JUNE 20, 2016 | USD 20

DIGITAL WEEKLY EDITION

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USD 20

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June 20, 2016 | Volume 114.6b

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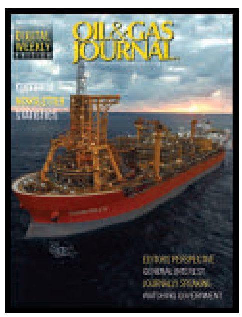
GENERAL INTEREST



COVER

Final tensioning and chain cutting *operations have been completed by InterMoor on the Turritella floating production, storage, and offloading vessel, which will be installed and used for Shell Offshore Inc.'s ultradeepwater Stones project in the Walker Ridge protraction area of the Gulf of Mexico (OGJ Online, Oct. 2, 2015). Stones field, 200 miles southwest of New Orleans, is estimated to contain more than 2 billion boe in place. The Turritella FPSO will connect to subsea systems in 9,500 ft of water. This project marks the second FPSO to be used in the gulf, and the first FPSO in the gulf for Shell. Photo from InterMooor.*


Smart move
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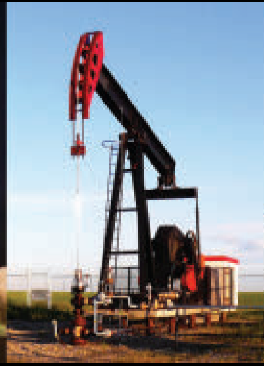

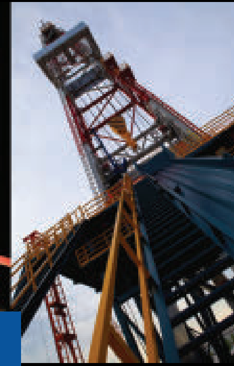

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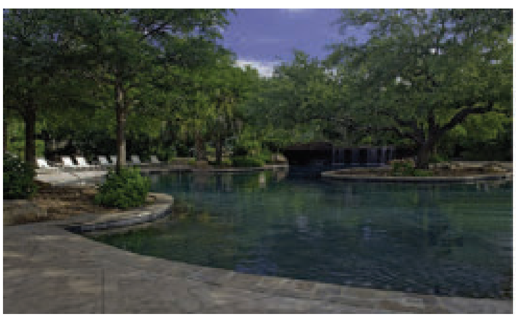
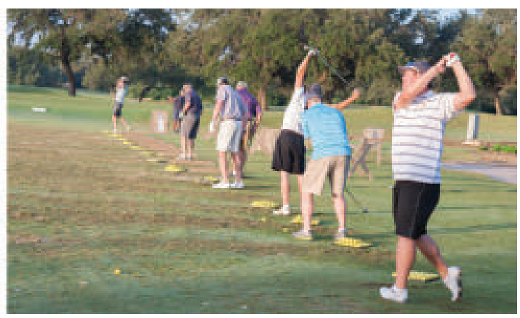
For additional details on TIPRO's 2016 Summer Conference, visit www.tipro.org or call (512) 477-4452.

TIPRO President Ed Longanecker with Pioneer Natural Resources President & COO Timothy Dove at TIPRO's Summer Conference

TIPRO's Summer Conference also provides several opportunities to network with other members of the association and form new business connections.





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June 20, 2016

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GENERAL INTEREST QUICK TAKES

BP Norge and Det norske agree to merge

BP Norge AS and Det norske oljeselskap ASA have agreed to merge through a share-and-cash transaction into an independent exploration and production company with more than 120,000 boe/d of production offshore Norway.

The main industrial shareholders will be Aker ASA, which owns 49.99% of Det norske, and BP. Aker will own 40% of the merged company, and BP will own 30%. Other Det norske sharholders will hold the remaining 30%. Named Aker BP ASA, the new company will be based in Fornebuporten, Norway.

At yearend 2015, BP Norge had proved and probable reserves of 225 million boe. Its net average production from 13 licenses last year was 62,100 boe/d.

Det norske, Trondheim, had 498 million boe of proved and probable reserves last year and net average production from 84 licenses of 60,000 boe/d.

The company operates Alvheim, Volund, Vilje, and Jette oil and gas fields, which are on production, and Ivar Aasen oil and gas field, which is under development. It holds 20% and 22% interests in two of the three licenses encompassing giant Johan Sverdrup oil and gas field, which is under development.

Det norske will issue 135.1 million shares based on 80 krone ($9.74)/share to acquire BP Norge, including assets, a tax-loss carry-forward of $267 million, and a net cash position of $178 million. Aker will acquire 33.8 million of those shares from BP at the same price. BP also will receive a $140-million cash payment.

BP said all of BP Norge's 850 employees will transfer to the new company. At yearend 2015, Det norske employed 530 workers.

Det norske Chairman Oyvind Eriksen will be chairman of the combined company. Det norske CEO Karl Johnny Hersvik will have that position at Aker BP.

Teine to buy Saskatchewan assets for $975 million

Teine Energy Ltd. has agreed to acquire all of fellow Calgary-based firm Penn West Petroleum Ltd.'s assets in Saskatchewan, including the Dodsland Viking area, for $975 million in cash. The deal is effective May 1 and expected to close in the second quarter.

Split evenly between medium and heavy-oil properties in the West and the Dodsland light-oil properties in the East, the assets cover 16,300 boe/d of production (91% liquids) as of the first quarter, estimated proved plus probable reserves of 53.2 million boe (91% liquids), and 410,000 net acres of undeveloped land.

Teine, a Viking producer backed by the Canada Pension Plan Investment Board, acquires and develops oil and gas properties in the Western Canadian Sedimentary Basin, with 90% of its total production weighted towards crude oil and NGLs.

Dave Roberts, Penn West president and chief executive officer, explained the move from his firm's perspective. "While the Dodsland Viking was an important contributor to Penn West's growth profile in recent years, this transaction will allow us to replace these largely mature assets by funding the more prospective and numerous growth opportunities in our Cardium and Alberta Viking positions—areas where we are more focused and more competitive," he said.

Penn West in the Cardium area has 700 net sections and 1,500 drilling locations, with first-quarter production of 19,500 boe/d. The firm notes the deal gives it the financial flexibility to begin exploiting the area's multihorizon potential. In the Belly River and Mannville formations, the firm has 500 net sections that it believes are highly prospective and will form part of its development strategy over the next several years.

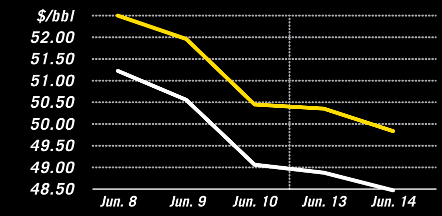
Penn West says that its technical understanding of the Viking play in recent years has extended into Alberta through an active farmout program as well as the exploratory findings and strong production results from offsetting peers. Its Alberta Viking position encompasses 174 net sections and has 500 potential drilling locations. First-quarter production from Viking in Alberta was 1,000 boe/d, but Penn West notes the area will be a primary focus of its 2017 development program.

API, Mexican regulator to share standards, practices

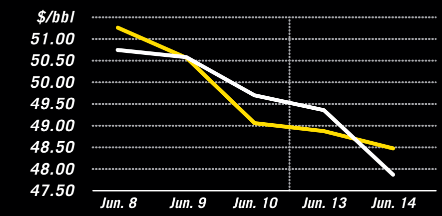
The American Petroleum Institute and Mexico's recently created oil and gas regulatory agency, the National Agency for Industrial Safety and Environmental Protection of the Hydrocarbons Sector (ASEA), reached an agreement for ASEA to get access for its safety programs to API's technical standards and recommended practices.

The memorandum of understanding that API and ASEA reached earlier this month assures that ASEA will be able to in-

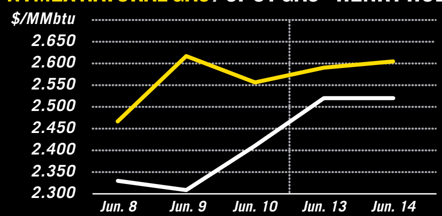
ICE BRENT / NYMEX LIGHT SWEET CRUDE



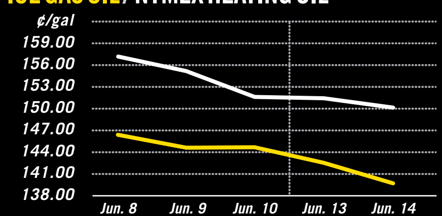
WTI CUSHING / BRENT SPOT



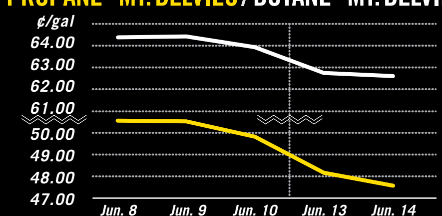
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



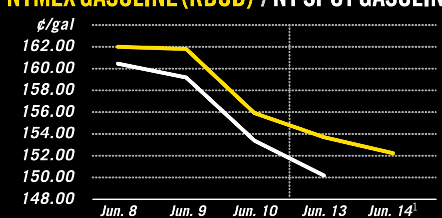
ICE GAS OIL / NYMEX HEATING OIL



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

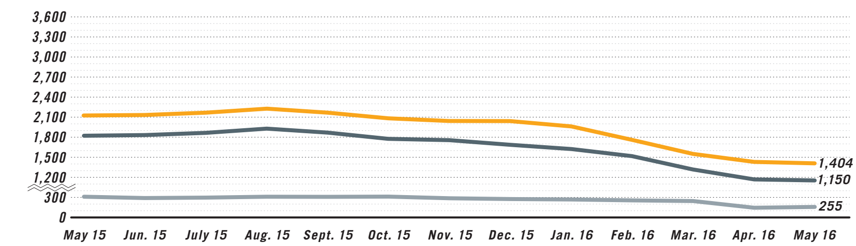
US INDUSTRY SCOREBOARD — 6/20

Latest week 6/3	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	9,639	9,393	2.6	9,310	8,947	4.1
Distillate	3,954	3,939	0.4	3,736	4,035	(7.4)
Jet fuel	1,596	1,592	0.3	1,563	1,536	1.8
Residual	393	170	131.2	307	204	50.5
Other products	4,755	4,625	2.8	4,940	4,772	3.5
TOTAL PRODUCT SUPPLIED	20,337	19,719	3.1	19,856	19,494	1.9
Supply, 1,000 b/d						
Crude production	8,760	9,506	(7.8)	9,007	9,352	(3.7)
NGL production[2]	3,329	3,120	6.7	3,392	3,086	9.9
Crude imports	7,634	6,973	9.5	7,801	7,246	7.7
Product imports	2,281	2,009	13.5	2,092	2,049	2.1
Other supply[2 3]	2,185	2,045	6.8	2,024	2,328	(13.1)
TOTAL SUPPLY	24,189	23,653	2.3	24,316	24,061	1.1
Net product imports	(1,388)	(1,385)	—	(1,817)	(1,576)	—
Refining, 1,000 b/d						
Crude runs to stills	16,318	16,463	(0.9)	16,048	16,003	0.3
Input to crude stills	16,524	16,647	(0.7)	16,250	16,233	0.1
% utilization	90.2	92.7	—	89.3	90.5	—

Latest week 6/3	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	532,476	535,702	(3,226)	470,603	61,873	13.1
Motor gasoline	239,629	238,619	1,010	217,354	22,275	10.2
Distillate	151,377	149,623	1,754	133,477	17,900	13.4
Jet fuel–kerosine	44,163	42,336	1,827	39,388	4,775	12.1
Residual	39,667	41,029	(1,362)	40,795	(1,128)	(2.8)
Stock cover (days)[4]			Change, %		Change, %	
Crude	32.6	32.9	(0.9)	28.7	13.6	
Motor gasoline	24.9	24.7	0.8	23.1	7.8	
Distillate	38.3	36.8	4.1	33.9	13.0	
Propane	76.3	74.6	2.3	88.2	(13.5)	
Futures prices[5] **6/10**			Change		Change	Change,%
Light sweet crude ($/bbl)	50.18	48.98	1.20	59.65	(9.47)	(15.9)
Natural gas, $/MMbtu	2.52	2.37	0.15	2.64	(0.12)	(4.7)

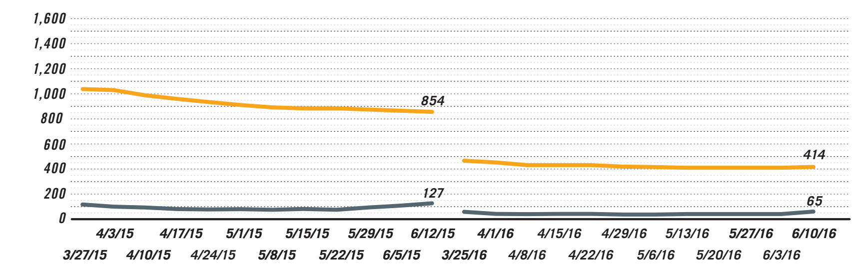
[1]Based on revised figures. [2]OGJ estimates. [3]Includes other liquids, refinery processing gain, and unaccounted for crude oil. [4]Stocks divided by average daily product supplied for the prior 4 weeks. [5]Weekly average of daily closing futures prices.
Source: Energy Information Administration, Wall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

clude the API recommended standards and practices in its own regulations, API said. The MOU also supports the opportunity for regulatory agencies in the Gulf of Mexico to cooperate in implementing safety and environmental management systems (SEMS) based on API's Recommended Practice 75 and Center for Offshore Safety (COS) processes and best practices, it added.

