JULY 11, 2016 | USD 20

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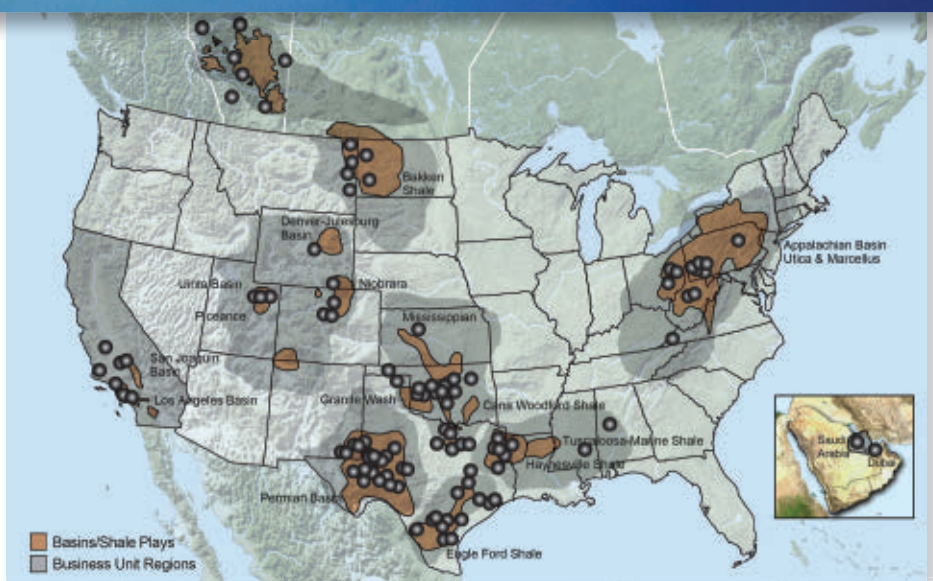

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GENERAL INTEREST

COVER

KCA Deutag Drilling Ltd. *sold the Ben Rinnes jack up drilling unit to an integrated energy and services company for an undisclosed sum. Ben Rinnes was under contract offshore Angola until February. The ABS Classed Marathon Le Tourneau MLT 53-S enhanced rig has been stacked in the Gulf of Guinea since. The rig was KCA Deutag's last mobile offshore drilling unit. Photo by KCA Deutag.*

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July 11, 2016

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GENERAL INTEREST QUICK TAKES

Libya's NOC rival leaders reach unification deal

The chairman of Libya's National Oil Corp. and his counterpart appointed by the government in Bayda agreed to unify the state company under a single management in an attempt to end a conflict about who controls Libya's crude oil exports and oil revenues.

Mustafa Sanalla, head of NOC in Tripoli, will continue as chairman. The unified company will be based in Benghazi, said a statement on NOC's web site. Nagi el-Maghrabi will join NOC's board.

"There is only one NOC, and it serves all Libyans," said Sanalla. "This agreement will send a very strong signal to the Libyan people and to the international community that the Presidency Council is able to deliver consensus and reconciliation."

The agreement recognized the Presidency Council as Libya's highest executive authority and the House of Representatives as the highest legislative authority. NOC will submit periodic reports to committees established by both.

The two sides jointly agreed a unified budget for the rest of the current fiscal year, the news release said.

The agreement makes infrastructure a priority, especially in Benghazi. The parties indicated their desire that NOC's board should meet regularly in Benghazi in the interim if security permits. Libya split into separately governed regions in 2014, resulting in rival NOC administrations for the east and west.

El-Maghrabi told Bloomberg on July 3 that the agreement has yet to be approved by the two parliaments of Tubruk and Tripoli. Libya's oil production has fallen dramatically since Muammar Qaddafi was ousted from power in 2011.

Libya is a member of the Organization of Petroleum Exporting Countries.

Israel-Turkey link lifts offshore-gas hope

Rapprochement between Israel and Turkey lowers one of many hurdles to development of giant Leviathan natural gas field and other deepwater discoveries in the eastern Mediterranean (OGJ Online, Apr. 12, 2016).

The countries signed an agreement on June 28 that reestablishes ties severed in 2010 after the Israeli military killed 10 Turkish activists aboard the Mavi Marmara, part of a flotilla trying to breach Israel's naval blockade of Gaza.

The new agreement allows Turkey to invest in Gaza and to deliver aid to Palestinians there. Israel will create a "humanitarian fund" of $20 million for families of the Mavi Marmara victims. The Turkish aid shipments will pass through the Israeli port of Ashdod.

Turkey is a logical destination for pipeline deliveries of gas from East Mediterranean fields, further development of which depends on outlets for production exceeding Israeli needs.

But routing and financing of a pipeline would be difficult because of tensions among countries in the region. Turkey's strained relations with Cyprus also complicate prospects.

Within Israel, too, gas development remains controversial. Opposition political parties objected to the agreement with Turkey, some claiming it had been motivated by gas interests.

North American leaders seek methane cuts

Leaders of Canada, Mexico, and the US have agreed to pursue cuts in methane emissions from oil and gas operations of 40-45% by 2025.

Canadian Prime Minister Justin Trudeau, Mexican President Enrique Pena Nieto, and US President Barack Obama also said they'd try to have 50% of electric power generation come from "clean energy" by 2025.

In a statement from their June 29 summit in Ottawa, the leaders said they committed to "an ambitious and enduring North American climate, clean-energy, and environmental partnership that sets us firmly on the path to a more sustainable future."

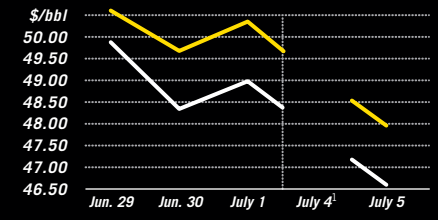
The statement included methane among "short-lived climate pollutants."

To reduce methane emissions, it said, the leaders commit "to develop and implement federal regulations to reduce emissions from existing and new sources in the oil and gas sector as soon as possible" and "to develop and implement national methane reduction strategies for key sectors such as oil and gas, agriculture, and waste management, including food waste."

