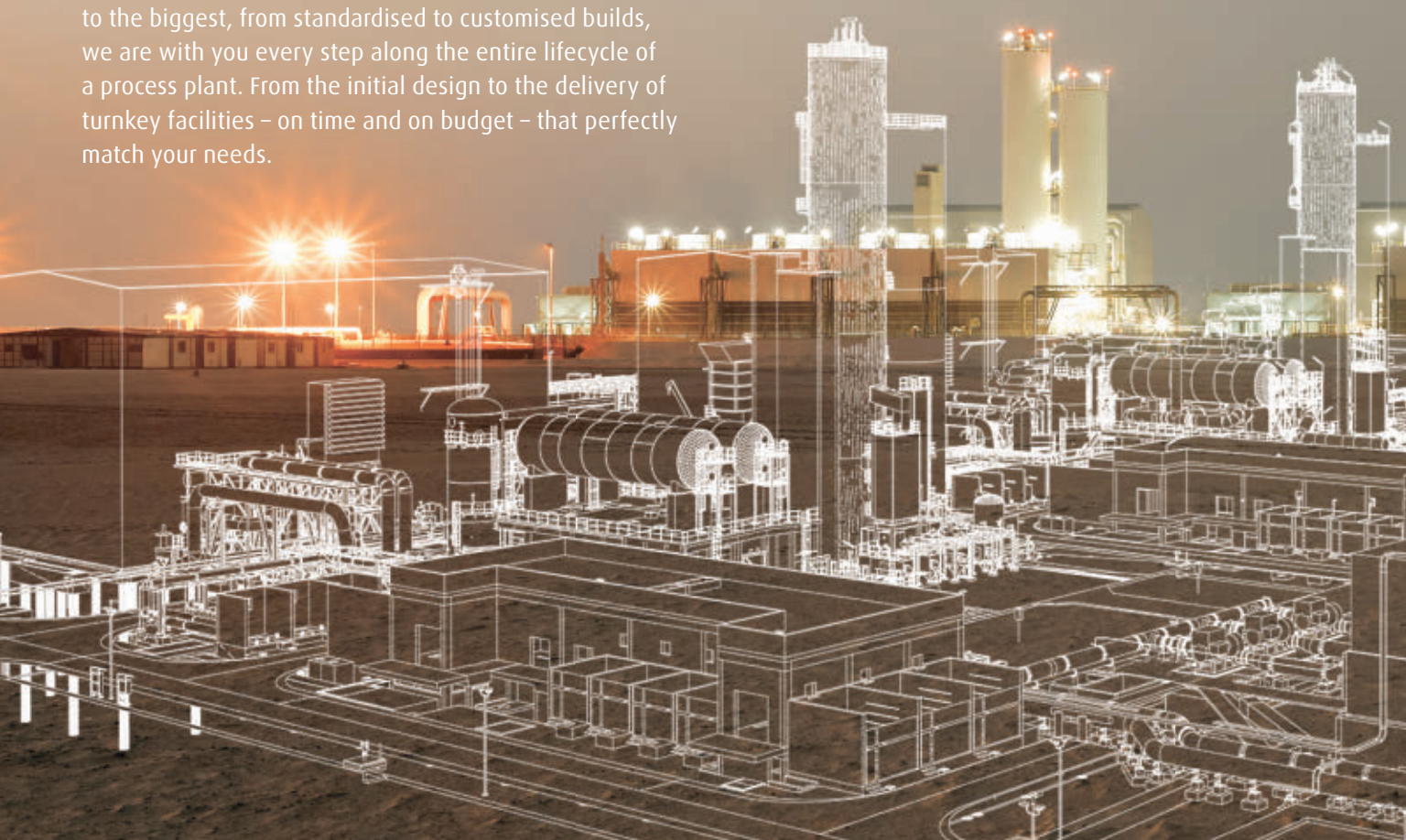

Canada backpedals

Economic pressure is fracturing the brittle diplomacies of climate remediation in Canada. While promising to force carbon pricing on provinces not meeting its standards of sacrifice, the Liberal government headed by Justin Trudeau has moderated its own ambition. In a television interview Sept. 18, Environment Minister Catherine McKenna reasserted targets set by the predecessor Conservative government for lowering emissions of carbon dioxide. When the former government set those goals in May 2015, Liberals howled. It wouldn't be enough, they complained, to cut CO_2 emissions 17% from 2005 levels by 2020 and 30% by 2030. At the Paris climate summit late last year, McKenna even described those aspirations as merely a floor.

Settling for the floor now is no wobble, McKenna assured her interviewer, because her party, unlike the Conservatives, will actually implement policy. "It's mandatory that everyone will have to have a price on carbon," she declared. "If provinces don't do that, the federal government will provide a backstop."

Difficult 'equivalency'

Alberta and British Columbia have opted for carbon taxes, while Quebec and Ontario prefer cap-and-trade systems. But those programs might not satisfy Ottawa. Meanwhile, Saskatchewan's premier says the federal government should account for the costs of CO_2 captured in his province and sold to oil producers for enhanced recovery. And the Nova Scotia premier thinks his province deserves credit for jumps in electricity prices caused by switching from coal to renewable generation fuels.

Achieving the "equivalency" McKenna extolled for nationwide carbon pricing thus will be difficult. Pursuing it will raise constitutional questions. But Trudeau wants a national plan to be ready when he attends a United Nations summit in Morocco early in November.

The Liberals fool no one. Their embrace of emission targets introduced by Conservatives is a huge concession. For making it, they deserve applause. They recognize economic reality when it bangs their skulls. Fanatics never come around.

The Canadian economy is struggling. Gross domestic product fell at an annualized rate of 1.6% in the second quarter. Economic performance of course took an extra beating from devastating fires that curtailed bitumen production in Alberta from late April through June. But that just aggravated a slump, related to oil-price weakness, in what had been Canada's main source of economic growth. According to Statistics Canada, business investment declined during April-June for the sixth straight quarter.

Trudeau nevertheless wants to punish carbon, which will raise the costs of producing and using fossil energy, which in turn will hurt oil and gas producers and energy consumers. Not raising goals for emission cuts will only moderate the pain.

No matter what national program emerges for carbon pricing, Canada won't meet even the Conservative targets that Liberals once disparaged but now accept. Toronto Sun columnist Lorrie Goldstein Harper did the arithmetic against government projections for greenhouse gas emissions in 2020 and 2030 and reached conclusions important to Canadians facing elevation of energy costs. Meeting the 2020 targets, Harper wrote on Sept. 20, requires the equivalent of shutting down Canada's entire electricity industry and most of the country's agriculture. Meeting the 2030 targets requires the equivalent of shutting down the oil and gas industry and more than half of Canadian transportation.

Deprivation will not reach these extremes. Propelled by real-world economics, politics will intervene before Canada surrenders much more prosperity to capricious goals for emissions and energy use. And the world will have another illustration of how not to formulate climate policy.

Creatures of politics

The current approach depends on numerical goals set during contests for diplomatic adulation among elites parroting hysteria scripted by extremists. The targets, creatures as they are of politics, crumble when they encounter reality. This is why the Kyoto Treaty unraveled. It's why the Paris accord will fail. It's why Canada is backpedaling.