The US Bureau of Safety and Environmental Enforcement has incorporated SEMS into its federal regulatory requirements for offshore oil and gas operations in US waters, API noted. OGJ

EXPLORATION & DEVELOPMENT QUICK TAKES

Pemex seeking partners to explore Trion field

Mexico's Petroleos Mexicanos (Pemex) is seeking partners to explore and develop offshore Trion field in the Perdido belt, a Pemex executive said at a news conference in Mexico City.

Pemex Chief Executive Jose Antonio Gonzalez Anaya said Pemex estimates Trion to hold 480 million boe in total proved, potential, and possible oil and gas reserves. The field lies in more than 2,500 m of water about 200 km offshore Mexico. No contract details were immediately available such as what percentage share Pemex expects.

The National Hydrocarbons Commission is expected to select partners for Pemex as part of a tender process. Results are expected to be announced in December at the same time as the government holds an auction for 10 deepwater blocks. Trion is adjacent to several blocks being offered in the deepwater round.

Drilling campaign commences in Colombia

GeoPark Ltd. has started its drilling program on the Llanos 34 block in Colombia. The company spudded its Jacana 3 appraisal well with plans to follow with the Jacana 4.

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

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

Baltim SW-1 well finds gas in East Nile Delta

The Baltim SW-1 exploration well in the Baltim South development lease of the East Nile Delta reached 3,750 m TD in 25 m of water, encountering 62 m of net gas pay in high-quality Messinian sandstones, partners Eni SPA and BP PLC reported.

The discovery, drilled 12 km offshore, is a new accumulation along the same trend as Nooros field, discovered in July 2015 and currently producing 65,000 boe/d (OGJ Online, May 13, 2016). The "Great Nooros Area" is now estimated to hold 70-80 billion cu m of gas in place.

Further appraisal activities will be required to underpin the full resource potential of the discovery, BP says. "Our plan is to utilize existing infrastructure which will accelerate the development of the discovery and expedite early production start-up," said Hesham Mekawi, regional president of BP North Africa.

In parallel with appraisal and development activities, Eni says it will continue exploring the Great Nooros Area by drilling two more wells.

Eni unit IEOC operates Baltim South with 50% interest while BP holds the other 50%. Baltim SW-1 was drilled by Petrobel, a joint venture of IEOC and state partner Egyptian General Petroleum Corp.

USGS: Colorado's Mancos shale holds 66 tcf of gas

The Mancos shale of the Piceance basin in Colorado holds mean undiscovered, technically recoverable resources of 66 tcf of shale natural gas, 74 million bbl of shale oil, and 45 million bbl of NGLs, according to an updated assessment by the US Geological Survey.

The previous USGS assessment of Mancos was completed in 2003 as part of a comprehensive assessment of the greater Uinta-Piceance province. That estimate totaled 1.6 tcf of shale gas.

"We reassessed the Mancos shale in the Piceance basin as part of a broader effort to reassess priority onshore US continuous oil and gas accumulations," explained USGS scientist Sarah Hawkins, lead author of the assessment. "In the last decade, new drilling in the Mancos shale provided additional geologic data and required a revision of our previous assessment of technically recoverable, undiscovered oil and gas."

Tight gas in the younger, shallower parts of the Mancos is produced primarily from vertical and directional wells in which the reservoirs have been hydraulically fractured. Shale oil and gas in the older and deeper intervals are produced mostly from horizontal wells that have been fraced. OGJ

DRILLING & PRODUCTION QUICK TAKES

Statoil approved to start Rutil development

A consortium led by Statoil ASA has been given consent by the Norwegian Petroleum Directorate (NPD) to start up facilities and production on the Rutil deposit on Gullfaks South in the Tampen area of the North Sea. Production is scheduled to start in August-September.

Rutil, a gas-filled structure on production license 050, will be developed with a standard subsea template with four well slots and two gas production wells. The template is tied-in to existing systems on the Gullfaks A facility.

The plan for development and operation for Rutil was submitted in December 2014 (OGJ Online, Dec. 16, 2014). Statoil estimates in-place volumes at 17.9 billion standard cu m of gas and 2 million standard cu m of condensate. Expected recoverable reserves are 11.9 million standard cu m of oil equivalent.

NPD notes that investment in the project has totaled $460 million, down from the $590 million estimated in the PDO.

Statoil operates production license 050 with 51% interest.

ONHYM

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OFFICE NATIONAL DES HYDROCARBURES ET DES MINES

MOROCCO

CALL FOR TENDER ANNOUCEMENT

L'OFFICE NATIONAL DES HYDROCARBURES ET DES MINES « ONHYM » is issuing a tender in order to select companies for the development of gas resources of the prospective Gharb Center Area located onshore (part of the Gharb basin which has produced gas for decades)

The partnership with the selected company will be formalized through a petroleum agreement giving the right to an exploration permit

The bidders interested in the present tender are invited to request the corresponding documentation by sending a demand to ONHYM at the following address:

5, Avenue Moulay Hassan – BP. 99, Rabat – Maroc.

Tel 212 (0) 5 37 23 98 98

Fax 212 (0) 5 37 28 16 34

The terms of reference (CPS) can be downloaded from ONHYM web site (Link: http://www.onhym.com/en/calls-for-tender.html)

The deadline for bid reception is **19 August 2016, at 4 PM.**

Jack up delivered for Culzean development

Sembcorp Marine AS said it has delivered the high-specification Maersk Highlander jack up drilling rig to Maersk Higher UK Ltd. The harsh-environment jack up, formerly known as the Hercules Highlander, is scheduled to be deployed in Culzean field in the UK North Sea. Production is expected in 2019. Maersk Oil is the operator.

The Maersk Highlander was designed to operate in 400 ft of water and drill to 30,000 ft. The rig's construction started in September 2014 and was completed on schedule.

Culzean is a high-pressure, high-temperature field discovered in 2008 on Block 22/25 and appraised during 2009-11 (OGJ Online, Jan. 30, 2009).

Eni Portugal lets contract for Saipem drillship

Eni Portugal BV let a contract to Saipem SPA for the Saipem 12000 ultradeepwater drillship, which will operate offshore Portugal starting in this year's third quarter. Saipem 12000 is capable of operating in more than 3,000 m of water. Samsung Heavy Industries built the vessel in 2010. Previously, Total SA terminated its lease of the drillship in Angola.

In addition, Saipem received a contract extension with Eni Norge for the Scarabeo 8, a semisubmersible drilling rig designed to operate in up to 3,000 m of water. OGJ

PROCESSING QUICK TAKES

Blog: Strikes show French refining vulnerability

Refinery strikes now easing in France highlight vulnerabilities of the country's refining industry, especially in comparison with that of the US, according to analysts at Turner, Mason & Co. (OGJ Online, May 26, 2016).

Strikes at six of eight French refineries have crippled the industry, wrote John Mayes and John Auers in a June 14 blog post on Turner, Mason's web site.

A refining industry strike in the US last year, the first in many years, had much less effect on operations because managers, supplemented by support staff, worked in place of strikers.

In France, labor laws "complicate the operation of French refineries" and "will certainly impact future investment decisions," Mayes and Auers wrote.

A general strike that began last month to protest labor reforms became work stoppages affecting railroads and sanitation services as well as refineries and terminals.

The government approved withdrawal from strategic oil reserves. Much of the lost middle-distillate products, which dominate French demand, were replaced by supply from the Amsterdam-Rotterdam-Antwerp (ARA) refining center.

The writers said Total's 247,000-b/d Gonfreville l'Orcher refinery, France's largest, remains down.

Restarting are Total's Donges (219,000 b/d), Feyzin (109,000 b/d), and Grandpuits (101,000 b/d) refineries.

Total's 153,000-b/d La Mede refinery restarted quickly after the strike and is now at 80% of capacity.

The other refinery hit hard by the strike, Petrolneos's 207,000-b/d Lavera facility, is operating at reduced rates.

Exxon's two French refineries, Fos-sur-Mer (133,000 b/d) and Port Jerome (236,000 b/d) are operating normally.

Mayes and Auers noted that the disruption drew down ARA product inventories and improved normally thin European refining margins.

Citgo, Aruba ink deal to restart idled refinery

Citgo Petroleum Corp., an indirect wholly owned subsidiary of Petroleos de Venezuela SA (PDVSA), has reached an agreement with the Aruban government to restart Valero Energy Corp.'s former 235,000-b/d refinery in San Nicolas, Aruba.

Citgo Aruba will invest $450-650 million to transform the refinery into a plant designed for upgrading extra-heavy crude from Venezuela's Orinoco belt, Citgo and PDVSA said.

Comparable to a large turnaround, the refinery overhaul project will take 18-24 months to complete and will be financed by external sources, said Nelson P. Martinez, Citgo's president and chief executive.

To be operated by Citgo Aruba under a 15-year lease agreement with a 10-year option to extend, the refinery will have a capacity to upgrade 209,000 b/d of Venezuelan extra-heavy crude into intermediate feedstock for further processing at Citgo's refineries in the US, Martinez said.

Naphtha recovered at the plant, in turn, will be sold to PDVSA for use as diluent.

Alongside creating an opportunity to increase production from Orinoco belt, the proposed refinery restart also paves the way for a complementary project under consideration involving construction of a 17-mile gas pipeline from Venezuela to Aruba that would deliver excess natural gas from Venezuela's Paraguana region for use at the upgrader, PDVSA and Citgo said.

While the companies have yet to identify contractors for the project, they did confirm Yokogawa Electric Corp.'s recently acquired subsidiary KBC Advanced Technologies Ltd. and KBR Inc., among other unidentified consultants, participated in an assessment of the project's technical and financial viability.

Citing "unfavorable refinery economics and the outlook for continued unfavorable refinery economics," Valero suspended crude processing operations at the Aruba refinery in March 2012 before converting it into a products terminal.

Westlake, Axiall sign merger agreement

Westlake Chemical Corp., Houston, has entered a definitive agreement to acquire Axiall Corp., Atlanta, in a deal that, once completed, would form the third-largest chloralkali producer and second-largest polyvinyl chloride (PVC) producer in North America.