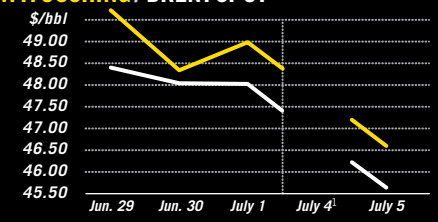
Senate to vote on new revenue-sharing bill

US Senate leaders indicate they'll support a vote later this year on legislation supported by industry groups changing how states share revenue from oil and gas produced on federal land.

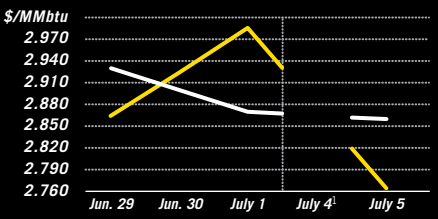
ICE BRENT / NYMEX LIGHT SWEET CRUDE



WTI CUSHING / BRENT SPOT



NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



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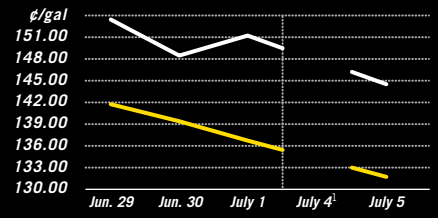
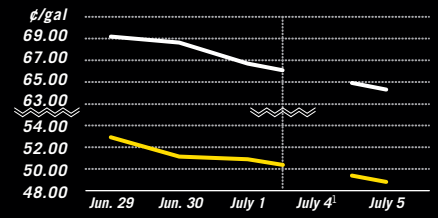
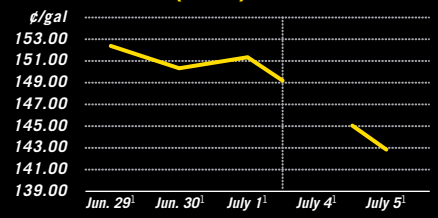


PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



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



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

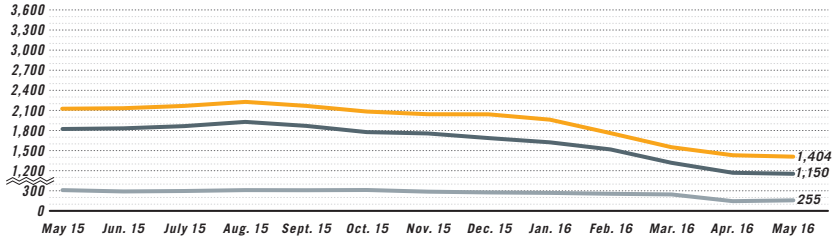
US INDUSTRY SCOREBOARD — 7/11

Latest week 6/24	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	9,714	9,541	1.8	9,365	9,015	3.9
Distillate	3,823	3,936	(2.9)	3,756	4,016	(6.5)
Jet fuel	1,694	1,580	7.2	1,592	1,543	3.2
Residual	301	216	39.4	297	205	44.9
Other products	4,913	4,769	3.0	4,943	4,791	3.2
TOTAL PRODUCT SUPPLIED	20,445	20,042	2.0	19,953	19,570	2.0
Supply, 1,000 b/d						
Crude production	8,690	9,600	(9.5)	8,966	9,381	(4.4)
NGL production[2]	3,464	3,181	8.9	3,406	3,097	10.0
Crude imports	7,830	6,992	12.0	7,810	7,231	8.0
Product imports	2,486	2,216	12.2	2,146	2,082	3.1
Other supply[2 3]	2,289	2,156	6.2	2,062	2,316	(11.0)
TOTAL SUPPLY	24,759	24,145	2.5	24,390	24,107	1.2
Net product imports	(1,284)	(1,331)	—	(1,748)	(1,543)	—
Refining, 1,000 b/d						
Crude runs to stills	16,484	16,658	(1.0)	16,101	16,003	0.6
Input to crude stills	16,727	16,891	(1.0)	16,308	16,233	0.5
% utilization	91.4	93.8	—	89.5	90.5	—

Latest week 6/24	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	526,573	530,626	(4,053)	465,379	61,194	13.1
Motor gasoline	238,998	237,631	1,367	216,737	22,261	10.3
Distillate	150,513	152,314	(1,801)	135,820	14,693	10.8
Jet fuel–kerosine	40,247	41,388	(1,141)	41,383	(1,136)	(2.7)
Residual	40,171	40,275	(104)	40,086	85	0.2
Stock cover (days)[4]			Change, %		Change, %	
Crude	31.9	32.4	(1.5)	28.2	13.1	
Motor gasoline	24.6	24.5	0.4	22.7	8.4	
Distillate	39.4	40.3	(2.2)	34.5	14.2	
Propane	89.0	81.2	9.6	86.1	3.4	
Futures prices[5] **7/1**			**Change**		**Change**	**Change,%**
Light sweet crude ($/bbl)	48.28	49.02	(0.74)	60.06	(11.78)	(19.6)
Natural gas, $/MMbtu	2.88	2.71	0.17	2.77	0.11	4.1

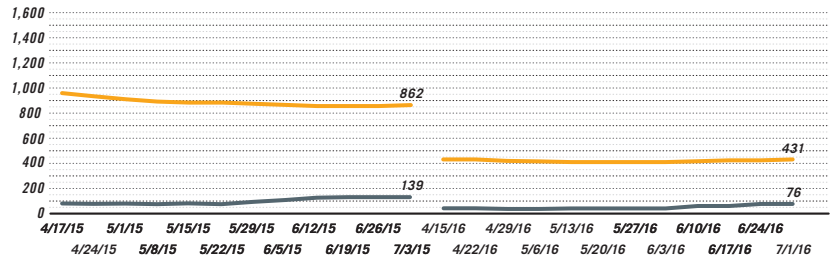
[1]Based on revised figures. [2]OGJ estimates. [3]Includes other liquids, refinery processing gain, and unaccounted for crude oil. [4]Stocks divided by average daily product supplied for the prior 4 weeks. [5]Weekly average of daily closing futures prices.
Source: Energy Information Administration, Wall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

A revenue-sharing bill was proposed at the end of June by Sens. Bill Cassidy (R-La), Energy and Natural Resources Chairman Lisa Murkowski (R-Alas.), Tim Scott (R-SC), Dan Sullivan (R-Alas.), Thom Tillis (R-NC), and David Vitter (R-La.).

It covers onshore and offshore production of oil and natural gas as well as of renewable energy.

The legislation aims to correct imbalances of a system under which coastal states now receive 0.07% of federal royalties while onshore states receive 50%.