Climate policy needs balanced incentives aligned with economic imperatives and rational assessments of the hazard. In any approach lacking stressful targets, extremists would see deficient seriousness. Others, finally, could see hope for success. OGJ

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House panel asks whether new EPA methane emissions rules are needed

Nick Snow
Washington Editor

A US House Committee on Science, Space, and Technology was divided along party lines over whether the Environmental Protection Agency's new oil and gas methane emissions rules are clearly necessary or simply a solution in search of a problem. Witnesses also offered conflicting assessments at the Sept. 15 hearing.

"Rather than expedite methane regulation, EPA should take a breath and realize that the best available science does not support new rulemaking," Environment Subcommittee Chairman Jim Bridenstine (R-Okla.) said in his opening statement. "But once again, EPA is back at it with cherry-picking and fudging data to fit a politically driven agenda aided by a cabal of establishment environmentalists."

In her opening statement, Ranking Minority Member Suzanne Bonamici said, "Methane leaks and releases are a real problem for many Americans all over this country on a daily basis. While the new rule only addresses methane emissions at new, reconstructed, and modified oil and gas sources, it is an important first step to ensure that the problems of today are not the problems of tomorrow."

Witnesses generally agreed that methane emissions need to be controlled. It's about 20 times more potent than carbon dioxide in climate damage terms during the first 20 years following its release, Elgie Holstein, senior director for strategic planning at the Environmental Defense Fund, said in his written testimony.

"While CO2 represents a continuing, long-term threat in the form of accumulated, long-lived, and rising atmospheric concentrations, methane drives near-term climate effects. The result is that 25% of the global warming we are experiencing now is due to methane emissions," he said, adding that EPA said oil and gas activity represents a third of US methane emissions—the largest of all US industrial sources.

But two other witnesses strongly questioned whether EPA's directing its regulation toward oil and gas activity was justified. "The White House justifies these new regulations by arguing that methane traps 50-75 times as much heat as CO2 in the atmosphere over 20 years, thereby contributing significantly to human-induced global warming," said Bernard L. Weinstein, Maguire Energy Institute associate director at Southern Methodist University's Cox School of Business in Dallas.

"But if the goal is to significantly reduce greenhouse gas emissions, including methane, the oil and gas industry is the wrong whipping boy," he declared.

'An astounding accomplishment'

Oil and gas industry methane releases represent only about 3.4% of all US GHG emissions, which reached a 25-year low last year, Weinstein said in his written testimony. "This is an astounding accomplishment, considering the American economy is 75% larger than it was in 1990 while domestic oil and gas production has nearly doubled over the past decade. What's more, total US methane emissions have dropped 15% since 1990," he said.

"Despite the success of the industry in reducing methane emissions, [it] is under threat of various regulations that will impose significant costs without commensurate benefits," American Petroleum Institute Upstream Director Erik Milito said in his written testimony. "[EPA] recently finalized a suite of new regulations targeting our industry."

Milito said each of the EPA rules—Control Techniques Guidelines, Source Determination, Minor Source Tribal New Source Review, and the New Source Performance Standard for the Oil and Gas Sector—will likely have a significant impact on the industry's operations. "Collectively, they have the potential to hinder our ability to continue providing the energy our nation demands," he warned.

But Holstein noted that doing something now about methane emissions, including complying with EPA's new rules, can be accomplished at low costs with existing technology. "Moreover, as information about the specific sources of methane leakage continues to improve, prevention, detection, and repair methods and technologies will also improve, bringing prices down even farther," he said.

"Regulation is never cost-free, and the new methane rules are no exception," Weinstein said. "With oil and gas prices close to 10-year lows, producers and service companies laying off tens of thousands of workers, and bankruptcies rising, does it make sense to increase the cost of staying in business?"

Milito said, "Methane emission reduction trends by the industry are now observable despite major increases in the production and use of gas. Improved policy measures, removal of bureaucratic barriers, and regulatory certainty are imperative to allow these trends to accelerate and lead to even greater GHG emission reductions, as well as the benefits of reduced air pollutants such as sulfur dioxide, nitrogen dioxide, and particular matter.

"Innovation and technological advancement through the free market, rather than command-and-control regulations, have proven to be the solution to environmental questions and should be embraced by regulators and policymakers moving forward," the API official suggested. OGJ

Moniz: US should review energy security policy to address changes

Nick Snow
Washington Editor

It is time for the US to take a fresh, comprehensive look at its energy security policies so they reflect 21st century energy market changes, challenges, and needs, US Energy Sec. Ernest G. Moniz told a US House Energy and Commerce subcommittee.

"Our energy security investments and policies should be viewed in a broad sense to value and include the resiliency, reliability, and modernization of key energy infrastructures, energy efficiency, responses to climate change, and the collective needs of our allies and partners," Moniz said during a Sept. 15 Energy and Power Subcommittee hearing.

Such an energy security view should not discount oil, Moniz said. "Indeed, the [US Strategic Petroleum Reserve] remains a highly valuable tool for meeting US energy security needs in 21st century global markets," he said.

Despite changes in the US oil production profile, the economy will remain vulnerable to significant international supply disruptions in the future, and the SPR will remain an important aspect of the national energy security strategy, Moniz said. Those production profile changes, particularly in their effects on the pipeline system, have reduced the SPR's ability to respond to a future disruption, he added.

"There are vulnerabilities not only in wires and pipes, but also in inland waterways and other key parts of our national energy transportation system," Moniz said.

His testimony came a week after DOE released a congressionally mandated long-term strategic review of the SPR that examined its surface and subsurface infrastructure, bottlenecks that could restrict distribution, costs and benefits of options, modernization requirements, and issues with the SPR's authorization under the Energy Policy and Conservation Act.

"The whole point of modernizing the SPR has been to improve the distribution of crude oil which has been compromised by our increased production," Moniz said. "We have submitted our request for the modernization's first tranche to build new marine distribution infrastructure in the Gulf region. We seek $800 million to modernize distribution equipment and another $1 billion to improve marine capabilities. We should complete work on this in about 3 years."

LNG concerns

Abundant natural gas resources and large production increases have created global, regional, and domestic market opportunities for US producers, Moniz said. "Indeed, US exports of LNG can make a major contribution to the evolution of world gas markets," he said.

Europe's more-flexible gas systems and well-developed markets make it an attractive US LNG export destination, although flat-to-soft demand there suggest intense competition for customers will develop, Moniz said. There are competing pipeline and LNG system proposals in the Eastern Mediterranean to support regional demand, with the present focus on developing regional gas pipelines, he said.

"Finally, it should be noted that the widening of the Panama Canal is taking place coincident to the growth of LNG exports from the US," Moniz said. "This multibillion dollar infrastructure improvement could help facilitate and lower transportation costs for the US LNG trade with Asia and possibly to destinations on the west coast of South America."

Asked about a provision that would require DOE to decide within 30 days whether an LNG export proposals is in the national interest as part of broader energy policy reforms before a Senate-House conference, Moniz said he does not believe it is needed.

"Since we changed our process in 2014, we have approved—quite speedily—all the export applications, sometimes as short as one day after [the US Federal Energy Regulatory Commission] approved its permits to a few weeks. We have been committed to address these applications expeditiously," he told the subcommittee.