As part of the agreement, Westlake will purchase all of the outstanding shares of Axiall for $33/share in an all-cash transaction, representing an enterprise value of about $3.8 billion, including debt and certain other Axiall liabilities, the companies said in a joint release.

The transaction, which has been unanimously approved by both companies' boards of directors, is scheduled to be completed by this year's fourth quarter, pending approval of Axiall's stockholders as well as other customary closing conditions.

In conjunction with the merger agreement, Westlake, which already has secured commitments from its banks to finance the transaction, also has agreed to withdraw its nomination of a slate of director nominees at Axiall's upcoming annual stockholders' meeting to be held on June 17.

Upon finalizing the merger, Westlake said it will continue working with South Korea's Lotte Chemical Corp. and LACC LLC, a subsidiary of Axiall and Lotte Chemical USA Corp.'s 50–50 joint venture Eagle US 2 LLC, to complete LACC's proposed 1-million tonne/year ethane-based ethylene plant under construction in Lake Charles, La. (OGJ Online, June 9, 2016; Dec. 18, 2015; Sept. 3, 2015; June 18, 2015; Dec. 20, 2013).

The current merger agreement follows Axiall's rejection of Westlake's previous offers to purchase its outstanding common shares at $20/share in January and $23.12/share in March, according to Jan. 29 and Apr. 4 releases from Axiall. OGJ

TRANSPORTATION QUICK TAKES

US House approves amended pipeline safety bill

The US House unanimously approved an amended federal pipeline safety bill that included changes from bills two of its committees approved in late April and sent the reworked measure back to the Senate for further consideration. The Senate unanimously passed the original version in late March.

The amended bill, the Protecting our Infrastructure of Pipelines and Enhancing Safety (PIPES) Act of 2016, is a collaborative product of the House Energy and Commerce Committee and the House Transportation and Infrastructure Committee, and the legislation incorporates text from separate bills each committee passed in April, leaders of the two committees said.

It reauthorizes the federal pipeline safety program within the US Pipeline and Hazardous Materials Safety Administration (PHMSA) for 4 years and requires the agency to update safety regulations, increase transparency, and embrace emerging technologies, they indicated.

The bill also speeds up the process of completing outstanding safety requirements included in the 2011 reauthorization, and reforms PHMSA to be a more efficient and data-driven agency, the federal lawmakers said in a statement following the full House's vote.

AOPL Pres. Andrew J. Black noted that the PIPES Act:

• Ensures pipeline operators receive timely post-inspection information from the government to allow them to maintain and improve their safety efforts.

• Increases inspection requirements for certain underwater oil pipelines to enhance safety.

• Ensures that product composition information is quickly provided to first responders after an incident.

• Improves protection of coastal areas, marine coastal waters, and the Great Lakes by explicitly designating them as unusually environmentally sensitive to pipeline failures.

TransCanada-IEnova JV to build Texas-Mexico lines

Infraestructura Marina del Golfo (IMG)—TransCanada Corp.'s joint venture with Sempra Energy subsidiary IEnova—will build, own, and operate the 42-in. OD, 497-mile Sur de Texas-Tuxpan natural gas pipeline in Mexico. A 25-year gas transportation service contract for 2.6 bcfd with Comision Federal de Electricidad (CFE), Mexico's state-owned power company, supports the project, expected to enter service in late 2018.

The pipeline will begin offshore in the Gulf of Mexico at the border point near Brownsville, Tex., and extend along the coast to Tuxpan, Veracruz, Mexico. It will connect with Cenegas's pipeline system in Altamira, Mexico, and with TransCanada's Tamazunchale and Tuxpan-Tula pipelines, and other transporters in the region. It will be supplied by gas from the 2.6-bcfd Valley Crossing Pipeline, to be built by Spectra Energy under a CFE contract.

Valley Crossing will extend 168 miles from Agua Dulce hub in Nueces County, Tex., to Brownsville.

TransCanada previously won bids to build and operate the Tuxpan-Tula and the Tula-Villa de Reyes lines, both expected to enter service in 2018.

TransCanada will own 60% of the $2.1-billion Sur de Texas-Tuxpan project and operate it. IEnova will own the other 40%. Spectra is sole owner of the $1.5-billion Valley Crossing line.

EnLink to build Midland basin oil gathering system

A subsidiary of EnLink Midstream Partners LP and EnLink Midstream LLC plans to construct a crude oil gathering system in Upton and Midland counties, Tex., in the Permian basin.

The partnership will invest $70-80 million in the Greater Chickadee crude oil gathering project, which will include more than 150 miles of high- and low-pressure pipelines that will transport crude volumes to several major market outlets and other hub centers in the Midland area.

The project also includes the construction of multiple central tank batteries and pump, truck injection, and storage stations to expand shipping and delivery options for EnLink's producer customers. The initial phase of Greater Chickadee will be operational in this year's second half with full service expected early next year.

Greater Chickadee is supported by long-term, fee-based agreements with Permian producers. The project includes 35,000 dedicated acres in Upton County with current production averaging more than 10,000 b/d.

Formed in 2014 by the merger of the midstream assets belonging to Devon Energy Corp. and Crosstex Energy LP, EnLink Midstream has increased its presence in the Permian over the past couple of years with expansion projects (OGJ Online, Aug. 6, 2014), as well as the acquisitions of LPC Crude Oil Marketing LLC, and Coronado Midstream Holdings LLC. OGJ

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

JUNE 2016

SPE Argentina Exploration & Production of Unconventional Resources Symposium, Buenos Aires, web site: www.spe.org/events/laur/2016/ **1-3.**

23rd International Caspian Oil & Gas Conference, Baku, web site: www.oilgasconference.az/2016/?p=index **2-3.**

Society of Petroleum Evaluation Engineers (SPEE) 53rd Annual Meeting, Lake Tahoe, NV, web site: https://secure.spee.org/ **4-9.**

Canadian Energy Research Institute (CERI) 2016 Petrochemical Conference, Kananaskis, Alta., web site: ceri.ca/index.php?option=com_content&view=article&id=57&Itemid=60 **5-7.**

Australian Petroleum Production & Exploration Association (APPEA) Conference & Exhibition, Brisbane, web site: www.appeaconference.com.au/ **5-8.**

SPE Canada Heavy Oil Technical Conference, Calgary, web site: www.spe.org/events/choc/2016/ **7-9.**

Caspian Oil & Gas Exhibition, Baku, web site: www.oilgas-events.com/Caspian-OG-Exhibition/ **7-10.**

Internet of Things (IOT) in Oil & Gas Europe, Aberdeen, web site: energyconferencenetwork.com/iot-oil-gas-europe-2016/ **8-9.**

ICOGPE 2016: 18th International Conference on Oil, Gas & Petrochemical Engineering, Toronto, web site: www.waset.org/conference/2016/06/toronto/ICOGPE **13-14.**

SPE Trinidad & Tobago Section Energy Resources Conference, Port of Spain, web site: spettconf.org/ **13-15.**

Nigeria Oil & Gas Conference & Exhibition, Abuja, Nigeria, web site: www.cwcnog.com/ **13-16.**

SPE London Annual Conference: Adapting to a Challenging Oil Price Environment, London, web site: www.spe.org/events/lond/2016/ **14.**

Oil & Gas Polymer Engineering Texas 2016, Houston, web site: www.amiplastics-na.com/events/Event.aspx?code=C734&sec=5725 **14-15.**

LNG Fuels Summit, Amsterdam, website: www.lngfuelssummit.com/**14-15.**

CWC's LNG Fuels Summit, Amsterdam, web site: www.lngfuelssummit.com/ **14-16.**

IADC World Drilling 2016 Conference & Exhibition, Lisbon, www.iadc.org/event/world-drilling-2016/ **15-16.**

IADC World Drilling Conference & Exhibition, Lisbon, web site: www.iadc.org/event/world-drilling-2016/ **15-16.**

AAPG Annual Convention & Exhibition 2016, Calgary, web site: ace.aapg.org/2016 **19-22.**

AAPG 2016 Annual Convention & Exhibition, Calgary, web site: www.aapg.org/events/conferences/ace/ **19-22.**

North American Custody Transfer Measurement Conference, San Antonio, web site: www.ceesi.com **21-23.**

ICOGPE 2016: 18th International Conference on Oil, Gas & Petrochemical Engineering, Copenhagen, web site: www.waset.org/conference/2016/06/copenhagen/ICOGPE **27-28.**

The 4th Annual Cyber Security for Oil & Gas Summit, Houston, web site: www.oilandgas-cybersecurity.com/ **27-29.**

Independent Petroleum Association of America (IPAA) 86th Midyear Meeting, Colorado Springs, Colo., web site: www.ipaa.org/meeting-events/event-details/?mid=266 **27-29.**

2016 Exploration & Production Standards Conference on Oilfield Equipment & Materials, Washington, DC, web site: www.api.org/events-and-training/calendar-of-events/2016/e-p **June 27-July 1.**

Papua New Guinea Oil & Gas Summit, Port Moresby, web site: pngoilgas.com/ **28-29.**

JULY 2016

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

AUGUST 2016

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

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

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

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

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

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

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

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

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

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

SEPTEMBER 2016

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

OCTOBER 2016

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

NOVEMBER 2016

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

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

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

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

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

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

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

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

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

DECEMBER 2016

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

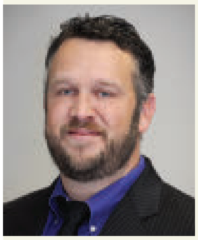
OpEx MENA 2016—Operational Excellence in Oil, Gas & Petrochemicals, Abu Dhabi, web site: www.opex.biz **5-7.**

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.**

The drill must tell



TAYVIS DUNNAHOE
Exploration Editor

Modern exploration goes far to improve drilling success in frontier plays. Recent rounds in the Barents Sea have opened new acreage that will likely be productive within the next decade (OGJ Online, Feb. 1, 2016). In Europe, the question of unconventional resources remains to be answered (OGJ Online, June 6, 2016). While geophysical understanding of the subsurface has gained contrast in today's exploration and development programs, the true nature of undiscovered resources are proven through active drilling.

A wildcat does not hold the same meaning in today's market as it did in the 1930s, and Oil & Gas Journal covered many along the US Gulf Coast during this time. In 1933, Tomball oil field was being opened 35 miles north of Houston. OGJ's Houston bureau documented the event on June 15, 1933, reporting that "There is no definite way of determining without further development just what structural or geological conditions prevail at Tomball."

Yesterday's news

Magnolia Petroleum Co.'s No. 1 Kobs well, spudded in March 1933, opened Tomball field as an oil discovery. OGJ touted the discovery as a "victory for geophysics." The discovery in Tomball produced from the oil and gas-prone Claiborne unit in the Cockfield sand from 5,500 to 5,600 ft.

J. Brian Eby later published, "The Geophysics of the Tomball Oil Field Harris County, Texas," in Geophysics, Vol. 1, No. 1, January 1936, citing, "the geophysical and drilling discovery of the Tomball oil field…marks one of the important mile-posts in the course of Gulf Coast geophysics."

The Tomball discovery was the first geophysical prospect to be admitted to oil field rank before the discovery well was drilled into sand, according to Eby. At the time, OGJ reported, "On wildcat wells, derricks usually are left up for a time but in this case within 5 days after completion of the well nothing was left on the location except the Christmas tree, a separator, and two flow tanks." The derrick and machinery were already drilling a second well.

OGJ described the ensuing land rush as "one of the most sensational wildcat lease and royalty plays on record."

The success at Tomball arrived when refraction seismographs were on the way out, and reflection seismographs were bidding for entrance into the prospecting market. "An oil field discovery on this new type of geophysical prediction was needed to reestablish confidence and insure cooperation on the part of management," Eby said. OGJ reported that the first reflection seismograph was carried out by the Vacuum Oil Co. (then a subsidiary of Magnolia) in September and October 1930.