"This legislation protects onshore energy-producing states' royalties and increases offshore states' share," according to a fact sheet.

The bill establishes 37.5% revenue-sharing for Alaska and Middle Atlantic states, beginning in 2027, subject caps that increase with time and disappear after 2067.

It maintains 37.5% revenue-sharing for states on the Gulf Coast but adjusts current limits, removing caps after 2055.

The bill also directs 12.5% of federal OCS revenue to specific uses in coastal states.

For onshore oil and gas production on federal land the bill restores 50% in revenue-sharing.

Cassidy said Senate Majority Leader Mitch McConnell tweeted, "Thanks to the Louisiana delegation, Senate is primed to take up the critical issue of resource production revenue sharing later this year."

Presidents of eight oil and gas industry groups wrote Cassidy a letter supporting the legislation. OGJ

EXPLORATION & DEVELOPMENT QUICK TAKES

EnQuest makes oil find with Eagle prospect

EnQuest PLC encountered a 67-ft thick oil-bearing column in the Fulmar in its Eagle exploration well in the Greater Kittiwake Area (GKA) in the Central North Sea. The company did not encounter an oil-water contact, which it said represented potential upside volumes on the flank of the structure.

The company anticipates gross recoverable reserves to be similar to those in nearby Gadwall field, which was estimated to be 6.6 million bbl of oil and 4.4 bcf of natural gas in 2004 (OGJ Online, Oct. 1, 2004). Gadwall is part of GKA, acquired by EnQuest in 2014, and was returned to production by the company in second-half 2015. EnQuest holds 100% working interest in the Eagle well, which is being further evaluated.

GKA is located on UKCS blocks 21/12a (license P.073), 21/12d (P.1786), 21/17a (P.1415), 21/17c (P.1415), 21/18a (P.351), and 21/19 (P.238). The area includes the Kittiwake, Mallard, Gadwall, Goosander, and Grouse fields, all of which have been developed as subsea tie-backs to a steel platform located at Kittiwake.

ExxonMobil confirms oil discovery offshore Guyana

The Liza-2 well, drilled 120 miles offshore Guyana, encountered more than 190 ft of oil-bearing sandstone reservoirs in Upper Cretaceous formations, reported ExxonMobil Corp. unit Esso Exploration & Production Guyana Ltd.

The Liza-2 well was drilled to 17,963 ft in 5,551 ft of water about 2 miles from the operators first exploration well, Liza-1, on the 6.6 million acre Stabroek block.

ExxonMobil president Steve Greenlee said a production test of the Liza-2 well confirmed "the presence of high-quality oil from the same high-porosity sandstone reservoirs that we saw in the Liza-1 well completed in 2015."

The Liza-1 well, which was spudded on Mar. 5, 2015, drilled to 17,825 ft in 5,719 ft of water, and it encountered more than 295 ft of oil-bearing sandstone reservoirs (OGJ Online, May 20, 2015).

As early as 2012, the Guyana-Suriname basin began drawing interest from operators as a frontier region (OGJ Online, June 4, 2012). While Guyana has proven successful, Suriname has cooled considerably. Suriname's state-owned Staatsolie reported last year that it had received two bids for Block 58 in its 2015 offshore deepwater bid round. No IOCs, however, bid on Blocks 59 and 60 (OGJ Online, Feb. 26, 2015).

Potential recoverable resources for the Liza discovery are estimated at 800 million to 1.4 billion boe, ExxonMobil said.

Esso E&P is operator and holds 45% interest in the Stabroek block. Hess Guyana Exploration Ltd. holds 30% interest and CNOOC Nexen Petroleum Guyana Ltd. holds 25% interest.

Delek Group to drill Tamar-8 well offshore Israel

Delek Drilling LP and operator Noble Energy Mediterranean Ltd. have announced that the Tamar-8 development well will spud in this year's fourth quarter with 4 months planned for drilling, completion, and tie back. The well is 100 km west of Haifa off Israel in 1,670 m of water. Tamar-8 will target Miocene Tamar sands and is planned for a total depth of 5,050 m.

The partnership looks to increase redundancy in the existing Tamar productions system, and Tamar-8 will serve as part of its Tamar expansion project. The partnership also is planning on development of Tamar SW field.

Israel's Petroleum Commissioner of the Ministry of National Infrastructures, Energy, and Water Resources approved the current development plan (OGJ Online, June 2, 2016).

The well cost is an estimated $265 million, which includes $160 million for completion, and $105 million for construction of infrastructure for the Tamar project (tie back and subsea system). The partners have already invested $37 million for infrastructure development in Tamar SW, Delek said. Total net expense for the well will be $228 million.

Noble signed an agreement to divest 3% of its working interest in Tamar field to the Harel Group, a leading insurance provider and pension manager in Israel. The transaction value of $369 million is based on gross pretax Tamar valuation of $12 billion, Noble said. The transaction is expected to close in the third quarter. Harel partnered with private equity firm Israel Infrastructure Fund (IIF). The partners have an option to purchase an additional 1% working interest from Noble before closing.

Prior to the working interest sale, Noble operated Tamar field with 36% working interest. The company is carrying out an 11% sell down of its interest in Tamar field and anticipates the sale of the remaining 7-8% working interest with the next 36 months, at which point the operator will retain 25% working interest and operatorship in Tamar field.

Tamar has recoverable resources of 10 tcf of natural gas. In 2015, the field sold 252 MMcfd of natural gas, generating $318 million in net pretax income for the operator.

Additional partners on Tamar-8 include Delek Drilling 15.625%, Avner Oil & Gas Exploration LP 15.625%, Isramco Negev 2 LP 28.75%, and Dor Gas Exploration LP 4%. OGJ

DRILLING & PRODUCTION QUICK TAKES

Vaalco reports well shut-in status offshore Gabon

Houston independent Vaalco Energy Inc. maintains its 2016 production guidance of 3,700-4,500 boe/d, noting that a malfunction with pumps on one well offshore Gabon is being resolved. Meanwhile, Vaalco renegotiated terms with Transocean Ltd. after releasing the Constellation II rig offshore Gabon.

Second-quarter production averaged 4,700 boe/d, up 4% from the first quarter, Vaalco said.