Addressing climate change also will be a crucial component in developing modern, effective energy security policies, Moniz said. "Just this week, a number of military leaders pointed out that climate change can have an impact on our national security, including energy," he said. "As we go into a low-carbon transition, we're addressing this, but we also need to address threats to our energy infrastructure and response to interruptions. We need to think about addressing our security and climate issues in an integrated way." OGJ

NICK SNOW
Washington Editor | Blog at www.ogj.com

Colorado's emissions study

Colorado's Air Quality Control Commission (AQCC) received a report on Sept. 15 from a 3-year study of oil and gas production air emissions and dispersants along the northern Front Range that was led by Colorado State University (CSU) researchers.

Data from this study, and from a similar one in Garfield County, completed in June, will be used in a health-risk assessment that the state's Department of Public Health and Environment (DPHE), of which the AQCC is a part, expects to complete by Summer 2018.

Information from the two studies represents one of the most comprehensive assessments of air toxics, ozone precursors, and greenhouse gas (GHG) emission rates from oil and gas well operations to date, a DPHE official said.

"These studies will provide us with critical information to design a detailed and accurate health-risk assessment so we can answer questions related to potential health concerns related to oil and gas operations," said Larry Wolk, DPHE's executive director and chief medical officer.

The new study could draw more attention than its predecessor because it examined oil and gas operations' emissions near Colorado's most populous region instead of along the much more rural Western Slope.

DPHE will coordinate the health-risk assessment using the data from this study and is contracting the work to a third party consultant, AQCC said. It is soliciting formal proposals for the assessment and expects to have a contract in place by December.

Jeffrey Collett, a professor and head of CSU's Department of Atmospheric Science, was the North Front Range study's principal investigator, and presented his team's findings at the AQCC's meeting.

The study was designed to characterize and quantify emission rates and dispersion of air toxics, ozone precursors, and GHGs from oil and gas operations in the Denver-Julesburg basin on the northern Front Range.

Focus on three activities

The study aimed to quantify emissions from three specific production activities: hydraulic fracturing, post-fracing liquids flowback, and general production operations. CSU researchers conducted 18 experiments to quantify air emission rates and dispersion of air toxics, ozone precursors, and GHGs from each of the three processes.

Four oil and gas producers—Anadarko Petroleum Co., Encana Corp., Noble Energy Inc., and PDC Energy Inc.—were recruited to participate in the study and provided access to field operations for emission measurement

Overall, production emissions, which may continue for many years, were found to be lower than the shorter-term fracing and flowback emissions, which last for a few days to a few weeks. Emissions in the North Front Range were slightly lower than in Garfield County, but contained heavier-weight organic compounds, likely due to differences in the geology between the basins, DPHE said. OGJ

RINs program within RFS created opportunities for fraud, report says

Nick Snow
Washington Editor

A program that the US Environmental Protection Agency designed to help refiners and other obligated parties meet renewable fuel volume obligations under the federal Renewable Fuel Standard actually "provided the unintended framework for a new and persistent area of fraud," a report released Sept. 20 by E&W Strategies charged.

The structure of the Renewable Identification Numbers (RIN) market, which was designed to create a more efficient trading system, ultimately opened the door for misconduct by creating an extended chain of custody for the environmental credits that often passed through brokers, said E&W Strategies Pres. Doug Parker, who was a special agent in EPA's Criminal Investigation Division for 24 years, in a report commissioned by Valero Energy Corp.

That extended chain mandates that obligated parties—refiners and importers that essentially have no influence on the purchase and blending of renewable fuel—"make large-scale, and often unverifiable, purchases of these credits to meet their regulatory mandates," Parker said in the report.

"In practical terms, those with no leverage to influence the blending of renewable fuel or to ensure its validity are required to purchase vast quantities of RINs from entities [that] have no responsibility to ensure the validity of the product, and can profit from the process by separating RINs for later sale at the blending point," Parker said.

At the same time, EPA lacked resources to oversee the market, he

said. "This combination, along with the inherent lack of transparency in this market, laid the ground for large-scale fraud in the RFS," Parker said. RFS Strategies, which he leads, is part of the Washington-based Earth & Water Group, a strategic advisory organization based in Washington.

The American Petroleum Institute and American Fuel & Petrochemical Manufacturers have each called for major changes in the RINs program and other parts of the RFS that they believe Congress needs to reform substantially at least and possibly repeal outright. US crude-oil production increases and product demand declines since it was expanded as part of the 2007 Energy Independence and Security Act (EISA 2007) may have made certain portions of the RFS unnecessary and possibly counter-productive, they argue.

In the nearly 10 years since EISA 2007 expanded the RFS, which the 2005 Energy Policy Act established, the program has fallen short of its legislative goals and needs to be structurally revised, Parker said.

"As the former senior federal law enforcement officer who initiated and oversaw a nationwide effort aimed at investigating significant fraud in the program, I believe the existing regulatory and oversight framework will continue to provide opportunities for illegal exploitation and lead to competitive distortions in this sector," Parker said.

"Additionally, maintaining the status quo will deprive the American public of the full energy, consumer, and environmental benefits the founding statutes sought to provide while continuing to expose US taxpayers to ongoing fraud," Parker warned. OGJ

Major LNG exports by Egypt seen unlikely

Even as production of natural gas rebounds next year, Egypt will have difficulty recovering its role as a steady exporter of LNG, says Facts Global Energy (FGE), London.

The country's production fell below 4 bscfd in July from 6 bscfd in 2009 but will reverse course as major developments start coming on stream. FGE cites:

- Deepwater Zohr field, which will start production at 1 bscfd next year, increasing to 2.7 bscfd in 2019 after a second phase of development by Eni SPA and partners.
- BP PLC's West Nile Delta project, which will begin at 800 MMscfd-1 bscfd late in 2017 after tie-back of Giza and Fayoum fields to modified facilities at Rosetta integrated with a gas plant handing output from Raven field.
- BP's development of offshore Atoll gas field, where production is expected to start at 300 MMscfd in the third quarter of 2018 (OGJ Online, June 20, 2016).
- Possible redevelopment of the West Delta Deep Marine block operated by Royal Dutch Shell PLC, where production has fallen to 250 MMscfd from more than 900 MMscfd in 2009 and the operator hasn't sanctioned further investment. FGE says a redevelopment phase could start in the second half of 2008 if Shell signs a new agreement--but probably not at a rate able to offset declines.

Because domestic gas use is increasing, Egypt must rely on LNG, imports of which are expected to exceed 6 million tonnes this year after totaling 2.8 million tonnes last year.

The country has two floating storage and regasification units at the port of Ain Sukhna and plans to charter a third, to be moored at Safaga on the Red Sea.

FGE says Egyptian LNG imports might peak at 6.6 million tonnes in 2017 and decline to 5.4 million tonnes in 2018 as domestic production increases. But the country might still need 3.5-4 million tonnes of LNG in 2020.

Egyptian Natural Gas Holding Co. continues to load occasional cargoes of LNG at Idku and probably will continue to do so during the next 3-4 years, FGE says. The sales will help it pay debts to Shell and other producers.

But continuous operation of liquefaction plants is unlikely.

"In the longer term, Egypt is not expected to return into the LNG market at full capacity unless it ramps up its production through new gas discoveries or starts gas imports by pipeline from Mediterranean countries," FGE says. OGJ

LNG to be marginal source of global supply, BP exec says

Curtis Williams
OGJ Correspondent

BP PLC's Global Chief Economist Spencer Dale has forecast that the US Henry Hub will be the benchmark for global LNG prices into the future. He said US LNG will be the marginal source of global supply and therefore LNG prices are likely to be determined by prices at Henry Hub.