Within 2 years of its discovery, Tomball field covered 13,000 acres of which 8,000 had proven commercially productive. According to Eby, the field had produced 2.75 million bbl of oil from 200 wells by Nov. 25, 1935.

The Cockfield formation would prove to be a prolific producer throughout the Gulf Coast region extending through South Texas and into Louisiana.

Prospecting today

Historically, the nature of Tomball field's origin was an anomaly. Analogous discoveries and new seismic methods led the way to opening a field that ultimately paid off. Science is ongoing, and exploration technology has advanced from its 1930s roots. Modern imaging provides assurance against most dry holes, and some recent studies have identified newer ways to indicate resources underground (OGJ Online, Dec. 7, 2015).

For many regions of the world, seismic exploration provides structural familiarity and a reasonable method of identifying drilling targets. Operators would rarely, if ever, declare a discovery as an oil field without further development. Most exploration wells drilled today would be considered development wells vs. wildcats.

For any frontier region, headlines are made with a discovery well as opposed to geophysical evidence. What was true for Tomball field in 1933 is true today. The only definitive proof for determining the nature of a play is further development. OGJ

THE TYRANNY OF ACTIVISM–1

Policies that stifle

Any adult who marches in public wearing a dinosaur costume should be certain about the political point he or she wishes to make. Protestors dressed that way while protesting fossil-energy projects indeed behave with unflinching certitude. They know without doubt that climate change poses a threat so dire that nothing less than revolutionizing energy use can suffice as a response. And they know equally well that anyone who disagrees with them must be logically and morally wrong. They're activists.

Their self-assured willingness to appear silly in public and to make costly demands of others evinces sincerity. To them, being sincere is more important than being right.

Dominating energy policy

In the US, in most of Europe, and in much of Canada, activism now dominates the making of energy policy. The US government is hobbling the coal industry and threatening to replicate the endeavor with natural gas. Europe is crushing its energy consumers. Several Canadian provinces are following the European example, and a Liberal national government probably will try to federalize the effort. Yet a majority of Americans didn't vote to run coal companies into bankruptcy and miners into unemployment. Europeans didn't volunteer for punishing electricity bills. And Canadians are just beginning to realize what their governments want to do to them. Activism is doing its work. Eventually, politics will do its work, too.

Activism isn't by nature bad. Indeed, it's essential to democracy. Activism can instigate constructive change. But its excesses can weaken benign institutions. Healthy democracies tolerate activism and even encourage it. But they keep it in check. They do so because unbridled activism becomes tyranny.

By definition, activism exists to counter popular will, to effect change lacking majority support. It achieves its goals with organization, focus, and persistence absent from the unwilling or unaware populations on which it would impose its will. Sometimes, activism wins support through simple persuasion, such as by creating awareness of a legitimate problem or cause previously shielded from public attention. Sometimes, activism becomes coercive.

With climate change, activism tries to frighten people into accepting policy changes certain to raise the costs of using energy and to limit resource development. Advocates of those changes insist the needed adjustments would be moderate and affordable. Those assurances are unpersuasive. The changes to energy consumption and production they demand in fact would be radical, the costs unbearable.

In Europe, changes undertaken for climate remediation once enjoyed popular support. Now that the costs are palpable, that is changing fast. The European example might partly be what keeps Americans in compelling numbers from identifying climate change as a priority of policy-making and their elected representatives from enacting much of the activist program.

Ever persistent, activists have taken the fight to other fronts in the US. They now control regulatory agencies, especially the Environmental Protection Agency. There, in courts, and in the streets, they're assembling an effective framework of obstructionism. Proposals for fossil-energy projects face growing, often endless delays. Existing projects face strangling regulation.

Escapes notice

This characteristic of activism and its full-time practitioners too frequently escapes notice. Activists don't build things. They don't provide services. They don't invent devices that improve human life or create items of artistic beauty that enrich it. Activists stifle activity—pipeline construction, plant operation, oil and gas well drilling—that they consider injurious but that many if not most other people see quite differently.

Certain about their assertions, demanding with their agenda, and intolerant of unaligned viewpoints, activists are setting energy policy by blocking targeted work. They're sincere, yes, but too often wrong. Industry representatives are perhaps busier now than ever responding to policy abominations bred in unprecedented numbers by well-entrenched activism. That effort would benefit from disclosure of activism's distortions of scientific and democratic processes, about which more will appear here in coming weeks. OGJ

BP: Oil gained global market share in 2015 for first time in 16 years

Although crude oil prices in 2015 recorded their largest annual decline on record in dollar terms and their largest percentage decline since 1986, oil gained market share for the first time since 1999, according to the 65th edition of BP PLC's Statistical Review of World Energy.

The multinational firm's comprehensive review of energy markets notes that prices for all fossil fuels declined last year, prompting adjustments in the energy markets. In some markets, demand was lifted while curtailing supply and shifting the fuel mix in others.

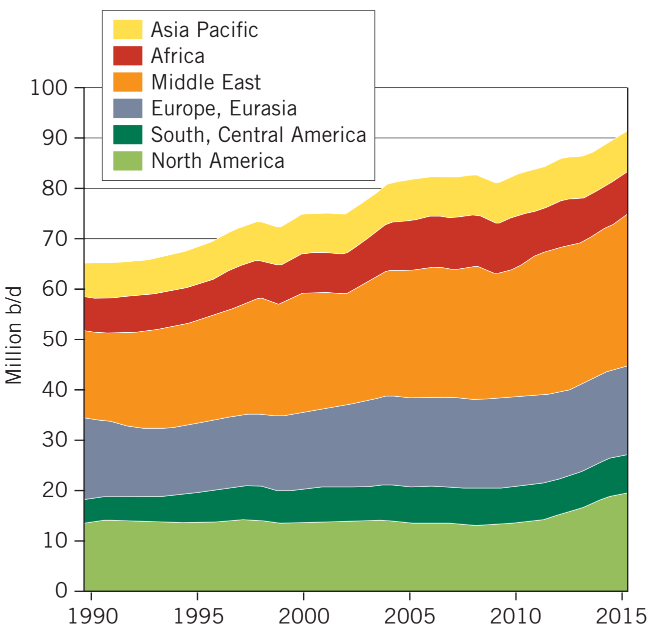
Oil remained the world's leading fuel, accounting for 32.9% of global energy consumption. Global oil consumption grew 1.9 million b/d, or 1.9%, nearly double the recent historical average of 1% and significantly stronger than the increase of 1.1 million b/d seen in 2014.

The relative strength of consumption was driven by countries in the Organization for Economic Cooperation and Development, where consumption increased 1.1%, compared with an average decline of 1.1% over the past decade. Growth was well above recent historical averages in the US at 1.6% and the European Union at 1.5%. Down 3.9%, Japan recorded the largest decline in oil consumption.

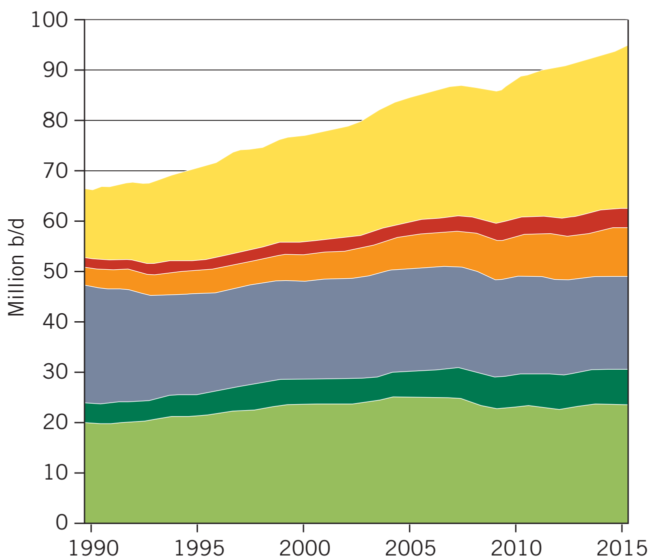
Outside of the OECD, net oil importing countries recorded significant increases. Up 6.3%, China once again accounted for the largest increment to demand, while India, rising 8.1%, surpassed Japan as the world's third-largest oil consumer. But this was offset by slower growth in oil producers such that oil demand growth in the non-OECD as a whole, up 2.6%, was below its recent historical average.

Global oil production increased even more rapidly than consumption for a second consecutive year, rising 2.8 million b/d, the strongest growth since 2004. Production in

OIL PRODUCTION BY REGION

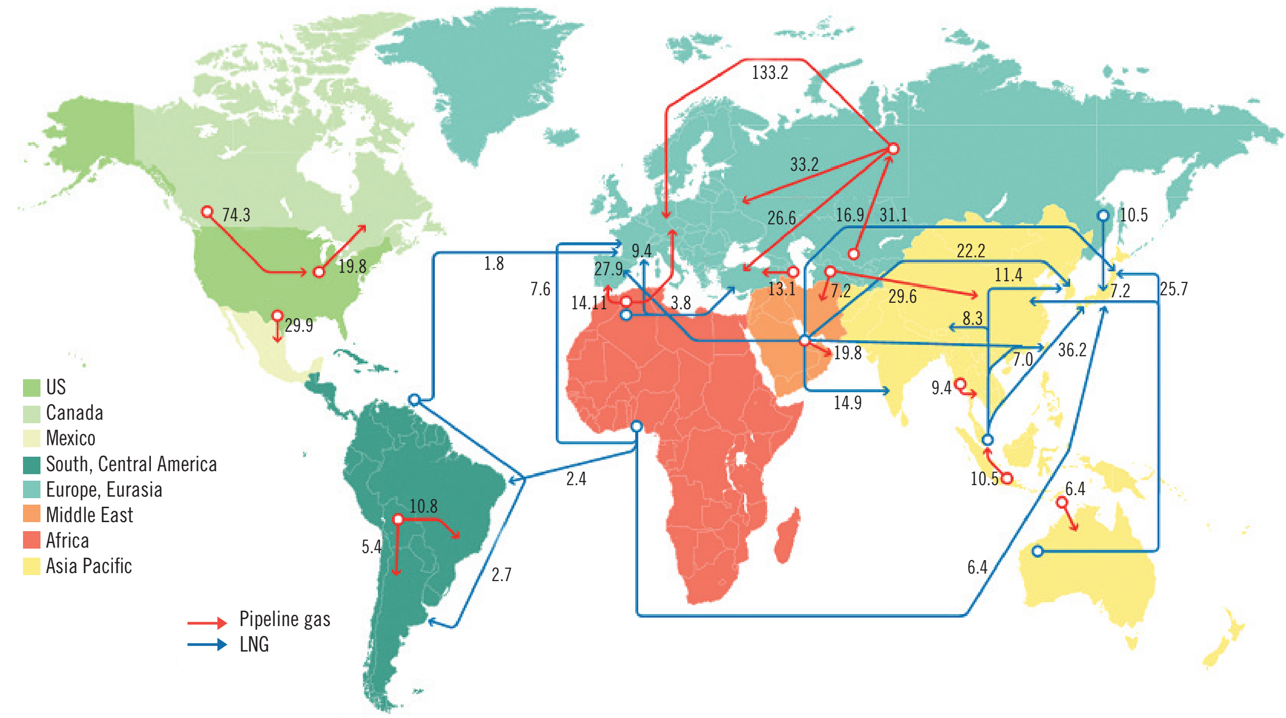


OIL CONSUMPTION BY REGION



Source: BP PLC's Statistical Review, 2016

MAJOR GLOBAL GAS TRADE ACTIVITY IN 2015*



*Trade flows worldwide (billion cu m).
Source: BP PLC's Statistical Review, 2016

Iraq, up 750,000 b/d, and Saudi Arabia, up 510,000 b/d, rose to record levels, driving an increase in production from the Organization of Petroleum Exporting Countries of 1.6 million b/d to 38.2 million b/d, exceeding the previous record reached in 2012.