On June 23, electrical submersible pumps (ESPs) in the South Tchibala 2-H well failed offshore Gabon, resulting in the well being temporarily shut-in. Before the shut-in, South Tchibala 2-H produced 1,700 b/d of oil gross, or 415 b/d net to Vaalco.

Vaalco plans to move a hydraulic workover unit onto the Avouma platform to replace the ESPs. The well is expected to be back on stream by early fourth quarter. The independent selected a hydraulic unit because it was less expensive than using a jack up rig.

Net cost to Vaalco is expected to be $1.5 million. Separately, Vaalco will pay $5.1 million net for its interest for unused rig days in the Transocean contract for the Constellation II rig.

Terms call for Vaalco to pay the $5.1 million, plus Vaalco's share of demobilization charges, in seven equal monthly installments starting in July.

Steve Guidry, Vaalco's chief executive officer, said, "While low oil prices were the primary factor in our releasing the rig, the benefit of our drilling program through that point was further evidenced in the second quarter."

Vaalco has exploration, development, and production activities in Gabon, Equatorial Guinea, and Angola.

A floating production, storage, and offloading vessel is used for the Etame Marin block production offshore Gabon, which includes Southeast Etame and North Tchibala fields (OGJ Online, Aug. 29, 2016).

Stone Energy cancels contract for Ensco 8503 rig

Stone Energy Corp., Lafayette, La., has agreed with Ensco PLC to cancel the contract for the Ensco 8503 dynamically positioned deepwater drilling rig that was operating in the deepwater Gulf of Mexico.

Stone will pay to Ensco $20 million, $5 million of which was a deposit previously provided to Ensco pursuant to the drilling services contract. The contract, effective since 2015, was at a day rate of $341,000 and scheduled to expire in August 2017 (OGJ Online, Oct. 7, 2014).

Separately, Stone entered into an interim gas gathering and processing agreement with Williams Co. Inc. at Mary field in Appalachia. The interim agreement provides near-term relief for Stone by permitting Stone to resume production at the field, thereby providing greater volume to Williams.

Volumes from Mary field are now at 45 MMcfed and are expected to rise to more than 60 MMcfed in July and more than 100 MMcfed in August. These volumes are in addition to the 20 MMcfed producing from Heather and Buddy fields.

Stone shut output from the field in September 2015 citing "unacceptable" operating margins caused by low commodity pricing and fees for transportation, processing, and gathering.

Johan Sverdrup riser platform construction begins

Statoil ASA said construction has begun at the Samsung Heavy Industries yard in South Korea on the riser platform for the Johan Sverdrup development in the North Sea (OGJ Online, June 6, 2016).

The riser platform will be 124 m long, 28 m wide, 42 m tall, and weigh 23,000 tonnes. It will be the largest of four Johan Sverdrup Phase 1 platforms and serve as the receiver of land-based power and the sender of oil and gas to land.

Statoil in January 2015 awarded Kvaerner ASA the contract for engineering and procurement management for the riser platform and the processing platform, construction of which was planned to start this month. OGJ

PROCESSING QUICK TAKES

Uganda reported in refinery talks with SK

The government of Uganda has resumed negotiations with SK Engineering & Construction, Seoul, for construction of a grassroots refinery after ending talks with a Russian company, according to press reports.

Uganda's Ministry of Energy and Mineral Development last year selected a consortium led by RT-Global Resources, Moscow, for the main contract for construction of a 60,000 b/d refinery to be built in two phases near Lake Alberta. The project includes a 205-km products pipeline linking the refinery with a terminal near Kampala (OGJ Online, Feb. 17, 2015). RT-Global and SK were finalists in a long period of bid evaluation.

Construction of the country's first refinery would allow development of discoveries of waxy crude oil in the Albertine basin.

The ministry was quoted as saying it ended talks with RT-Global (Rostek) after the company added demands to a deal reached in May.

Long-term oil supplies secured for Litvinov refinery

Unipetrol RPA SRO, the marketing arm of Unipetrol AS, and parent company Polski Koncern Naftowy SA (PKN Orlen) have signed separate agreements with OJSC Rosneft Oil Co. and PJSC Tatneft to supply Russian crude oil through mid-2019 to subsidiary Ceska Rafinerska AS's 5.4 million-tpy refinery in Litvinov, Czech Republic.

Under the first contract, signed on June 30, Rosneft will ship 2.9-5 million tonnes/year of Russian Export Blend crude oil (REBCO) to the Czech Republic along its Druzhba pipeline from July 1, 2016, to June 30, 2019, Unipetrol said.

Alongside benefitting from more favorable contractual terms as a result of jointly purchasing crude with PKN Orlen, the long-term contract with Rosneft covers 65% of Unipetrol's total demand for REBCO, a major refining feedstock, said Marek Switajewski, Unipetrol's chairman and chief executive officer.

As part of a second contract also signed on June 30, Tatneft will supply a total 600,000 tonnes of REBCO from July 1, 2016, to June 30, 2017, Unipetrol said.

The medium, sour Russian crude will be valued according to prevailing market conditions at the time of its delivery using the differential price of Russian Urals to the Brent Dated Index.

Petro Rabigh's refinery due new units

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

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

Due for mechanical completion in first-quarter 2019, the project is scheduled for startup during third-quarter 2019, Maire Tecnimont and Petro Rabigh said.

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

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

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

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

TRANSPORTATION QUICK TAKES

Tangguh LNG firms reach FID for expansion project

Partners in the Tangguh production-sharing contract have taken a final investment decision (FID) for development of the Tangguh LNG expansion project in the Papua Barat province of Indonesia.

The BP PLC-led project will add a third LNG train, which will add 3.8 million tonnes/year of production capacity to the existing facility, bringing total plant capacity to 11.4 million tpy. The project also includes two offshore platforms, 13 production wells, an expanded LNG loading facility, and supporting systems.

This FID follows Indonesia's approval of the Plan of Development II in late 2012, and an environmental and social impact assessment in 2014 (OGJ Online, Nov. 5, 2012; Aug. 4, 2014). Front-end engineering and design contracts were let to two consortia in 2014 (OGJ Online, Oct. 22, 2014).

Awards for the project's key engineering, procurement, and construction contracts are expected in the third quarter with construction to begin thereafter. Operation is expected in 2020.

BP notes that 75% of Train 3's annual LNG production has been sold to the Indonesian state electricity company PT PLN (Persero). The remaining volumes are under contract to Kansai Electric Power Co. in Japan.