Speaking at a luncheon in Trinidad and Tobago held to discuss the 2016 BP Statistical Review, Dale forecast that over the short term there will be an oversupply of LNG with a new train coming on stream every 9 weeks.

Dale said this is likely to keep prices relatively low with Henry Hub prices averaging $3/MMbtu while prices in Europe and Asia average $1-2 higher than at Henry Hub. However, Dale said in the long run there will be an increase in LNG demand, which will balance supply and demand and lead to LNG prices taking their cue from Henry Hub.

BP's chief economist opined that global LNG supplies will continue to rise and overtake pipelines as the major source of supplying gas to the world. Dale explained that this is because LNG is more nimble than pipeline gas and can respond rap-

idly to market changes.

He pointed to the case of the Asian market in 2011 following the Fukushima nuclear disaster in Japan, where there was a strong need for additional LNG supply, which led to higher prices.

He said, "If you have a pipeline then you cannot respond. You have to keep on pumping wherever you were pumping. But if you are the captain of a ship in the ocean, then you can turn your vessel around and take that gas to the place where it is fetching the highest price."

Dale told the luncheon audience that the growth in LNG will be driven mainly by Australia and the US with the emergence of a global integrated gas market. He said the US was likely to have excess LNG capacity, which it will use to sell additional quantities of LNG into the global system as long as it can cover the variable costs.

Dale said the shale revolution was here to stay and that by 2035, shale will be responsible for half the gas supply growth worldwide.

He said while the US will remain king of shale, it is expected that Russia and China will also increase their gas production but from conventional sources.

Dale said gas will be used increasingly to replace coal to power the future industries and provide electricity for the millions who will be lifted out of poverty in countries like India and China. OGJ

Tangguh LNG partners let contract for third train

Robert Brelsford
Downstream Technology Editor

The BP PLC-led Tangguh partnership has let a contract to GE Oil & Gas to provide equipment for Train 3 of the $12-billion Tangguh LNG expansion project in Teluk Bintuni Regency of Indonesia's Papua Barat province (OGJ Online, Oct. 22, 2014).

GE Oil & Gas will supply gas turbine-driven compressor strings for the third liquefaction train, which will expand LNG production by 3.8 million tonnes/year, bringing total plant production at Tangguh to 11.4 million tpy, the service provider said.

Alongside on-site support and development of local talent for installation of the LNG train, GE Oil & Gas will deliver the following as part of the contract:

• A low, medium-pressure mixed refrigerant (MR) string that includes one horizontally split centrifugal compressor for low-pressure MR and one barrel-type centrifugal compressor for medium-pressure MR driven by a GE MS7001EA gas turbine and a helper-starter steam turbine.

• A propane, high-pressure MR string that includes one horizontally split centrifugal compressor with side streams for propane and one barrel-type centrifugal compressor for high-pressure MR, also driven by a GE MS7001EA gas turbine and a helper-starter steam turbine.

• A heat-recovery steam generator for each of the two strings.

To be manufactured at GE locations in Greenville, SC, and Florence, Italy, equipment for Train 3 will be ready for shipment to Indonesia in mid-2018, said GE Oil & Gas, which also provided the original equipment for Tangguh's Trains 1 and 2 (OGJ Online, July 22, 2004).

While it confirmed the majority of LNG production from the new train would be used to supply energy to Indonesia's domestic market, the service provider did not reveal a value of the contract for its work on the expansion project.

This latest contract award follows the partners' July announcement of reaching final investment decision for development of the Tangguh expansion, which in addition to Train 3, will include two offshore platforms, 13 production wells, an expanded LNG loading facility, and supporting systems (OGJ Online, July 1, 2016).

The Tangguh LNG project is operated by BP Berau Ltd. on behalf of the other PSC partners as contractor to SKK Migas. BP Berau and its affiliates in Indonesia hold 37.16% interest.

Other Tangguh PSC partners are MI Berau BV 16.3%, CNOOC Muturi Ltd. 13.9%, Nippon Oil Exploration (Berau) Ltd. 12.23%, KG Berau Petroleum Ltd. and KG Wiriagar Petroleum Ltd. 10%, Indonesia Natural Gas Resources Muturi Inc. 7.35%, and Talisman Wiriagar Overseas Ltd. 3.06%. OGJ

HollyFrontier, HEP ink dropdown deal for Woods Cross refinery units

Robert Brelsford
Downstream Technology Editor

Independent refiner HollyFrontier Corp., Dallas, has entered an agreement in principle to sell newly built crude, fluid catalytic cracking and polymerization units at its 45,000-b/sd Woods Cross refinery in West Bountiful, Utah, just north of Salt Lake City, to consolidated variable interest entity Holly Energy Partners LP (HEP), also of Dallas (OGJ Online, Sept. 8, 2015).

Subject to the execution of definitive agreements and other customary closing conditions, HEP subsidiary Holly Energy Partners Operating LP will purchase the units from HollyFrontier's wholly owned subsidiary HollyFrontier Woods Cross Refining LLC (HFWCR) for aggregate cash consideration of $275 million, the companies said.

As part of the deal's closing, HEP Operating and HFWCR plan to enter 15-year tolling agreements for each unit containing minimum quarterly throughput commitments from HF-

WCR, with the subsidiaries' obligations under those agreements to be guaranteed by HEP and HollyFrontier.

In conjunction with the proposed transaction, HEP also has agreed to a private placement with unidentified clients of Tortoise Capital Advisors LLC for about $100 million of common equity.

The balance of the purchase price for HFWCR's assets will be financed by borrowings under existing revolving-credit agreement, HEP said.

The proposed transaction, which HollyFrontier said it expects will be immediately accretive to unitholders, is scheduled to close on or about Oct. 1.

HEP's acquisition of the processing assets comes as part of an ongoing collaborative effort with HollyFrontier to grow business by leveraging HollyFrontier's refining footprint and commercial commitments alongside HEP's logistic capabilities.

HollyFrontier Corp. has entered an agreement in principle to sell newly built crude, FCC, and polymerization units at its 45,000-b/sd Woods Cross refinery in West Bountiful, Utah. Photo from HollyFrontier.

Woods Cross expansion

Designed to increase the refinery's processing capacity by 14,000 b/sd to its current capacity of 45,000 b/sd capacity, Phase 1 of the Woods Cross expansion was commissioned in June, HollyFrontier said on Aug. 3 in its second-quarter earnings call.

Alongside the relocation-revamp of an 8,000-b/sd fluid catalytic cracker (FCC) and polymerization units from Western Refining Inc.'s shuttered refinery in Bloomfield, NM (OGJ Online, Jan. 4, 2012), the $420-430 million project was to include the addition of a rail-loading rack for intermediates and finished products associated with refining waxy crude oil.

With the crude expansion and installation of the site's second FCC now completed, the refinery is equipped with the following capacities:

- Crude distillation: 45,000 b/sd.
- FCC: 18,000 b/sd.
- Alkylation-polymerization: 6,000 b/sd.
- Gas oil hydrocracking: 15,000 b/sd.
- Distillate hydrotreating: 10,000 b/sd.

While the expanded crude unit was designed to run primarily Utah West crudes, HollyFrontier currently is modifying the plant to enable increased runs of Canadian Syncrude as a result of crude pricing issues in the Uintah basin, George Damiris, HollyFrontier's president and chief executive, said in August.