Non-OPEC production slowed from last year's record growth but still rose 1.3 million b/d. Up 1 million b/d, the US had the world's largest annual growth increment and remained the world's largest oil producer. Meanwhile, production growth in Brazil, Russia, the UK, and Canada was offset by declines in Mexico, Yemen, and elsewhere.

Global proved oil reserves in 2015 fell 2.4 billion bbl to 1,697.6 billion bbl, just the second annual decline in BP's data set. Reserves have nonetheless increased 320 billion bbl over the past decade and are sufficient to meet 50.7 years of global production. Brazil recorded the largest decline, with proved reserves falling 3.2 billion bbl, while Norwegian proved reserves increased 1.5 billion bbl.

OPEC member countries continue to hold the largest share of global proved reserves at 71.4%. On a regional basis, South and Central American reserves have the highest reserves-to-production (RP) ratio at 117 years.

Gas consumption growth rises

World natural gas consumption in 2015 rose 1.7%, a significant increase from the very weak growth, 0.6%, seen in 2014 but still below the 10-year average of 2.3%. As with oil, consumption growth was below average outside the OECD at 1.9%, accounting for 53.5% of global consumption, but above average in the OECD countries at 1.5%.

Among emerging economies, Iran and China—up 6.2% and 4.7%, respectively—recorded the largest increments to consumption, even though growth in China was sluggish compared with a 10-year average growth of 15.1%. Meanwhile, falling 5%, Russia recorded the largest volumetric decline, followed by the Ukraine at 21.8%. Among OECD countries, the US, rising 3%, accounted for the largest growth increment. Gaining 4.6%, EU consumption rebounded after a large decline in 2014.

Globally, gas accounted for 23.8% of primary energy consumption. Global gas production rose 2.2%, more rapidly than consumption but below its 10-year average of 2.4%. As with consumption, the US, up 5.4%, recorded the largest growth increment, with Iran, up 5.7%, and Norway, up 7.7%, also recording significant output increases.

Growth was above average in North America, Africa, and the Asia-Pacific region. EU production once again fell sharply at 8%, with the Netherlands recording the world's largest decline with a 22.8% dive. Large volumetric declines were also seen in Russia and Yemen, losing 1.5% and 71.5%, respectively.

Global gas trade rebounded in 2015, rising 3.3%. Pipeline shipments increased 4% driven by growth in net pipeline exports from Russia and Norway, gaining 7.7% and 7%, respectively. The largest volumetric increases in net pipeline imports were in Mexico and France, respectively rising 44.9% and 28.8%. Global LNG trade increased 1.8%.

Export growth was led by Australia, up 25.3%, and Papua New Guinea, up 104.8%; offsetting declines in shipments from Yemen, down 77.2%. Higher net LNG imports for Europe, up 15.9%, and rising Middle Eastern imports, up 93.8%, were partly offset by declines in net imports in South Korea and Japan, down 10.4% and 4%, respectively. International gas trade accounted for 30.1% of global consumption; the pipeline share of global gas trade rose to 67.5%.

As was the case for oil, global proved gas reserves in 2015 fell slightly, dropping 100 billion cu m to 186.9 trillion cu m, sufficient to meet 52.8 years of current production. Small declines in Russian and Norwegian reserves drove the decline. Reserves have increased 29.6 trillion cu m over the past decade. The Middle East region holds the largest proved reserves at 80 trillion cu m, 42.8% of the global total, and has the highest regional RP ratio at 129.5 years.

Global emissions of carbon dioxide from energy consumption increased only 0.1% in 2015, driven by a combination of slightly slower energy consumption growth and a shift in the global fuel mix. Other than the recession of 2009, this represented the lowest growth rate since 1992.

Emissions growth was below average in every region except Europe and Eurasia. The US, down 2.6%, and Russia, down 4.2%, accounted for the largest absolute declines in emissions, while India, up 5.3%, saw the largest increase. Chinese emissions declined for the first time since 1998. OGJ

E&Y: US producers' oil reserves plunged 12% in 2015

Matt Zborowski
Staff Writer

A year characterized by persistently low crude oil and natural gas prices, decreased capital expenditures, and falling revenues included dramatic downward reserve revisions by the 50 largest exploration and production firms in the US, according to Ernst & Young LLP's US oil and gas reserves study for 2016.

Yearend proved oil and gas reserves estimates in 2015 from the group as a whole fell 12% to 24.1 billion bbl and 21% to 147 tcf, respectively, compared with 2014 totals (OGJ Online, June 3, 2015).

Midsize independents' proved oil reserves were impacted most with downward revisions equal to 20% of their beginning-of-year levels. Large independents, which trend toward being predominately oil-focused, took downward revisions of 16% compared with 7% for integrated firms. The largest downward revisions on an absolute basis were reported by ConocoPhillips at 269 million bbl, Occidental Petroleum Corp. at 248 million bbl, and Continental Resources Inc. at 246.8 million bbl.

Oil extensions and discoveries declined 24% to 3.1 billion bbl, with the largest recorded by ExxonMobil Corp. at 387 million bbl, EOG Resources Inc. at 190.5 million bbl, and Marathon Oil Corp. at 179 million bbl.

Oil production in 2015 rose 10% year-over-year to 2.4 billion bbl, with the largest increases posted by BHP Billiton Ltd. at 22.7 million bbl, Encana Corp. at 20.2 million bbl, and Chevron Corp. at 17 million bbl. The downward revisions in reserves eclipsed other additions, resulting in an all sources production replacement rate of 45% for 2015 compared with 40% for finding and development (F&D) including revisions.

Purchases of oil reserves were 517 million bbl while sales were 627 million bbl. Herb Listen, E&Y US oil and gas assurance leader, explained during the June 14 presentation in Houston that the discrepancy was due to a large number of smaller independents outside the top 50 and private equity acting as buyers. Noble Energy Inc.'s acquisition of Rosetta Resources Inc. accounted for the largest transaction activity during the year (OGJ Online, May 11, 2015).

As for proved gas reserves, the largest downward revisions in 2015 on an absolute basis came from ExxonMobil at 6.7 tcf, Chesapeake Energy Corp. at 4.2 tcf, and Southwestern Energy Co. at 3.5 tcf. Gas extensions and discoveries declined 37% to 18.7 tcf, with the largest coming from Antero Resources Corp. at 2.3 tcf, EQT Corp. at 2 tcf, and ExxonMobil at 1.2 tcf.

Gas production increased 2% year-over-year to 13.6 tcf, with the largest gains from large independents Southwestern Energy, Antero Resources, and EQT each rising more than 100 bcf. Purchases of gas reserves during the year were 2 tcf, with the Noble-Rosetta deal again accounting for the largest activity.

Despite the across-the-board downward revisions, John Russell, E&Y US oil and gas assurance partner, noted that those oil and gas reserves "are still in the ground" but "just don't meet the definition to be reported" by the US Securities and Exchange Commission within the current low-price environment.

Listen added that some proved undeveloped (PUD) reserves booked by firms in previous years have recently been excluded—even though they were economical—because those firms didn't have liquidity or capital to develop them.

'Structural shift' occurring

The group of 50 independents reported total capital expenditures of \$117.5 billion, a 41% drop from the 2014 level. "The significant spending cuts and downward reserve revisions reported in 2015 are illustrative of a structural shift taking place in the industry as a result of abundant oil," said Listen. "No longer are capital investment decisions driven by the pursuit of growth—instead the industry and those investing in it are progressively more focused on cash flow and returns."

Amid less merger and acquisition activity than many projected, proved and unproved acquisition costs dropped 79% to $5.4 billion and 63% to $10 billion, respectively.

WPX Energy Inc. was the leading purchaser in 2015, with total property acquisition costs including proved and unproved of $3.2 billion as the firm acquired RKI Exploration & Production LLC (OGJ Online, July 15, 2015). Noble followed with total property acquisition costs including proved and unproved of $3.1 billion, primarily related to the Rosetta deal.

"While many expect an uptick in asset sales due to oil and gas companies' need for capital, the most valued E&P assets in this current environment are frequently the lifeblood of their companies' operations," said Mitch Fane, E&Y US oil and gas transactions leader in the Southwest region. "As a result, the bid-ask spreads for quality, producing properties, and declining values of some nonproducing properties have hindered transactions and private equity investment thus far."

Declines in exploration and development spending of 28% and 31%, respectively, were evident in the study firms' reduced drilling activity. The number of exploratory wells drilled declined 41% and development wells 31% in 2015.

Exploration spending totaled $17.1 billion in 2015, compared with $23.6 billion in 2014, led by midsize independents at a decrease of 39%. Listen noted that much of the exploration spending cuts came in the deepwater Gulf of Mexico, which will impact future reporting of proved reserves. Development spending declined to $84.7 billion in 2015 from $122.8 billion in 2014.

"The [midsize] independents and large independents accounted for the most significant cuts to exploration and development spending while the integrateds actually increased exploration spending by 9%," Listen said. "Looking forward to 2016 and 2017, the full range of US producers will face continued pressure to reduce spending if prices remain at current levels."

Impairments skyrocket

The firms did somewhat benefit from a 12% year-over-year decline in production costs in 2015 to $56.6 billion, driven by a 45% drop in production taxes and smaller declines in lease operating expenses and transportation costs. However, low oil and gas prices ultimately caused revenues to decline 41% to $129.8 billion, which, coupled with substantial property impairments, led study companies to report net losses of $112 billion.

The largest impairments were reported by companies that follow full cost accounting, which requires a "ceiling test" be conducted each quarter to review properties for impairment. These tests require companies use a 12-month average of the first-day-of-month reference prices.

Of the 50 study companies, 44 recorded oil and gas impairments including ceiling test charges in 2015, totaling $141.8 billion, up more than 600% from a year earlier. Even though just 14 of the firms follow full cost accounting, those firms altogether accounted for 74% of the total impairments reported in the group during the year.

The largest impairments were reported by Apache Corp. at $19.6 billion, Chesapeake at $18.2 billion, and Devon Energy Corp. at $18 billion, each of which uses the full cost method.

"Amid low prices, declining hedges, and the drastic drop in revenues, many US producers are experiencing rating downgrades and lower reserve base borrowing limits and, consequently, less cash flow and liquidity," said Mitch Fane, E&Y oil and gas transactions leader in the Southwest region. Midsize independents in particular utilize reserve base borrowing, Russell said.

E&Y noted that first-quarter 2016 revenues for the study firms fell 21% from fourth-quarter 2015, with asset impairments totaling $17 billion, as oil prices dipped toward the mid-$20s/bbl. James Bowie, E&Y US oil and gas assurance sector resident, said he expects impairments to continue in the second quarter as oil and gas prices remain down year-over-year.

What remains to be seen in 2016, Listen concluded, is whether "there will be an even further stepdown in reserves" or the firms will benefit from "a bullish run in oil and gas prices between now and the end of the year." OGJ

New England senators, witness question pipeline financing practices

Nick Snow
Washington Editor

Two US Senate Energy and Natural Resources Committee members from New England joined a witness from the Environmental Defense Fund in questioning how major natural gas pipeline projects are financed. Markets and priorities have changed to a point that relying on purchasers' capacity commitments to raise construction capital may no longer be appropriate, they said at a June 14 hearing examining pipeline economics and other issues.

Large gas pipelines traditionally are financed by utilities and other large customers that determine they will save substantially with lower rates, Sen. Elizabeth Warren (D-Mass.) observed. "But does it make sense to make home heating customers and small businesses bear the risk when the state lets utilities pass the costs through? Giant pipeline companies should not be allowed to force consumers to pay for these huge uneconomic projects," she said.

Sen. Angus King (I-Me.) said, "It seems to me we build infrastructure for either the hottest or coldest days of the year. That's like building a church for only Christmas and Easter, and not the other days when there aren't as many people. There's a proposal in New England to make the utilities, and not the customers, pay for the risk of constructing these pipelines. It's not an easy question. We clearly need the infrastructure."