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

PHMSA seeks comments on regulating CO_2 pipelines

The US Pipeline & Hazardous Materials Safety Administration is seeking comments on a report it developed, "Background for Regulating the Transportation of Carbon Dioxide in a Gaseous State," as part of its effort to develop minimum requirements for safely transporting CO_2, the US Department of Transportation agency announced.

The report evaluates present and potential future CO_2 gaseous pipelines and outlines PHMSA's approach for establishing regulations, it said in a June 27 Federal Register notice. The agency is seeking to better understand where CO_2 pipelines, which it does not regulate currently, are located so it can establish requirements as mandated under the 2011 Pipeline Safety Reauthorization Act.

After carefully reviewing the available information with regard to gaseous carbon dioxide pipelines, PHMSA has been unable to identify specific gaseous CO_2 pipelines or pipeline operators which would potentially be subject to future regulation under Section 15 of the 2011 law, the agency said.

It said it is seeking comments to better understand the possible effects of the regulatory scenarios presented within the report, information considered within the report, conclusions that could be drawn from the report, information missing from the report, and to better understand the locations and extent of existing or planned gaseous CO_2 pipelines. OGJ

Offshore crane-transfer safety

STEVEN PORUBAN
Managing Editor-News

A new milestone has been reached in the form of a guidance document aimed at supporting a global industry that performs millions of offshore personnel transfers every year. These guidelines are outlined in a document entitled "Offshore Personnel Transfer by Crane—Best Practice Guidelines for Routine & Emergency Operations," which was recently released by the Marine Transfer Forum, a group that focuses on personnel transfers to and from offshore installations by marine methods.

The need for such guidelines is explained on the forum's web site at www.marinetransferforum.org: "Unlike the highly regulated aviation industry, marine practices vary greatly from region to region." Through collaboration, the forum says it commits to "raising standards, increasing awareness, gathering better data, developing better reporting, sharing good practice, and improving equipment and services."

The forum's aim

The forum, which is run by a steering group of organizations including EnerMech, DNV GL, Reflex Marine, and Seacor Marine, aims to "build a substantial personnel transfer data set." Forum members are requested to contribute activity levels and incident data to an independent annual survey. Benefitting from this range of expertise, the guidelines "reflect the key roles in ensuring safe and efficient marine transfer operations," the group said.

Key contributions to the guidelines also came through a period of detailed consultation with various industry groups including the International Marine Contractors Association, the Institute of Occupational Safety & Health (IOSH), and Damen Shipyards. Involving these groups ensured that the guidelines reflected best practices and were relevant not only to the conventional offshore oil and gas industry, but also to the growing marine renewable energy industry.

Simon Hatson, chair of IOSH's offshore group, explained, "The offshore industry is one in which workers face many inherent risks, but all workers, irrespective of their industry, should be covered by a culture of care."

Robin Proctor, Reflex Marine's primary contact for the forum, noted, "Market conditions, new technologies, evolving logistics demands in offshore wind, and increasing industry trends toward marine vs. helicopter-based logistics all bring the case for marine transportation methods into sharper focus."

Crane transfers

According to the forum's findings, every year about 9 million passenger transfers to offshore installations are made via helicopter, and an estimated 7 million transfers/year are made by sea. Marine-based crew supply involves a range of methods that includes crane transfer, walk to work, step-over (to a ladder or boat landing), and swing rope. Of these, crane transfer is the most common method, accounting for about 5 million transfers/year.

Using data based on the review of global crane transfer incidents involving all carrier types from mainly 2000 onwards, the forum determined that a majority of crane-transfer incidents—68%—are most likely to occur on or near the vessel not hosting the crane. About 13% occur at the installation itself, 7% at the mid-transfer point, and 12% are unknown.

It was discovered that the highest number of incidents—46%—occur during pick-up of the carrier, as opposed to landing. This is typically due to an off-centered lift, or the misalignment between the crane hook and the carrier during pick-up, causing the carrier to swing uncontrollably. About 21% of the incidents occurred at the mid-transfer point, 30% at the landing point, and 3% are unknown.

The types of incidents vary as well. About 54% of incidents involved falls from the carrier, 40% are lateral collisions, 16% are vertical impacts, 9% are trips and entanglements, and 6% are immersions. It is noted that since incidents can fall into more than one of these categories, the cumulative total for the categories used is greater than 100%.

In recent years, crane transfers have evolved through changes in the design of the carrier, the crane, and the vessel. Safe crane transfers rely on collaboration across several disciplines, the forum found, including lifting, marine logistics, health and safety, and asset management.

To achieve best-practice transfer procedures, the forum formulated guidelines for conducting passenger briefings, entries and exits, liftings, emergency response protocols, and vessel-mounted crane standards. This was done all in the name of "working together to transfer crews safely." OGJ

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

JULY 2016

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

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

AUGUST 2016

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

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

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

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

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

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

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

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

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

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

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

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

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

SEPTEMBER 2016

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

OCTOBER 2016

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

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

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

THE TYRANNY OF ACTIVISM—CONCLUSION

Carbon tax context

To radical demands of climate-change protestors in dinosaur costumes, some oil and gas companies respond by supporting a carbon tax. That won't make the issue or the activists go away. Activists want oil and gas companies to go away.

Support for a carbon tax demonstrates proper concern about a rising concentration of carbon dioxide in the atmosphere and about possible effects on the climate. It would yield a "carbon price" helpful to investment planning. And it might, some seem to think, mollify activists long enough for temperature measurements further to weaken doomsday warming theories and for economic strain to steer politics away from extreme remedies. Indeed, a carbon tax might represent the best among universally poor options.

Not cap-and-trade

Yet the best that can be said about a carbon tax is that it isn't a cap-and-trade scheme. Cap-and-trade is central planning disguised as capitalism. It mimics markets by allowing trading of emission credits but loses the distinction by allowing officials to control supply of emission rights. When governments manipulate market factors, scoundrels get rich at everyone else's expense. Furthermore, cap-and-trade systems always emerge in partnership with other market distortions, such as mandates and subsidies for politically coddled energy.

A carbon tax would be no better than cap-and-trade at resisting governmental encroachment on energy markets. But it would be more honest. Unlike cap-and-trade, a carbon tax would make clear to energy consumers what governments were doing to them.