HollyFrontier has scheduled a turnaround of the Woods Cross refinery's older FCC during this year's fourth quarter, Damiris said.

Future plans

In a March presentation to investors, HollyFrontier said it also was considering a potential Phase 2 expansion at Woods Cross, which would expand capacity to 60,000 b/sd by 2018 at an estimated cost of $750 million-1 billion.

To date, the company has yet to reveal further details regarding the status of the possible Phase 2 expansion, which would involve increases to both crude and vacuum distillation capacities as well as installation of a hydro-isom unit, a hydrogen plant, and a distillate hydrotreater, the company previously said. OGJ

Petronas lets contracts for Pengerang complex

Robert Brelsford
Downstream Technology Editor

State-run Petronas has let contracts for industrial gas and power supplies and equipment for its long-planned Pengerang integrated complex (PIC) and refinery and petrochemical integrated development (RAPID) project at Pengerang in southeastern Johor, Malaysia (OGJ Online, Aug. 11, 2014).

As part of long-term supply agreements with Petronas, Pengerang Gas Solutions Sdn. Bhd. (PGS)—a joint venture of Linde AG subsidiary Linde Malaysia Sdn. Bhd. and Petronas Gas Bhd. (PGB)—will invest €150 million to build a grassroots air gas plant that will produce gaseous oxygen and nitrogen to meet RAPID's industrial gas needs, Linde said.

The air gas plant, which will include two large air-separation units (ASU) and associated gas installations, will be built on site at the PIC complex and be equipped with proprietary air-separation technology from Linde, which also will provide engineering, procurement, construction, and commissioning services for the ASUs as part of a separate contract with PGS, the service provider said.

Linde disclosed no further details regarding the value or specific duration of the supply agreements.

Petronas has let contracts for industrial gas and power supplies for its long-planned PIC and RAPID projects at Pengerang in southeastern Johor, Malaysia. Photo from Petronas.

Under development by PGB, the ASU plant will use cryogenic fractionation distillation at a very low temperature (-196° C.) to separate atmospheric air into its primary components (oxygen and nitrogen), Petronas said.

The plant will include two separate ASU trains that, combined, will have a capacity to generate 1,600 tonnes/day (tpd) of oxygen and 1,800 tpd of nitrogen to provide PIC with 46,233 cu m/hr (1,584 tpd) of O_2 and 45,631 cu m/hr (1,370 tpd) of N2.

Commissioning of the ASU plant is scheduled to coincide with startup of operating units at RAPID's refining leg, which previously was targeted for July 2018.

Separately, Petronas has let a contract to General Electric International Inc. to provide a mix of equipment designed to enable uninterrupted power supplies to RAPID in the event of unexpected electrical outages at the site, GE said.

Through a strategic partnership with Petronas subsidiary Prime Sourcing International (PSI), GE will supply 17 emergency diesel generator (EDG) packages, five transportable switch rooms, as well as the electrical balance of the plant.

Each EDG package will include GE's 616 diesel engines coupled with generators and electrical equipment bounded in e-houses, according to the service provider. GE did not disclose a value of the contract.

PIC overview

Alongside RAPID, PIC will include six associated facilities, namely the Pengerang cogeneration plant (PCP), an LNG regasification terminal, the ASU plant, a raw-water supply project, a liquid bulk terminal, as well as central and shared utilities and installations.

With a planned capacity of 300,000 b/d, the RAPID refinery will produce naphtha and LPG feedstock for the petrochemical complex, as well as gasoline and diesel meeting Euro 5-quality specifications to help address Asia-Pacific's growing need for petroleum and petrochemical products.

The $27-28-billion complex will have a combined capacity to produce 7.7 million tonnes/year of various grades of products, including differentiated and specialty chemicals products.

As of late June, Petronas said it had reached the midpoint of the project schedule and remained on track to achieve overall startup of PIC during first-quarter 2019 (OGJ Online, June 27, 2016).

By mid-July, however, Petronas also had commissioned PIC's raw-water supply project, Projeck Air Mentah RAPID (PAMER), which became the first installation within PIC to reach startup, Petronas said.

Designed to provide a total of 260 million l./day of raw water from the Seluyut dam mostly to PIC operations, PAMER also will channel 30 million l./day of raw water to Johor State's Sungai Lebam reservoir to help supplement existing municipal water supplies for the public in and around Pengerang, the company said.

In late August, Petronas additionally confirmed completion of major construction-related works on two 200,000-cu m LNG storage tanks for PIC's LNG regasification terminal.

Equipped with a 3.5 million-tpy capacity for LNG regasification, handling, storage, unloading, and reloading to help supply primary gas needs to PCP, as well as other PIC installations, the LNG regasification terminal is due to be commissioned by fourth-quarter 2017, according to Petronas. OGJ

AltaGas starts up midstream complex in British Columbia

Robert Brelsford
Downstream Technology Editor

AltaGas Ltd. of Calgary has fully commissioned the first phase of its Townsend integrated midstream complex in northeast British Columbia, in the heart of the Montney natural gas play, about 100 km north of Fort St. John and 20 km southeast of the company's Blair Creek plant.

The Townsend complex, which officially opened on Sept. 14, includes a 198-MMcfd shallow-cut natural gas processing plant, a 25-km natural gas-gathering line connecting to the Blair Creek field gathering area, and two liquids-egress lines (30 km total) connecting to the associated Townsend truck terminal, AltaGas said.

The $430-million (Can.) complex, which first entered commercial operation on July 10, was completed ahead of schedule and about $40 million under budget, the operator said.

First announced in 2014, the Townsend development follows a strategic alliance between AltaGas and Painted Pony Petroleum Ltd., also of Calgary, to develop processing and marketing for natural gas and NGLs for Painted Pony's liquids-rich Montney gas production (OGJ, June 1, 2015, p. 58).

AltaGas Ltd. has fully commissioned the first phase of its Townsend integrated midstream complex in northeast British Columbia. Photo from AltaGas.

At the time, AltaGas said it also was considering a second phase of Townsend, which would include a deep-cut system for enhanced recovery of additional NGLs and fractionation.

While precise details regarding a second phase at Townsend have yet to be confirmed, the company already has discussed the potential for building the proposed deep-cut plant with various producers in the region, according David Harris, president and chief executive officer of AltaGas.

"We certainly see the ability to double our Townsend facility, well before the end of the decade," Harris told investors in the company's second-quarter 2016 conference call on July 21.

"Based on our current views, we expect we could eventually get to 1 bcf of processing capacity in the region," added Harris, without disclosing a timeframe for the possible expansion.

To date, Painted Pony has reserved all of the Townsend complex's firm capacity, as well as that of the associated natural gas gathering line, under 20-year take-or-pay agreements.

In its 2015 annual report, AltaGas said it expected Painted Pony also would reserve all firm-liquids capacity for the related egress lines and truck terminal. OGJ

OGJ's 2016 Worldwide Refining Survey

Forms for the 2016 edition of OGJ's annual Worldwide Refining Survey were sent to respondents via e-mail during the first 2 weeks of August. Completed survey forms must be returned by Oct. 1, 2016, to guarantee inclusion of respondents' data in this year's published survey, which will be available for download by OGJ subscribers on Dec. 5, 2016. For past and new respondents, if you have not received the annual survey package and feel this has occurred in error, please contact Robert Brelsford, OGJ Downstream Technology Editor, at rbrelsford@ogjonline.com or (713) 963-6232.