But N. Jonathan Peress, who is EDF's gas air-policy director, said the magnitude of new gas pipeline projects under development combined with what's been built in the last 10 years could lead to a capacity bubble. "It could impose unnecessary costs on energy customers for expensive yet unneeded pipeline capacity, and ultimately constrain deployment of lower cost energy sources like wind and solar in the future," he warned.

Where new pipeline capacity is financed by market participants who choose to risk their capital to capture benefits, prospects of overbuilding are not particularly troublesome, Peress said. "However, a pipeline capacity build-out induced by policies designed to spread the costs of new infrastructure on captive retail gas or electric ratepayers will almost surely become uneconomic, undermine market drivers for more efficient solutions, and impose unacceptable long-term environmental and economic costs," he said.

Other witnesses and committee members called for more oil and gas pipeline construction. "I'm increasingly concerned about the politicization of routine infrastructure projects," said Sen. Mike Lee (R-Utah). "Many of these groups do not represent responsible environmental organizations, let alone most of the nation's population. But these antidevelopment activists are preventing construction of the necessary pipelines to accommodate the demand growth."

Future capacity is uncertain

While it looks as if producers will be able to meet manufacturers' gas needs, it's still not certain whether there will be enough pipelines and capacity to get it from the wellhead, said Ross Eisenberg, vice-president for energy resources and policy at the National Association of Manufacturers. "By improving technology and increasing productivity, supply growth continues at a strong pace despite falling prices for both gas and oil and significantly lower rig activity…[but] the rapid growth of low-cost production out of the Marcellus and Utica plays has created a bottleneck, as producers are unable to find pipeline capacity."

Association of Oil Pipe Lines Pres. Andrew J. Black testified: "American workers rely upon pipelines to deliver the raw material feedstocks needed for good-paying manufacturing jobs in plastics, chemicals, fabrics, and pharmaceuticals. Plentiful, low-priced ethane production has fueled an industrial renaissance in America with billions of dollars in investment building new petrochemical plants and creating new jobs." Case in point, he said, would be Shell Chemical's announcement last week of plans to build a multibillion dollar petrochemical plant in Pennsylvania northwest of Pittsburgh (OGJ Online, June 7, 2016).

North American Building Trades Unions' Pres. Sean McGarvey said that any pipeline project has three significant participants: industry, labor, and government. "Industry wants to grow, labor wants to create jobs, and the government wants safety and environmental concerns adequately addressed. But the third leg of this stool is proving to be an adversary, instead of an advocate of the first two," he said.

"Comments out of this administration such as 'eliminating the dash for gas' are only superseded by the lack of support for gas to back up intermittent renewables, a less-than-ambitious support system for carbon capture and sequestration at power plants and industrial facilities, a virtual vendetta against hydraulic fracturing and enhanced oil recovery, and of course, the denial of the Keystone XL cross-border permit application," McGarvey said.

Paul W. Parfomak, energy and infrastructure policy specialist at the Congressional Research Service, noted, "From an energy-market perspective, continued expansion of US pipelines has the potential to improve the efficiency of gas, oil, and refined products transportation—linking new producing regions with traditional consuming markets more directly, with greater capacity and reliability. However, the future operation and expansion of the pipeline network also faces significant challenges related to public safety, environmental risk, and energy market economics." OGJ

Senate vote sends 2016 pipeline safety bill to White House

Nick Snow
Washington Editor

The US Senate unanimously approved an amended federal pipeline safety bill it received days earlier from the House of Representatives, sending it to the White House for President Obama's signature. The June 13 vote came days after the House passed an amended version of the original measure which the Senate had approved previously (OGJ Online, June 9, 2016).

The 2016 Protecting Our Infrastructure of Pipelines and Enhancing Safety (PIPES) Act reauthorizes the federal pipeline safety program in the US Pipeline & Hazardous Materials Safety Administration (PHMSA) through fiscal 2019.

"Americans rely on energy transported through our nation's pipeline network—and its safety and certainty," Sen. John Thune (R-SD), who chairs the Commerce, Science, and Transportation Committee where the measure originated, said following the

WATCHING GOVERNMENT

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Washington Editor | Blog at www.**ogj**.com

Energy in the 2016 elections

Energy issues have not been discussed much in the 2016 US presidential campaigns. That doesn't necessarily mean the November election's outcome won't have significant policy consequences, two speakers suggested at a June 9 US Energy Association event.

They seemingly started from opposite viewpoints. David Bailey retired as ExxonMobil Corp.'s climate policy manager in 2012 after coming into the oil and gas business in 1989 as human resources director for Mobil Corp.'s UK businesses. David Bookbinder is an environmental lawyer who has handled lawsuits for the Sierra Club and similar organizations as well as the natural gas industry.

Both are principals in a consulting firm, Element VI. It is based in Middleburg, Va., outside Washington, DC, and tries to provide answers about climate change and carbon policies.

Oil and gas methane emissions could be interesting because the social cost of carbon may be due for judicial review in federal district court for the District of Columbia, Bookbinder said. "It, and possibly the US Supreme Court, will decide whether it's legitimate," he said. "Hang on, because we're in for a wild ride."

Bailey said, "The social cost of carbon will affect every decision governments make about fossil fuels. Companies will need to prepare for longer timelines. Longer term, regardless of what the US does, the rest of the world will become more carbon-constrained. In rich, emerging economies like Qatar, there will be more transformational initiatives."

Policy changes take time, both speakers emphasized. "We think it could be faster, but not necessarily at the rates under the Paris accords," said Bailey. "But the process will create new challenges for fossil fuel industries and opportunities for competitors, especially if it is pursued through a regulatory agenda."

EPA may be a key

Could the presidential election's outcome influence the policy change's pace? The US Environmental Protection Agency could be the key. Its regulations could reach a point where fossil fuel industries might find a carbon tax preferable because it provides more certainty and regulatory clarity, Bookbinder said.

Similarly, EPA under a Donald J. Trump presidency might be ordered to slow the process down by extending implementation deadlines, he added. "Many members of the House and Senate privately support it, but publicly oppose it," Bookbinder said. Hillary Clinton may try to restrict hydraulic fracturing, but won't likely try to eliminate it because the gas it produces backs out coal, he said.

"The Paris agreement provided ammunition for environmental activists, but depressed oil and gas prices have had a bigger impact," Bailey said. "Leave-it-in-the-ground may become more prevalent. But if it begins occurring in developing countries, they'll be at the mercy of the Organization of Petroleum Exporting Countries." OGJ latest vote. "The PIPES Act reforms pipeline safety and will help answer the need for more reliable access to energy."

Interstate Natural Gas Association of America Pres. Donald F. Santa applauded the Senate's passage of the final bill. "We look forward to the president making this important bill law as soon as possible," he said.

Although Congress made needed and important improvements to the legislation before final passage, it is critical that Congress continues to conduct vigilant oversight to ensure PHMSA's new authorities are not abused, American Fuel & Petrochemical Manufacturers Pres. Chet Thompson warned.

"In giving PHMSA wide-ranging emergency order authority that, if used improperly, has the potential for severe disruptions for businesses and consumers, Congress must now carefully monitor its actions to avoid agency overreach, which could inhibit the energy industry's ability to provide affordable and abundant fuel in a safe and reliable manner," he said.

Federal law and regulation combine with pipeline industry recommended practices and the safety programs of pipeline operators to keep pipelines safe, according to Association of Oil Pipe Lines Pres. Andrew J. Black.

"Each year, pipeline operators spend more than $2 billion to evaluate, maintain, and perform preventative maintenance on their pipelines," Black said. "The result is pipelines are the safest way to move liquid energy products across the nation. A barrel of crude oil or petroleum products reaches its destination safely by pipeline 99.999% of the time."

American Petroleum Institute Executive Vice-Pres. Louis Finkel said, "Pipelines continue to be one of the safest modes for transporting energy across the country. As domestic production grows, they will be the critical link to connect our abundant oil and gas resources to refineries, chemical plants, business and consumers." OGJ

US House passes EPA ozone limits bill along party lines

Nick Snow
Washington Editor

The US House approved HR 4775 by 234 to 177 votes, largely along party lines, as Republicans said the measure would give states more time to implement federal ozone limits, and Democrats argued that it would gut the Clean Air Act.

The June 8 action came 3 weeks after the Energy and Commerce Committee approved it, also along party lines (OGJ Online, May 20, 2016). Rep. Pete Olson (R-Tex.) and five cosponsors introduced it on Mar. 17.

It would delay implementation of National Ambient Air Quality Standards (NAAQS) for ground-level ozone, which the US Environmental Protection Agency published in 2015. States would have until Oct. 26, 2024, to submit implementation designations. EPA would have another year to designate state areas as being in attainment, nonattainment, or unclassifiable. States would then have until Oct. 26, 2026, to implement, maintain, and enforce the 2016 NAAQS.

The bill also would change the review cycle for criteria pollutant NAAQS from 5 to 10 years, and would not permit EPA to complete its next review before Oct. 26, 2025. It would let the agency consider, as a secondary consideration, likely technological feasibility in establishing and revising NAAQS for a pollutant if a range of air quality levels for such pollutant are requisite to protect public health with an adequate margin of safety.

"Our nation has worked hard to reduce ozone levels and improve air quality," Olson said following the bill's passage. "As we continue this progress, we need to give states better tools to meet air quality goals efficiently. As we work to keep this trend moving in the right direction, my bill provides needed flexibility so that states and localities can adequately achieve new, lower standards with time for compliance."

The American Fuel & Petrochemical Manufacturers applauded the House's action. "Air quality improvements are possible without unnecessarily straining our nation's economy and local and state resources," AFPM Pres. Chet Thompson said on June 8. "Today's vote simply affords states with the time needed to meet the existing ozone standards, before turning their attention to the 2015 standards. Such an approach protects the environment and states' limited resources." OGJ

Resolution opposing Obama's crude oil tax passes US House

Nick Snow
Washington Editor

The US House of Representatives approved a resolution opposing President Barack Obama's proposal to impose a $10.25/bbl tax on crude oil to support new transportation systems' research and development. H. Con. Res 112 was approved on June 10 by a 234-177 vote, largely along party lines. Twenty-three Democrats joined Republicans in favor of it, while a single Republican voted with Democrats against it.

"The president has looked for every opportunity to kick the oil and gas industry while it's down," said Rep. Charles Boustany (R-La.), who introduced the bill that became the resolution on Feb. 9. "This proposed tax is another over-the-top attack that will be passed on at the pump to the very families who are out of work while the industry is struggling."

Five days earlier, the Obama administration proposed a $10/bbl tax on crude to help pay for its plan to create a 21st Century Clean Transportation System (OGJ Online, Feb. 4, 2016). The projected amount rose to $10.25/bbl a few days later.

Leaders at the American Petroleum Institute, Independent Petroleum Association of America, and American Fuel & Petrochemical Manufacturers separately applauded the House's June 10 vote expressing opposition to Obama's proposal.

"The House was right to oppose the president's proposed $10.25/bbl, as it would have a damaging impact on consumers and our nation's economy," AFPM Pres. Chet Thompson said. "Higher energy prices mean less disposable income for life's other necessities. The president's proposal would be disruptive to American families and ultimately to the nation's economy."

Stephen Comstock, API tax and accounting policy director, said that the administration believes Americans are not paying enough for gasoline, so it proposed a tax which the Congressional Research Service estimates could raise the retail cost by as much as 25¢/gal. "This could harm consumers that are enjoying low energy prices, destroy American jobs, and reverse America's emergence as a global energy leader," he warned.