At any politically feasible level, though, a carbon tax could be little more than a climatological gesture. Even supporters of fervid precaution admit current proposals are just the first of many costly changes needed to achieve stated temperature goals under standard assumptions. In Canada, the Parliamentary Budget Office says meeting the country's emission targets, aligned with international efforts to limit global average temperature rise after 1990 to 2°C., requires a national carbon price more than triple the highest level in effect or proposed in any of the provinces. A Chatham House study last year warned temperature targets can't be met without shrinking livestock agriculture worldwide.

No one, therefore, should assume that adoption of a carbon tax would preclude other efforts to overhaul human habits with energy and food. Nor should anyone construe a carbon tax as an investment in political reaction against imposed distress. Political reaction presupposes health of democratic institutions. As was argued here last week, climate politics is poisoning those systems. When a US political party considers the criminalization of speech, for example, democracy has fallen ill. On June 25 the Democratic Platform Drafting Committee approved a call for the Department of Justice "to investigate alleged corporate fraud on the part of fossil fuel companies who have reportedly misled shareholders and the public on the scientific reality of climate change."

This triumph of activism fits a troubling pattern. Climate activists persistently misrepresent scientific issues, assert unidimensional certainty about complex and perplexing phenomena, and make democratic mechanisms intolerant of dissent. Many of them are charismatic radicals using climate change to pursue grander goals, including global governance, communism, and universal vegetarianism. For them, climate mitigation is an implement of control.

Honest discussion

Maybe oil and gas companies can advocate for a carbon tax without seeming to confirm an antiscientific, antidemocratic, anticapitalist, and anticonsumer orthodoxy expressly committed to running them out of business. If they choose that option, however, they should frame their arguments within uncompromising boundaries of market freedom, personal liberty, and consumer welfare. And they should demand honest, open discussion about climate science, insisting that activists, however they're dressed, shut up and listen for once.

With or without support for a carbon tax, a refined, toughened stand on climate issues would show commitment to the important work of bringing affordable energy to market, to the integrity of science, and to virtues of democracy. The alternative is energy policy forever set by tyrants dressed as dinosaurs. OGJ

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

NOVEMBER 2016

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

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

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

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

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

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

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

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

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

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

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

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

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

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

JANUARY 2017

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

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

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

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

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

FEBRUARY 2017

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

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

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

19th International Conference on Oil, Gas & Petrochemical Engineering (ICOGPE 2017), Venice, web site: www.waset.org/conference/2017/02/venice/ICOGPE **16-17.**

Society of Petroleum Engineers (SPE) Reservoir Simulation Conference, Montgomery, Tex., web site: www.spe.org/events/rsc/2017/ **20-22.**

Australasian Oil & Gas Exhibition & Conference (AOG), Perth, web site: aogexpo.com.au/ **22-24.**

Nigeria Oil & Gas Conference & Exhibition, Abuja, web site: www.cwcnog.com/ **Feb. 27-Mar. 2.**

Reaching 2022 RFS goals could be difficult, House subcommittee told

Nick Snow
Washington Editor

Substantially increased use of biofuels by 2022 under more ambitious goals set by the 2007 Energy Independence and Security Act won't be achieved with the low percentages of ethanol and biofuel that account for nearly all of their current use, a US Energy Information Administration official told a US House Energy and Commerce subcommittee.

Potential alternative pathways include increased use of ethanol blends above 10% by volume; more use of biodiesel blends above 5% by volume; the advent of drop-in biofuels such as renewable gasoline, diesel, or jet fuel that can be used as direct replacements for their petroleum counterparts; and development and use of new renewable fuel components, such as bio-butanol, that might be more easily blended in increased volumes, EIA Deputy Administrator Howard K. Gruenspecht said.

"To date, none of these options has achieved a significant market role," Gruenspecht told the committee's Energy and Power Subcommittee on June 22. "The premise that advanced biofuels, particularly liquid cellulosic biofuels, would be available in significant quantities at reasonable costs within 5-10 years following adoption of the 2007 RFS targets has not been borne out. Ethanol faces demand, distribution system, and regulatory challenges that make it difficult to increase its use as a motor fuel regardless of its source."

A top US Environmental Protection Agency official who testified alongside him said EPA used its waiver authority to establish quotas below statutory targets for total, advanced, and cellulosic biofuels "but only to the extent necessary and appropriate in light of supply limitations, and to levels that will drive ambitious, achievable growth."

Janet McCabe, EPA acting assistant administrator for air and radiation, told the subcommittee that quotas the agency proposed on May 16 "would require significant growth in renewable fuel production and use over historical levels, directionally consistent with congressional intent."

When Bobby Rush (D-Ill.), the subcommittee's ranking minority member, asked her if EPA has what it needs to reach the 2022 goals, she replied, "Congress had a long vision for this program, and it takes a long time to implement these changes. We're confident we have the tools to do this."

Implementation problems

But a second panel of witnesses disagreed over whether lower motor fuel product demand and significantly higher US crude oil production changed conditions to a point that EPA's implementation of rules has created serious problems.

Biofuel advocates charged that its use of waivers undercut the program's effectiveness and created uncertainty. Refiners, product retailers, and a leading national wildlife group cited unintended consequences ranging from being held accountable for situations beyond their control to losing millions of acres of wildlife habitat to more corn production for ethanol.

"AFPM members are not antibiofuel," American Fuel & Petrochemical Managers Pres. Chet Thompson said. "They are, however, anti-mandates, oppose limiting consumer choice, and oppose propping up some interests at the expense of others. AFPM believes that consumers and the free market should decide which fuels are used in the marketplace—not the federal government." The Clean Air Act clearly provides EPA with authority to issue waivers, which biofuel groups legally challenged as inappropriate, he added.

Renewable Fuels Association Pres. Bob Dineen responded that the 2007 RFS is accomplishing its goals. "While some stakeholders may not like the policy objectives this program was designed to address, the fact is energy diversity and security, rural economic development, reducing carbon, and spurring investment in new technologies remain critical policy priorities today," he said in his written testimony.

R. Timothy Columbus, a partner at Steptoe & Johnson LLP who testified on behalf of the National Association of Convenience Stores and the Society of Independent Gasoline Marketers of America, said that his clients believe EPA struck an appropriate balance in its latest ruling.