THE EDITOR'S PERSPECTIVE

Underwater monument a trophy in Obama's quest for legacy

by **Bob Tippee**, Editor

Oil and gas drilling was hardly imminent off New England when US President Barack Obama created an underwater museum for the study of marine life.

But that doesn't mean the oil and gas industry won't be affected by creation on Sept. 15 of the Northeast Canyons and Seamounts Marine National Monument.

Before then, any plan to drill in federal water off New England would have been blocked at state level under the Coastal Zone Management Act.

Obama, though, habitually ignores state prerogatives and programs not of his making.

A White House statement on creation of the 4,913-sq-mile monument even co-opted climate change.

"By permanently protecting these resources and reducing other threats to their respective ecosystems, these actions will also improve ocean resilience in the face of climate change and help to sustain the ocean ecosystems and fishing economies in these regions for the long run," it said.

In fact, statutory and Executive Branch protections already are in place. And a network of fishery management councils and commissions further protects marine habitat.

Apparently unsatisfied with those endeavors, Obama exercised presidential authority conferred by the Antiquities Act of 1906, passed to protect archeological sites and unique natural features against careless digging and commercial pilfering.

Congress clearly didn't design the law to be a tool of presidential control over federal land. Yet presidents of both parties have used it that way.

What should worry the oil and gas industry is how Obama's new monument designation, like his expansion a month earlier of a monument off Hawaii, conforms with his late-term quest for environmental trophies.

On Sept. 9, his administration suspended work on the Dakota Access crude oil pipeline hours after a court ruled against an injunction sought by activists.

In service to his environmental legacy, Obama craves adulation of the community, from which he emerged, of people dedicated to stopping work they find disagreeable.

Higher on their target list than lobster fishing, of course, remains anything related to fossil energy.

(From the subscription area of www.ogj.com, posted Sept. 16, 2016; author's e-mail: bobt@ogjonline.com)

ADVERTISERS INDEX

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OIL&GAS JOURNAL online research center. PennEnergy research

IMPORTS OF CRUDE AND PRODUCTS

	Districts 1-4		District 5		Total US		
	9-9 2016	9-2 2016	9-9 2016	9-2 2016	9-9 2016	9-2 2016	9-11* 2015
	1,000 b/d						
Total motor gasoline	635	594	14	14	649	608	722
Mo. gas. blending comp.	613	585	14	13	627	598	680
Distillate	118	107	21	0	139	107	66
Residual	149	258	110	39	259	297	167
Jet fuel-kerosine	79	64	100	0	179	64	45
Propane-propylene	59	76	24	13	83	89	82
Other	781	849	110	19	891	869	576
Total products	**1,821**	**1,948**	**379**	**85**	**2,200**	**2,034**	**1,658**
Total crude	**6,933**	**5,860**	**1,128**	**1,209**	**8,061**	**7,069**	**7,189**
Total imports	**8,754**	**7,808**	**1,507**	**1,294**	**10,261**	**9,102**	**8,847**

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

OGJ CRACK SPREAD

	9-16-16*	9-18-15*	Change	Change, %
	$/bbl			
SPOT PRICES				
Product value	58.52	59.47	(0.95)	(1.60)
Brent crude	46.21	47.34	(1.13)	(2.38)
Crack spread	12.31	12.14	0.18	1.47
FUTURES MARKET PRICES				
One month				
Product value	59.00	59.45	(0.44)	(0.74)
Light sweet crude	44.52	45.46	(0.94)	(2.07)
Crack spread	14.49	13.98	0.50	3.60
Six month				
Product value	59.43	61.04	(1.61)	(2.64)
Light sweet crude	47.47	48.05	(0.58)	(1.20)
Crack spread	11.96	12.99	(1.03)	(7.96)

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

EXPORTS OF CRUDE AND PRODUCTS

	Total US		
	9-9-16	9-2-16	*9-11-15
	1,000 b/d		
Finished motor gasoline	553	655	419
Jet fuel-kerosine	129	102	133
Distillate	1,137	968	1,223
Residual	294	234	414
Propane/propylene	424	503	505
Other oils	1,248	1,103	1,001
Total products	**3,785**	**3,565**	**3,695**
Total crude	**418**	**501**	**477**
Total exports	**4,203**	**4,066**	**4,172**
NET IMPORTS			
Total	6,059	5,037	4,675
Products	(1,585)	(1,531)	(2,037)
Crude	7,644	6,568	6,712

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

CRUDE AND PRODUCT STOCKS

District	Crude oil	Motor gasoline		Jet fuel, kerosine	Fuel oils		Propane-propylene
		Total	Blending comp.		Distillate	Residual	
	1,000 bbl						
PADD 1	17,218	64,010	58,052	9,208	66,589	11,311	7,654
PADD 2	148,734	50,406	44,689	7,220	33,687	1,386	29,441
PADD 3	269,090	78,916	69,446	15,588	43,178	22,795	60,245
PADD 4	25,698	6,742	4,871	795	3,586	173	[1] 3,751
PADD 5	50,058	28,286	26,059	9,939	15,713	4,918	—
Sept. 9, 2016	**510,798**	**228,360**	**203,117**	**42,750**	**162,753**	**40,583**	**101,091**
Sept. 2, 2016	**511,356**	**227,794**	**202,299**	**41,841**	**158,134**	**39,586**	**99,126**
Sept. 11, 2015[2]	**455,894**	**217,387**	**190,614**	**41,077**	**153,963**	**38,989**	**97,693**

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

REFINERY REPORT—SEPT. 9, 2016

District	REFINERY OPERATIONS		REFINERY OUTPUT				
	Gross inputs	Crude oil inputs	Total motor gasoline	Jet fuel, kerosine	Fuel oils		Propane-propylene
					Distillate	Residual	
	1,000 b/d				1,000 b/d		
PADD 1	1,092	1,101	3,187	76	328	61	142
PADD 2	3,819	3,812	2,630	240	1,075	78	422
PADD 3	8,877	8,629	2,290	934	2,718	227	994
PADD 4	672	670	345	38	230	14	[1] 202
PADD 5	2,666	2,517	1,597	471	582	121	—
Sept. 9, 2016	**17,126**	**16,729**	**10,049**	**1,759**	**4,933**	**501**	**1,760**
Sept. 2, 2016	**17,279**	**16,930**	**10,178**	**1,799**	**5,032**	**390**	**1,730**
Sept. 11, 2015[2]	**16,780**	**16,512**	**9,708**	**1,655**	**5,076**	**431**	**1,560**
	18,436	**Operable capacity**	**92.9**	**utilization rate**			