Daniel T. Naatz, IPAA's senior vice-president of government relations and political affairs, said the Obama administration's proposed fiscal 2017 budget attacks the US oil and gas industry and every American energy consumer. "The energy tax places our nation at a clear disadvantage against global oil cartels and unfriendly nations. A strong American oil and gas industry secures our place as a world leader in energy production," he said. OGJ

OGUK: UK offshore oil, gas jobs down 120,000 since 2014

Jobs linked to offshore oil and gas in the UK have dropped sharply since 2014 along with commodity prices. New employment figures indicate about 330,000 jobs in the UK in 2016 will stem from oil and gas, down from more than 450,000 in 2014.

Oil & Gas UK requested the analysis from Experian, a marketing services company. It focused on three categories of employment: direct employment, indirect employment, and induced jobs.

After peaking at more than 450,000 in 2014, jobs fell to 370,000 in 2015. The 330,000 cited for 2016 includes a forecast of 40,000 job losses by year-end. In 2014, direct employment was 41,700; indirect, 201,000; and induced, 211,100, for a total employment of 453,800. In 2015, direct was 38,200; indirect, 160,600; and induced, 170,800, for a total employment of 369,700. The 2016 forecast is direct, 34,000; indirect, 151,500; and induced, 144,900, for a total employment of 330,400.

OGUK noted that more than 20% of the oil fields on the UKCS are operating at a higher unit cost than the current price of about $50/bbl. OGJ

IEA: Oil stockpile in first half smaller than expected

In its June Oil Market Report, the International Energy Agency stated that less oil has been stockpiled than originally expected during this year's first half. The surplus of supply over demand in the first half is currently about 800,000 b/d compared with the initial expectation of 1.5 million b/d in January. The sharp reduction is driven by stronger oil demand growth and unexpected supply cuts, IEA said.

Firm data for this year's first quarter shows year-over-year growth of 1.6 million b/d, up from an initial expectation of 1.2 million b/d. IEA has increased the demand growth number for 2016 to 1.3 million b/d from a previous 1.2 million b/d. US gasoline demand is very strong and on course to rise 255,000 b/d, or 2.8%, this year.

On the supply side, Canada's wildfires at their peak removed as much as 1.5 million b/d of production capacity. In Nigeria, militant action has forecast production down to 30-year lows. Libya remains a long way from significantly increasing its production. Venezuela's oil might also soon be affected by the country's deteriorating situation. In May, outages in Organization of Petroleum Exporting Countries and non-OPEC countries cut global oil supply by nearly 800,000 b/d.

In addition to the unplanned shut-ins, IEA's production forecast falls due to lower oil prices remains intact. Non-OPEC countries will see production fall by 900,000 b/d this year.

Assuming only modest growth in production from OPEC member countries and no further surprises, in this year's second half, IEA expect the oil market to be balanced.

However, IEA also warned that there are large volumes of shut-in production, mainly in Nigeria and Libya, that could return to the market, and that strong start of oil demand growth seen this year might not be maintained.

"In any event, following three consecutive years of stock build at an average rate close to 1 million b/d there is an enormous inventory overhang to clear. This is likely to dampen prospects of a significant increase in oil prices," IEA said.

The report also includes for the first time IEA's 2017 outlook. IEA expects global oil demand to increase at the same rate as in 2016—1.3 million b/d—and global demand will reach 97.4 million b/d. Non-OPEC supply will rise by a modest 200,000 b/d. OGJ

THE EDITOR'S PERSPECTIVE

Climate leadership will chill Ontario's energy consumers

by **Bob Tippee**, Editor

In its Climate Change Action Plan published June 8, the provincial government refrains from pushing natural gas out of home heating by 2030.

That idea was part of a draft circulated in the cabinet of Liberal Prime Minister Kathleen Wynne and published May 16 in the Globe and Mail. The plan caused such an uproar that provincial officials had to make the rounds disavowing the gas phase-out (OGJ Online, June 3, 2016).

The final version of the plan ambiguously prescribes building-code updates with energy-efficiency and greenhouse-gas emission targets by 2030 and alludes to changes due by 2020.

Otherwise, it remains the declaration of environmental authoritarianism indicated by the leaked document.

The plan includes a renewable fuel standard, mandates that new residential garages have recharging outlets for electric vehicles, requirements for "energy audits" of homes, and $8.3 billion in spending, much of it for efforts to cut the use of fossil energy.

One antigas measure is smirk-worthy: "Establish a low-carbon content for natural gas." By that chemically impossible formulation, the document means to increase the use of methane from renewable sources.

More important is the economic death spiral the plan will accelerate in a province already burdened by high tax rates, heavy regulation, and green-energy experimentation already in progress.

The new plan proposes to use $1-1.32 billion from the province's cap-and-trade system to "offset costs."

But cap-and-trade systems deliberately impose costs by creating shortage. That's what the "cap" part does.

So proceeds from a system that imposes cost are supposed to offset costs imposed by other manipulations of energy choice.

Such programs turn economies hollow. They do cut greenhouse-gas emissions, though—by stifling work and driving businesses and people to more-affordable jurisdictions.

"We are establishing ourselves as global leaders in the fight against climate change," Wynne boasts in the plan.

Will the last leader to leave Ontario please turn—never mind; the lights already will be out.

(From the subscription area of www.ogj.com, posted June 10, 2016; author's e-mail: bobt@ogjonline.com)

ADVERTISERS INDEX

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IMPORTS OF CRUDE AND PRODUCTS

	Districts 1-4 6-3 2016	Districts 1-4 5-27 2016	District 5 6-3 2016	District 5 5-27 2016	Total US 6-3 2016	Total US 5-27 2016	Total US 6-5* 2015
	1,000 b/d						
Total motor gasoline	800	907	16	13	816	920	667
Mo. gas. blending comp.	756	859	14	13	770	872	627
Distillate	164	69	3	0	167	69	180
Residual	195	25	73	39	268	64	141
Jet fuel-kerosine	7	38	129	165	136	203	172
Propane-propylene	119	61	15	18	134	79	101
Other	745	660	60	65	805	724	643
Total products	**2,030**	**1,760**	**296**	**300**	**2,326**	**2,059**	**1,904**
Total crude	**6,468**	**6,380**	**1,237**	**1,459**	**7,705**	**7,839**	**6,623**
Total imports	**8,498**	**8,140**	**1,533**	**1,759**	**10,031**	**9,899**	**8,527**

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

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

OGJ CRACK SPREAD

	6-10-16*	6-12-15*	Change	Change, %
	$/bbl			
SPOT PRICES				
Product value	64.13	81.27	(17.14)	(21.09)
Brent crude	49.94	63.24	(13.30)	(21.02)
Crack spread	14.18	18.03	(3.85)	(21.33)
FUTURES MARKET PRICES				
One month				
Product value	66.42	84.89	(18.47)	(21.76)
Light sweet crude	50.48	60.09	(9.61)	(15.99)
Crack spread	15.94	24.80	(8.86)	(35.74)
Six month				
Product value	62.90	77.75	(14.85)	(19.10)
Light sweet crude	52.26	61.66	(9.40)	(15.25)
Crack spread	10.65	16.09	(5.44)	(33.84)

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

EXPORTS OF CRUDE AND PRODUCTS

	Total US 6-3-16	Total US 5-27-16	Total US *6-5-15
	1,000 b/d		
Finished motor gasoline	374	374	426
Jet fuel-kerosine	152	152	160
Distillate	1,178	1,178	1,025
Residual	366	366	380
Propane/propylene	649	649	449
Other oils	1,010	1,010	913
Total products	**3,729**	**3,729**	**3,353**
Total crude	**489**	**489**	**441**
Total exports	**4,218**	**4,218**	**3,794**
NET IMPORTS			
Total	5,813	5,680	4,733
Products	(1,403)	(1,670)	(1,449)
Crude	7,216	7,350	6,182

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

CRUDE AND PRODUCT STOCKS

District	Crude oil	Motor gasoline Total	Motor gasoline Blending comp.	Jet fuel, kerosine	Fuel oils Distillate	Fuel oils Residual	Propane-propylene
	1,000 bbl						
PADD 1	18,404	68,378	64,164	10,744	55,843	9,744	3,685
PADD 2	154,605	53,133	46,646	6,648	31,094	1,529	21,222
PADD 3	274,076	81,032	71,293	16,350	47,996	22,926	50,201
PADD 4	24,496	7,575	5,487	640	3,231	171	[1] 2,185
PADD 5	60,895	29,512	27,002	9,781	13,215	5,297	—
June 3, 2016	**532,476**	**239,630**	**214,592**	**44,163**	**151,379**	**39,667**	**77,293**
May 27, 2016	**535,701**	**238,620**	**215,163**	**42,336**	**149,625**	**41,029**	**75,381**
June 5, 2015[2]	**470,603**	**217,355**	**191,437**	**39,388**	**133,477**	**40,795**	**78,795**

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

REFINERY REPORT—JUNE 3, 2016

District	Refinery operations Gross inputs	Refinery operations Crude oil inputs	Refinery output Total motor gasoline	Refinery output Jet fuel, kerosine	Fuel oils Distillate	Fuel oils Residual	Propane-propylene
	1,000 b/d		1,000 b/d				
PADD 1	1,104	1,108	3,234	81	329	43	154
PADD 2	3,657	3,651	2,587	269	952	42	406
PADD 3	8,751	8,645	2,039	878	2,830	206	966
PADD 4	624	624	317	37	189	10	[1] 192
PADD 5	2,515	2,389	1,639	379	537	128	—
June 3, 2016	**16,651**	**16,417**	**9,816**	**1,644**	**4,837**	**429**	**1,718**
May 27, 2016	**16,442**	**16,207**	**9,991**	**1,609**	**4,757**	**471**	**1,708**
June 5, 2015[2]	**16,911**	**16,576**	**9,756**	**1,658**	**5,082**	**419**	**1,622**
	18,317 Operable capacity		**90.9 utilization rate**				

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

OGJ GASOLINE PRICES

	Price ex tax 6-8-16	Pump price* 6-8-16	Pump price 6-10-15
	¢/gal		
(Approx. prices for self-service unleaded gasoline)			
Atlanta	163.8	213.2	257.4
Baltimore	175.2	226.2	261.0
Boston	172.4	217.3	264.0
Buffalo	166.4	227.5	274.4
Miami	161.5	216.5	267.4
Newark	171.6	204.5	252.4
New York	189.2	250.2	291.7
Norfolk	206.5	247.2	241.7
Philadelphia	156.6	225.4	285.7
Pittsburgh	174.4	243.2	282.7
Wash., DC	198.8	240.7	272.7
PAD I avg	176.0	228.4	268.3
Chicago	244.7	293.3	305.2
Cleveland	191.3	237.7	268.9
Des Moines	194.1	244.5	271.1
Detroit	192.8	241.7	268.9
Indianapolis	197.0	245.3	260.0
Kansas City	193.8	229.5	249.7
Louisville	196.3	240.7	290.1
Memphis	203.0	242.8	252.0
Milwaukee	182.2	233.5	276.0
Minn.-St. Paul	187.7	234.7	268.9
Oklahoma City	187.4	222.8	253.3
Omaha	195.7	241.8	261.3
St. Louis	189.1	224.8	269.2
Tulsa	189.0	224.4	250.3
Wichita	185.6	228.0	252.3
PAD II avg	195.3	239.0	266.5
Albuquerque	177.9	215.2	253.2
Birmingham	172.9	212.2	244.6
Dallas-Fort Worth	174.3	212.7	251.7
Houston	173.9	212.3	243.7
Little Rock	174.7	214.9	246.7
New Orleans	171.0	209.4	244.7
San Antonio	174.8	213.2	244.0
PAD III avg	174.2	212.9	246.9
Cheyenne	183.1	225.5	260.1
Denver	195.0	235.4	265.1
Salt Lake City	189.5	237.4	294.9
PAD IV avg	189.2	232.8	273.4
Los Angeles	254.9	313.9	389.7
Phoenix	188.5	225.9	281.3
Portland	185.1	234.6	301.0
San Diego	225.6	284.6	377.7
San Francisco	232.9	291.9	389.7
Seattle	204.7	267.6	312.2
PAD V avg	215.3	269.7	341.9
Week's avg.	**189.2**	**235.8**	**275.0**
May avg...	**176.1**	**222.8**	**267.0**
Apr. avg.	**161.9**	**208.6**	**245.7**
2016 to date	**153.4**	**200.2**	—
2015 to date	**193.7**	**241.0**	—