"It is important to keep in mind, however, that SIGMA's and NACS's support for the RFS is based upon an expectation that the program will be administered in a manner that reflects the realities of the market as it exists today, rather than how Congress projected the market would look in 2005 and 2007," he went on. Constraints on retailers selling more renewable fuels include insufficient demand and retailers being held liable for recordkeeping and misfueling, Columbus said.

Misfueling may occur

"Research has shown, and EPA has agreed, that use of E15 in small nonroad engines can have harmful and costly consequences on small engines and outdoor power equipment. Research on warning label effectiveness suggests that an E-15 warning label will do very little to mitigate misfueling," Briggs & Stratton Corp. Chief Executive Todd J. Teske said.

Behavioral studies of customers at the gas pump conclude that consumers overwhelmingly favor the lowest priced option, regardless of the consequences, Teske said. "Misfueling due to lack of education to consumers regarding the proper use of E15 will be significant. The use of Biofuels or 'drop-in fuels' has been tested and could prevent misfueling," Teske said in written testimony.

National Wildlife Federation Pres. Collin O'Mara noted that Congress expanded the RFS in 2007 to reduce dependence on fossil fuels, accelerate development of sustainable biofuels, and reduce greenhouse gas emissions.

"Unfortunately, 9 years later, there have been severe unintended consequences—large-scale loss of wildlife habitat, especially native grasslands, and degradation of water quality—and wildlife has borne the brunt of these impacts," O'Mara said. "These unintended consequences threaten some of our most beloved and rare wildlife species, including sage grouse, meadowlarks, longspurs, swift fox, and the monarch butterfly, as well as a range of fish and other aquatic life."

But Brooke Coleman, Advanced Biofuels Business Council executive director, said the biofuels industry is being unfairly blamed for changing land uses that actually are part of a bigger agricultural push onto previously unused land in response to growing demand. "From an RFS perspective, the production capacity of the broader advanced biofuels industry (i.e. all types of fuel qualifying as advanced biofuel under the RFS) exceeded the 2013 statutory target of 2.75 billion gal established by Congress via RFS2," he said.

"While there are areas of the RFS that could be improved, it has facilitated the delivery of more biofuels to the American public. Last year alone, American consumers used nearly 2.1 billion gal of biodiesel and renewable diesel out of an overall diesel market of about 60 billion gal," asserted National Biodiesel Board Executive Vice-Pres. Anne Steckel. EPA's proposal sets a 2.1 billion-gal biomass-based diesel quota for 2018, a level the industry looks on pace to exceed in 2016, she said.

In a separate statement before the hearing, American Petroleum Institute Downstream Director Frank Macchiarola said federal lawmakers need to fix the RFS, which he described as outdated and broken. "We need Congress to repeal or significantly reform the RFS," Macchiarola said. "Members on both sides of the aisle agree this program is a failure, and we are stepping up our call for Congress to act." OGJ

SEC disclosure rule seen hurting US firms

New requirements for project-level disclosure of financial payments to governments put US oil and gas companies working abroad at a competitive disadvantage, an industry representative warned.

The requirements appear in the US Securities and Exchange Commission's final rule on financial disclosures, mandated by Sec. 1504 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (OGJ Online, Dec. 11, 2015).

"The SEC's rule forces US companies to disclose proprietary information to its competitors while foreign entities do not," said Stephen Comstock, American Petroleum Institute director of tax and accounting policy. "This can give some large industry players an advantage on future business projects and can fundamentally harm American jobs."

The rule applies to extractive-industries issuers of stock that are required by the Securities Exchange Act to file annual reports with the SEC.

Affected companies must disclose single or sequential payments above $100,000 "made to further the commercial development of oil, natural gas, or minerals."

Activities covered by the rule include exploration, extraction, processing, and export, as well as the acquisition of related licenses.

Payments that must be disclosed include taxes, royalties, fees (including license fees), production entitlements, bonuses, dividends, payments for infrastructure improvements, and payments required by law or contract related to community and social responsibility.

The rule allows for disclosure delays in acquisitions of companies not previously covered. It also provides for a 1-year delay in reporting payments related to exploration.

Court setback

The SEC reproposed disclosure requirements last December after an initial rule, adopted in 2012, was vacated by the US District Court for the District of Columbia in a case brought by a business coalition that included API and the Independent Petroleum Association of America.

At the time of the reproposal, SEC Chair Mary Jo White said requirements would be consistent with transparency regimes elsewhere.

When it issued the final rule, the commission issued a separate order saying it had determined its requirements are

"substantially similar" to those of the European Union Accounting and Transparency Directives, Canada's Extractive Sector Transparency Measures Act, and the US Extractive Industries Transparency Initiative.

The API isn't persuaded.

"There appears to be no meaningful differences between this rule and the previous rule struck down by the courts, so our concern remains the same," Comstock said.

He said the SEC "ignored industry efforts to disclose information but to do so in a way that doesn't give competitors an unfair advantage."

The central industry concern is the requirement that nonstate companies disclose payments project by project, rather than country totals. Project-level information is valuable to national oil companies not subject to the requirements, against which private companies compete for foreign investment opportunities.

"The industry actively supports the Extractive Industries Transparency Initiative, which takes a global approach and already includes 51 countries that promote transparency and puts all companies on equal footing," Comstock said. OGJ

Industry groups slam new US royalty rule

The US Department of the Interior has published a final rule that industry groups fear will enable federal officials to second-guess oil and gas values used in royalty calculations (OGJ Online, Apr. 17, 2015).

A department statement said the new regulations will ensure "Americans receive every dollar due" for oil and gas produced on federal land. The regulations also apply to coal on federal and Indian land.

DOI said current oil, gas, and coal valuation methods haven't kept pace with energy-market changes.

The new rules eliminate benchmarks for "non-arm's length" sales between affiliated companies and require valuation based on gross proceeds from the first arm's length sale, with allowances.

An American Petroleum Institute statement said the rule won't achieve its stated goals, which include simplification and cost-cutting, and will discourage development by reversing "many longstanding policies on valuation options and allowances."

A new "default provision," API said, "permits the agency to second-guess lessees' royalty valuation yet provides no standards for when and how such a decision would be made and justified."

According to API, DOI's Office of Natural Resources Revenue redefined "gathering" for Outer Continental Shelf leases to disallow deductions of costs for moving oil and gas from the wellhead to the first platform.