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

STATISTICS

OGJ GASOLINE PRICES

	Price ex tax 9-14-16	Pump price* 9-14-16	Pump price 9-16-15
	¢/gal		
(Approx. prices for self-service unleaded gasoline)			
Atlanta	155.4	204.8	220.3
Baltimore	161.8	212.8	224.1
Boston	158.9	203.8	224.7
Buffalo	152.9	214.0	231.5
Miami	147.0	202.0	232.5
Newark	166.1	199.0	217.4
New York	175.1	236.2	239.4
Norfolk	189.9	230.6	213.2
Philadelphia	142.7	211.5	236.2
Pittsburgh	160.4	229.2	235.1
Wash., DC	183.8	225.7	232.8
PAD I avg	163.1	215.4	227.9
Chicago	223.2	271.8	295.1
Cleveland	174.3	220.7	211.9
Des Moines	167.4	217.8	272.3
Detroit	168.8	217.8	234.0
Indianapolis	170.5	218.8	211.9
Kansas City	165.0	200.7	233.7
Louisville	173.3	217.7	253.8
Memphis	180.9	220.7	220.6
Milwaukee	159.4	210.7	263.5
Minn.-St. Paul	166.7	213.7	233.1
Oklahoma City	158.0	193.4	202.9
Omaha	162.7	208.8	231.3
St. Louis	168.0	203.7	205.6
Tulsa	161.8	197.2	210.5
Wichita	166.3	208.7	214.7
PAD II avg	171.1	214.8	233.0
Albuquerque	154.3	191.5	220.2
Birmingham	165.8	205.0	208.2
Dallas-Fort Worth	162.8	201.2	205.7
Houston	161.6	200.0	206.1
Little Rock	160.7	200.9	214.2
New Orleans	163.8	202.2	209.4
San Antonio	160.3	198.7	213.1
PAD III avg	161.3	199.9	211.0
Cheyenne	176.0	218.4	263.0
Denver	189.2	229.6	273.7
Salt Lake City	183.5	231.4	277.7
PAD IV avg	182.9	226.5	271.5
Los Angeles	244.9	303.9	341.3
Phoenix	181.5	218.9	230.4
Portland	178.4	227.9	284.4
San Diego	218.9	277.9	336.6
San Francisco	224.9	283.9	327.1
Seattle	198.0	260.9	303.4
PAD V avg	207.8	262.2	303.9
Week's avg.	**173.5**	**220.1**	**240.9**
Aug. avg.	**170.1**	**216.7**	**264.7**
July avg.	**178.7**	**225.4**	**278.7**
2016 to date	**162.5**	**209.2**	—
2015 to date	**204.0**	**251.3**	—

*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

	9-16-16	9-18-15
Alabama	1	3
Alaska	5	13
Arkansas	—	4
California	5	14
Land	5	13
Offshore	—	1
Colorado	19	33
Florida	—	—
Illinois	2	3
Indiana	—	—
Kansas	—	9
Kentucky	1	—
Louisiana	41	70
N. Land	14	30
S. Inland waters	4	4
S. Land	4	7
Offshore	19	29
Maryland	—	—
Michigan	—	—
Mississippi	4	5
Montana	—	1
Nebraska	—	1
New Mexico	28	49
New York	—	—
North Dakota	27	67
Ohio	14	19
Oklahoma	65	106
Pennsylvania	21	33
South Dakota	—	—
Texas	244	365
Offshore	1	—
Inland waters	—	1
Dist. 1	20	42
Dist. 2	15	39
Dist. 3	4	23
Dist. 4	8	12
Dist. 5	4	6
Dist. 6	8	18
Dist. 7B	6	5
Dist. 7C	21	33
Dist. 8	133	154
Dist. 8A	14	17
Dist. 9	1	3
Dist. 10	9	12
Utah	5	5
West Virginia	10	17
Wyoming	13	24
Others NV-1	1	1
Total US	**506**	**842**
Total Canada	**132**	**182**
Grand total	**638**	**1,024**
US oil rigs	416	644
US gas rigs	89	198
Total US offshore	20	31
Total US cum. avg. YTD	**486**	**1,064**

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

OGJ PRODUCTION REPORT

	[1]9-16-16	[2]9-18-15
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	18	27
Alaska	455	438
California	532	572
Colorado	307	347
Florida	5	7
Illinois	21	26
Kansas	95	132
Louisiana	1,284	1,347
Michigan	15	18
Mississippi	51	69
Montana	60	77
New Mexico	357	416
North Dakota	1,042	1,198
Ohio	62	74
Oklahoma	280	429
Pennsylvania	15	19
Texas	3,541	3,743
Utah	79	102
West Virginia	20	23
Wyoming	186	236
Other states	49	45
Total	**8,474**	**9,345**

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

US CRUDE PRICES

	9-16-16 $/bbl*
Alaska-North Slope 27°	37.05
Light Louisiana Sweet	38.40
California-Midway Sunset 13°	34.25
California Buena Vista Hills 26°	45.24
Wyoming Sweet	39.28
East Texas Sweet	37.00
West Texas Sour 34°	34.50
West Texas Intermediate	39.50
Oklahoma Sweet	39.50
Texas Upper Gulf Coast	33.25
Michigan Sour	31.50
Kansas Common	38.50
North Dakota Sweet	31.00

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

WORLD CRUDE PRICES

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

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

REFINED PRODUCT PRICES

	9-9-16 ¢/gal		9-9-16 ¢/gal
Spot market product prices			
Motor gasoline (Conventional-regular)		No. 2 Distillate Low sulfur diesel fuel	
New York Harbor	142.40	New York Harbor	141.40
Gulf Coast	139.60	Gulf Coast	142.90
		Los Angeles	144.90
Motor gasoline (RBOB-regular)		Kerosine jet fuel	
New York Harbor	159.10	Gulf Coast	132.70
No. 2 heating oil		Propane	
New York Harbor	133.70	Mont Belvieu	48.60

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

IHS PETRODATA RIG COUNT

SEPT. 16, 2016

	Total supply of rigs	Marketed supply of rigs	Marketed contracted	Marketed utilization rate (%)
US Gulf of Mexico	105	50	36	72.0
South America	51	44	38	86.4
Northwest Europe	108	86	60	69.8
West Africa	69	52	27	51.9
Middle East	170	159	122	76.7
Southeast Asia	94	79	41	51.9
Worldwide	834	681	482	70.8

Source: IHS Petrodata
Data available in PennEnergy Research Center

US NATURAL GAS STORAGE[1]

	9-9-16	9-2-16	9-9-15	Change, %
	bcf			
East	832	812	782	6.4
Midwest	954	928	873	9.3
Mountain	227	224	193	17.6
Pacific	317	313	348	(8.9)
South Central	1,169	1,160	1,119	4.5
Salt	285	280	297	(4.0)
Nonsalt	884	880	823	7.4
Total US	**3,499**	**3,437**	**3,315**	**5.6**
	June-16	**June-15**	**Change, %**	
Total US[2]	**3,196**	**2,656**	**20.3**	