*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

	6-10-16	6-12-15
Alabama	1	—
Alaska	9	9
Arkansas	-	5
California	5	11
Land	5	11
Offshore	—	—
Colorado	16	38
Florida	—	1
Illinois	1	2
Indiana	—	—
Kansas	2	13
Kentucky	3	—
Louisiana	47	71
N. Land	15	26
S. Inland waters	5	5
S. Land	7	11
Offshore	20	29
Maryland	—	—
Michigan	—	—
Mississippi	3	1
Montana	—	—
Nebraska	—	2
New Mexico	20	45
New York	—	—
North Dakota	24	76
Ohio	12	21
Oklahoma	58	107
Pennsylvania	13	46
South Dakota	—	—
Texas	178	363
Offshore	—	—
Inland waters	—	—
Dist. 1	13	52
Dist. 2	13	39
Dist. 3	4	18
Dist. 4	8	20
Dist. 5	1	5
Dist. 6	9	18
Dist. 7B	2	2
Dist. 7C	20	30
Dist. 8	95	151
Dist. 8A	8	9
Dist. 9	1	3
Dist. 10	4	16
Utah	4	6
West Virginia	10	19
Wyoming	7	22
Others HI-1	1	1
Total US	**414**	**859**
Total Canada	**65**	**127**
Grand total	**479**	**986**
US oil rigs	328	635
US gas rigs	85	221
Total US offshore	21	29
Total US cum. avg. YTD	**498**	**1,180**

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]6-10-16	[2]6-12-15
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	20	28
Alaska	525	471
California	546	590
Colorado	306	320
Florida	6	6
Illinois	20	25
Kansas	99	129
Louisiana	1,320	1,345
Michigan	13	18
Mississippi	54	70
Montana	62	83
New Mexico	363	411
North Dakota	1,065	1,185
Ohio	69	65
Oklahoma	345	388
Pennsylvania	16	21
Texas	3,580	3,138
Utah	84	107
West Virginia	18	25
Wyoming	205	241
Other states	50	64
Total	**8,766**	**8,730**

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

US CRUDE PRICES

	6-10-16 $/bbl*
Alaska-North Slope 27°	24.29
Light Louisiana Sweet	44.44
California-Midway Sunset 13°	38.90
California Buena Vista Hills 26°	47.32
Wyoming Sweet	45.32
East Texas Sweet	43.50
West Texas Sour 34°	40.50
West Texas Intermediate	45.50
Oklahoma Sweet	45.50
Texas Upper Gulf Coast	39.25
Michigan Sour	37.50
Kansas Common	44.50
North Dakota Sweet	38.75

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

WORLD CRUDE PRICES

	Wkly. avg. 6-10-16	$/bbl
OPEC reference basket		**47.11**

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

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

REFINED PRODUCT PRICES

Spot market product prices

	6-3-16 ¢/gal		6-3-16 ¢/gal
Motor gasoline		No. 2 Distillate	
(Conventional-regular)		Low sulfur diesel fuel	
New York Harbor	158.30	New York Harbor	148.20
Gulf Coast	155.60	Gulf Coast	144.30
		Los Angeles	155.00
Motor gasoline		Kerosine jet fuel	
(RBOB-regular)			
New York Harbor	159.60	Gulf Coast	136.20
No. 2 heating oil		Propane	
New York Harbor	141.00	Mont Belvieu	48.60

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

IHS PETRODATA RIG COUNT

JUNE 10, 2016

	Total supply of rigs	Marketed supply of rigs	Marketed contracted	Marketed utilization rate (%)
US Gulf of Mexico	112	62	40	64.5
South America	59	55	46	83.6
Northwest Europe	105	86	70	81.4
West Africa	65	54	29	53.7
Middle East	166	157	122	77.7
Southeast Asia	93	79	37	46.8
Worldwide	833	706	503	71.3

Source: IHS Petrodata
Data available in PennEnergy Research Center

US NATURAL GAS STORAGE[1]

	6-3-16	5-27-16	6-3-15	Change, %
		bcf		
East	559	537	461	21.3
Midwest	679	655	455	49.2
Mountain	183	178	140	30.7
Pacific	307	304	320	(4.1)
South Central	1,244	1,233	936	32.9
Salt	370	370	287	28.9
Nonsalt	874	863	649	34.7
Total US	**2,972**	**2,907**	**2,312**	**28.5**
	Mar.-16	Mar.-15	Change, %	
Total US[2]	**2,492**	**1,483**	**68.0**	

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

BAKER HUGHES INTERNATIONAL RIG COUNT

Region	May 2016 Land	May 2016 Off.	May 2016 Total	May 2015 Total
WESTERN HEMISPHERE				
Argentina	70	1	71	104
Bolivia	5	—	5	5
Brazil	6	9	15	43
Canada	40	2	42	80
Chile	3	—	3	3
Colombia	5	—	5	24
Ecuador	2	—	2	15
Mexico	8	14	22	60
Peru	—	—	—	2
Trinidad	2	3	5	3
US	384	24	407	889
Venezuela	57	3	60	68
Other	—	—	—	—
Subtotal	**582**	**56**	**637**	**1,296**
ASIA-PACIFIC				
Australia	2	4	6	14
Brunei	—	2	2	—
China-offshore	—	31	31	25
India	80	22	102	109
Indonesia	15	4	19	28
Japan	—	1	1	—
Malaysia	—	6	6	12
Myanmar	—	1	1	1
New Zealand	—	—	—	1
Papua New Guinea	2	—	2	2
Philippines	2	—	2	3
Taiwan	—	—	—	—
Thailand	3	12	15	19
Vietnam	—	3	3	3
Other	—	—	—	—
Subtotal	**104**	**86**	**190**	**217**
AFRICA				
Algeria	55	—	55	48
Angola	—	9	9	11
Congo	—	1	1	4
Gabon	—	1	1	4
Kenya	11	—	11	10
Libya	—	1	1	3
Nigeria	4	2	6	10
South Africa	—	1	1	—
Tunisia	—	—	—	—
Other	1	5	6	10
Subtotal	**71**	**20**	**91**	**100**
MIDDLE EAST				
Abu Dhabi	31	17	48	37
Dubai	—	2	2	2
Egypt	18	10	28	36
Iran	—	—	—	—
Iraq	43	—	43	54
Jordan	—	—	—	—
Kuwait	43	—	43	48
Oman	69	—	69	70
Pakistan	27	—	27	20
Qatar	3	4	7	7
Saudi Arabia	105	18	123	124
Sudan	—	—	—	—
Syria	—	—	—	—
Yemen	—	—	—	—
Other	1	—	1	—
Subtotal	**340**	**51**	**391**	**398**
EUROPE				
Croatia	1	—	1	1
Denmark	—	2	2	2
France	—	—	—	—
Germany	3	—	3	3
Hungary	2	—	2	2
Italy	4	1	5	5
Netherlands	—	2	2	5
Norway	—	17	17	18
Poland	4	—	4	7
Romania	4	—	4	10
Turkey	29	—	29	30
UK	—	9	9	16
Other	6	11	17	17
Subtotal	**53**	**42**	**95**	**116**
Total	**1,150**	**255**	**1,404**	**2,127**

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

PRODUCTION BY REGION

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

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

DRILLING PRODUCTIVITY REPORT

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

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

PROPANE PRICES

	Mar. 2016	Apr. 2016	Mar. 2015	Apr. 2015
	¢/gal			
Mont Belvieu	45.20	45.70	54.20	54.80

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

MUSE, STANCIL & CO. REFINING MARGINS

	US Gulf Coast	US East Coast	US Mid-west	US West Coast	North-west Europe	South-east Asia
	$/bbl					
May 2016						
Product revenues	58.72	58.67	62.41	62.87	54.37	50.72
Feedstock costs	(46.02)	(49.07)	(46.03)	(45.19)	(48.27)	(46.97)
Gross margin	12.70	9.60	16.38	17.68	6.10	3.75
Fixed costs	(2.45)	(3.40)	(2.76)	(3.21)	(2.76)	(2.14)
Variable costs	(0.98)	(0.92)	(0.85)	(1.16)	(1.13)	(1.37)
Cash operating margin	**9.27**	**5.28**	**12.77**	**13.31**	**2.21**	**0.24**
Apr. 2016	10.51	4.59	12.83	15.08	3.03	1.26
YTD avg.	10.03	3.17	9.82	13.11	2.99	1.61
2015 avg.	11.27	5.52	17.58	22.42	5.99	4.35
2014 avg.	8.50	3.99	19.43	15.04	3.05	2.17
2013 avg.	7.42	2.22	24.96	15.85	3.15	1.97

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

MUSE, STANCIL & CO. GASOLINE MARKETING MARGINS

Apr. 2016	Chicago*	Houston	Los Angeles	New York
	¢/gal			
Retail price	235.96	191.68	282.43	224.89
Taxes	52.42	38.40	58.25	48.02
Wholesale price	161.06	147.17	189.41	154.10
Spot price	153.83	141.37	159.67	149.11
Retail margin	22.48	6.11	34.77	22.77
Wholesale margin	7.23	5.80	29.74	4.99
Gross marketing margin	**29.71**	**11.91**	**64.51**	**27.76**
Mar. 2016	27.49	3.54	56.98	30.07
YTD avg.	34.17	15.51	78.03	38.97
2015 avg.	36.40	20.71	66.66	39.71
2014 avg.	33.12	25.36	45.25	39.64
2013 avg.	32.33	20.45	35.26	36.05

*The wholesale price shown for Chicago is the RFG price utilized for the wholesale margin. The Chicago retail margin includes a weighted average of RFG and conventional wholesale purchases.
Source: Muse, Stancil & Co. See OGJ, Oct. 15, 2001, p. 46.
Data available at PennEnergy Research Center.
Note: Margins include ethanol blending in all markets.

MUSE, STANCIL & CO. ETHYLENE MARGINS

	Ethane	Propane	Naphtha
	¢/lb ethylene		
May 2016			
Product revenues	28.43	48.22	60.97
Feedstock costs	(8.03)	(30.00)	(59.19)
Gross margin	20.40	18.22	1.78
Fixed costs	(6.77)	(8.00)	(9.04)
Variable costs	(2.18)	(2.43)	(3.01)
Cash operating margin	**11.45**	**7.79**	**(10.27)**
Apr. 2016	12.70	12.55	(4.94)
YTD avg.	9.97	9.93	(6.42)
2015 avg.	14.66	20.53	(7.40)
2014 avg.	41.38	31.42	(8.91)
2013 avg.	42.23	33.28	(17.24)

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

MUSE, STANCIL & CO. US GAS PROCESSING MARGINS

May 2016	Gulf Coast	Mid-continent
	$/Mcf	
Gross revenue		
Gas	1.80	1.57
Liquids	0.53	1.47
Gas purchase cost	2.00	2.11
Operating costs	0.07	0.15
Cash operating margin	**0.27**	**0.78**
Apr. 2016	0.22	0.65
YTD avg.	0.18	0.51
2015 avg.	0.17	0.44
2014 avg.	0.46	1.28
2013 avg.	0.58	1.61
Breakeven producer payment, % of liquids	44%	44%

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

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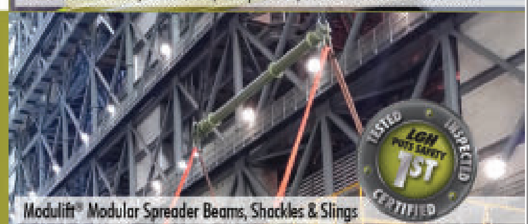

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