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

WORLD OIL BALANCE

	EIA						IEA						OPEC					
	2016		2015				2016		2015				2016		2015			
	2nd qtr.	1st qtr.	4th qtr.	3rd qtr.	2nd qtr.	1st qtr.	2nd qtr.	1st qtr.	4th qtr.	3rd qtr.	2nd qtr.	1st qtr.	2nd qtr.	1st qtr.	4th qtr.	3rd qtr.	2nd qtr.	1st qtr.
	Million b/d						Million b/d						Million b/d					
DEMAND																		
OECD	45.5	46.7	46.4	46.7	45.4	46.5	45.9	46.6	46.3	46.7	45.3	46.5	46.0	46.6	46.3	46.5	45.4	46.4
Non-OECD	49.3	47.7	47.8	48.3	48.0	46.4	49.7	48.7	49.2	49.0	48.8	47.1	47.5	46.6	47.7	47.4	46.6	45.5
TOTAL DEMAND	**94.8**	**94.4**	**94.1**	**95.0**	**93.4**	**92.9**	**95.6**	**95.3**	**95.5**	**95.7**	**94.1**	**93.6**	**93.5**	**93.2**	**94.0**	**93.9**	**92.0**	**91.9**
SUPPLY																		
Non-OPEC																		
OECD	26.0	27.0	27.1	26.8	26.4	26.6	22.8	24.0	24.2	23.9	23.5	23.8	24.3	25.3	25.5	25.3	24.9	25.2
Non-OECD	30.6	30.2	30.8	30.8	30.7	30.4	28.6	28.9	29.1	28.9	29.0	29.2	31.2	31.7	32.0	31.8	31.9	32.0
OPEC																		
Crude Oil	32.4	31.8	32.0	32.2	31.7	31.1	33.0	32.8	32.6	32.7	32.4	31.4	32.8	32.5	32.2	32.2	31.9	31.0
NGLs	6.9	6.7	6.6	6.6	6.6	6.5	6.8	6.8	6.7	6.7	6.7	6.6	6.3	6.2	6.2	6.2	6.2	6.0
TOTAL SUPPLY	**95.8**	**95.6**	**96.5**	**96.4**	**95.4**	**94.6**	**95.8**	**96.5**	**97.2**	**97.0**	**96.3**	**95.5**	**94.6**	**95.7**	**95.9**	**95.5**	**94.9**	**94.2**
Stock change	**0.9**	**1.2**	**2.4**	**1.4**	**2.0**	**1.7**	**0.2**	**1.2**	**1.7**	**1.3**	**2.2**	**1.9**	**1.1**	**2.5**	**1.9**	**1.6**	**2.9**	**2.3**

[1]IEA total supply includes processing gains and global biofuels.
Source: US Energy Information Administration, International Energy Agency, OPEC
Data available in PennEnergy Research Center. **NOTE: No new data at press time**

OECD TOTAL NET OIL IMPORTS

	Sept. 2015	Aug. 2015	July 2015	Sept. 2014	Chg. vs. previous year	
			Million b/d		Volume	%
Canada	(2,775)	(3,002)	(2,664)	(2,508)	(156)	6.2
US	4,451	5,205	4,544	5,234	(690)	(13.2)
Mexico	(604)	(725)	(542)	(810)	268	(33.1)
France	1,787	1,423	1,612	1,633	(21)	(1.3)
Germany	2,247	2,258	2,063	2,190	(127)	(5.8)
Italy	1,082	1,221	1,106	947	159	16.8
Netherlands	898	1,064	823	838	(15)	(1.8)
Spain	1,354	1,153	1,177	1,152	25	2.2
Other importers	4,442	4,257	4,369	4,097	272	6.6
Norway	(1,544)	(1,277)	(1,712)	(1,525)	(187)	12.3
United Kingdom	613	694	371	574	(203)	(35.4)
Total OECD Europe	**10,879**	**10,793**	**9,809**	**9,906**	**(97)**	**(1.0)**
Japan	3,806	4,095	4,191	3,901	290	7.4
South Korea	2,241	2,403	2,207	2,189	18	0.8
Other OECD	1,620	1,411	1,546	1,558	(12)	(0.8)
Total OECD	**19,618**	**20,180**	**19,091**	**19,470**	**(379)**	**(1.9)**

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

OECD* TOTAL GROSS IMPORTS FROM OPEC

	May 2016	Apr. 2016	Mar. 2016	May 2015	Chg. vs. previous year	
			Million b/d		Volume	%
Canada	287	326	260	198	89	44.9
US	3,509	3,308	3,538	3,215	294	9.1
Mexico	—	—	—	11	(11)	(100.0)
France	540	677	709	917	(377)	(41.1)
Germany	260	190	296	466	(206)	(44.2)
Italy	613	725	652	420	193	46.0
Netherlands	439	377	473	629	(190)	(30.2)
Spain	548	724	588	734	(186)	(25.3)
Other importers	1,324	1,252	1,305	1,583	(259)	(16.4)
United Kingdom	320	261	327	588	(268)	(45.6)
Total OECD Europe	**4,044**	**4,206**	**4,350**	**5,337**	**(1,293)**	**(24.2)**
Japan	3,374	3,461	3,540	3,307	67	2.0
South Korea	3,130	2,730	2,789	2,454	676	27.5
Other OECD	214	175	65	235	(21)	(8.9)
Total OECD	**14,558**	**14,206**	**14,542**	**14,757**	**(199)**	**(1.3)**

*Organization for Economic Cooperation and Development.
Source: US Energy Information Administration
Data available at PennEnergy Research Center.

US PETROLEUM IMPORTS FROM SOURCE COUNTRY

	May 2016	Apr. 2016	Average YTD 2016	Average YTD 2015	Chg. vs. previous year	
			1,000 b/d		Volume	%
Algeria	102	137	137	105	32	30.5
Angola	161	242	175	108	67	62.0
Kuwait	177	199	197	239	(42)	(17.6)
Nigeria	297	243	247	62	185	298.4
Saudi Arabia	1,171	1,154	1,141	1,046	95	9.1
Venezuela	787	788	779	811	(32)	(3.9)
Other OPEC	947	588	692	440	252	57.3
Total OPEC	**3,642**	**3,351**	**3,368**	**2,811**	**557**	**19.8**
Canada	3,571	3,558	3,862	3,830	32	0.8
Mexico	676	788	675	774	(99)	(12.8)
Norway	44	89	79	53	26	49.1
United Kingdom	106	149	117	108	9	8.3
Virgin Islands	—	—	—	—	—	—
Other non-OPEC	2,144	1,894	1,852	1,821	31	1.7
Total non-OPEC	**6,541**	**6,478**	**6,585**	**6,586**	**(1)**	**(0.0)**
TOTAL IMPORTS	**10,183**	**9,829**	**9,953**	**9,397**	**556**	**5.9**

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

OIL STOCKS IN OECD COUNTRIES*

	May 2016	Apr. 2016	Mar. 2016	May 2015	Chg. vs. previous year	
			Million bbl		Volume	%
France	167	171	166	175	(8)	(4.6)
Germany	290	286	289	288	2	0.7
Italy	123	126	120	122	1	0.8
United Kingdom	82	79	80	78	4	5.1
Other OECD Europe	827	817	823	1,364	(537)	(39.4)
Total OECD Europe	**1,489**	**1,479**	**1,478**	**1,419**	**70**	**4.9**
Canada	171	180	184	181	(10)	(5.5)
US	2,079	2,063	2,052	1,958	121	6.2
Japan	574	566	560	582	(8)	(1.4)
South Korea	235	230	236	224	11	4.9
Other OECD	111	112	109	107	4	3.7
Total OECD	**4,659**	**4,630**	**4,619**	**4,471**	**188**	**4.2**

*End of period.
Source: US Energy Information Administration
Data available at PennEnergy Research Center.

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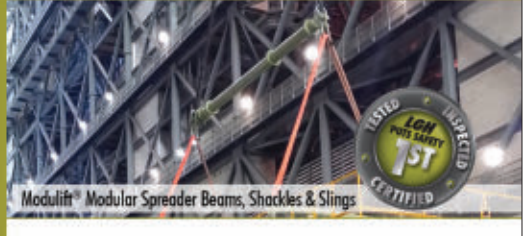

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