"This is significant for companies as the first movement of production could span hundreds of miles and could bring additional costs of tens of millions of dollars annually without providing companies any flexibility to conform their operations to the new rule," API said.

The Western Energy Alliance, many of whose members operate on federal land onshore, said the rule will further discourage development.

"Small businesses will be especially hard hit with this regulation, which disallows normal deductions for the cost of doing business, charging royalties for money producers haven't earned," it said.

According to WEA, the changes will disallow cost allowances of about 40¢/Mcf of gas.

"We keep hearing from the administration that it wants to get 'every dollar due' from oil and natural gas production on federal lands," the group said. "Yet there are no 'dollars due' if you drive production off federal lands by making it too time-consuming, complex, and costly."

The group cited a recent Congressional Research Service report that natural gas production is down 15% on federal land but up 66% on nonfederal land since 2008. OGJ

Survey: Outlook improving for US Eleventh District oil, gas firms

Oil and gas companies in Texas, southern New Mexico, and northern Louisiana reported improved business activity for the second quarter and thus a more positive outlook for the rest of the year onward, according to executives responding to a quarterly Dallas Federal Reserve energy survey.

The business activity index—the survey's broadest measure of sentiment among Eleventh District energy firms—turned positive at 13.8, up sharply from -42.1 in the first quarter. Positive readings in the survey generally indicate expansion, while readings below zero generally indicate contraction.

Data for the survey were collected from 152 energy firms. Of the respondents, 67 were exploration and production firms and 85 were oil and gas services firms.

"I think a key word here is 'stabilization' in business conditions," commented Michael D. Plante, Dallas Fed senior research economist. "A little more than 50% of respondents said that their business activity levels were the same as they were in the first quarter. That's a marked difference from what we found in the first-quarter results, when more than half of survey respondents said that business activity levels actually declined."

E&P firms reported oil and gas production fell again in the second quarter, but at a slower pace than in the first. The oil production index was -19.7, up from -49.4, and the natural gas production index rose 23 points to -24.7.

Oil and gas services firms reported that declines in equipment use largely abated in the second quarter, with the equipment utilization index rising more than 50 points to come in just below zero at -1.2.

Outlooks 6 months onward improved, with the index coming in at 19, a pronounced reversal from the -24.5 reading in the first quarter. Outlooks were particularly optimistic among E&P firms, with nearly half reporting their view had improved. Reflecting this, the index of expected E&P capital spending in 2017 jumped 40 points to 25.4, suggesting producers have revised upward their expenditure estimates for next year.

Around a third of respondents think the global oil market will likely balance this year, and more than 70% believe it will balance by second-quarter 2017. Ninety percent indicated balance would take place by yearend 2017, with 10% expecting balance in 2018 or later.

The average expected West Texas Intermediate crude oil price for yearend 2016 came in at $54.80/bbl. Price expectations ranged $35-70/bbl, with most respondents anticipating the price will be higher than its current level.

The average expected Henry Hub natural gas price for yearend 2016 came in at $2.63/MMBtu. Price expectations ranged $1.50-3.50/MMBtu. OGJ

Cedigaz: Global gas demand to rise 1.6%/year over 2014-35

Worldwide natural gas demand is expected to rise 1.6%/year during 2014-35, driven by emerging markets, electric power generation, and industry, according to a recent outlook from Cedigaz.

In its Medium and Long-Term Natural Gas Outlook 2016, the international gas association highlights the increasing role of gas as a bridge fuel towards a longer-term, increasingly renewables-based energy system.

Cedigaz noted that political action is needed to promote coal-to-gas switching worldwide, given the vast low-cost coal resources. The trajectory of Cedigaz's scenario is based on the assumption that energy-related carbon dioxide emissions increase an average of 0.3%/year, reaching almost 35 Gt over 2030-35.

"Looking forward to 2035, the total primary energy consumption is forecast to grow at a moderate rate of 1%/year in a context of increased energy efficiency. In this context, gas stands as the fastest-growing fossil fuel over 2014-35, up 1.6%/year. In contrast, the growth of oil and coal is expected to slow sharply, with respective annual rates of 0.2% and 0.1%." Cedigaz said.

Gas will therefore increase its relative share in the global primary energy supply to 23.9% in 2035 from 21.4% in 2013.

However, the pace of gas demand growth has been revised downwards compared with the association's Outlook 2015. Intended Nationally Determined Contributions (INDCs) ahead of Conference of Parties (COP21) have been taken into account, meaning greater efforts to meet environmental goals via the deployment of renewables and increasingly efficient technologies.

Also, according to the Outlook 2016, virtually all of the additional energy is consumed in emerging economics and 85% of gas growth comes from emerging economies. The US is the only industrialized market to record a significant growth in gas consumption in volume terms, thanks to the competiveness of shale gas and the adoption of the Clean Power Plan. China and the Middle East lead the way in gas demand growth, accounting for 27% and 25%, respectively, of the incremental volume over the projection period.

The power industry remains the powerhouse behind gas expansion. Substantial growth in gas use in manufactured industry is also expected in the Middle East, China, India, Latin America, Southeast Asia, and the US.

Interregional trade

Moreover, interregional trade will account for an increasing share of global supply.

"Net interregional (long distance) trade is forecast to grow by 2.7%/year from 398 billion cu m (bcm) in 2014 to 690 bcm in 2035, due to Asia's (post-2020) and Europe's growing import dependence," Cedigaz said.

This is accompanied by a 2%/year growth in interregional pipeline flows, boosted by Central Asia and Russia' exports to Asia, mainly China. With 30% of its total gas import being Russia, Europe will remain strongly dependent on Russian gas.

LNG will increase more rapidly than pipeline gas after 2020, according to this year's outlook. International LNG trade is set to increase 3.4%/year to 2035. The share of LNG in interregional flows will progress from 47% in 2014 to 53% in 2035.

North America emerges as a large-scale exporter, covering 18% of total net interregional exports by 2035 at the expense of the Middle East and the Commonwealth of Independent States.

"LNG will lead to a growing internationalization of gas markets with flexible LNG and hub pricing expanding in Europe and Asia, supported by US LNG," Cedigaz said.

However, in Cedigaz's scenario, the availability of low-cost US shale gas resources will be gradually restricted in the long term, leaving space for some other international LNG projects—Canada, East Africa—underpinned by fully or partially oil-indexed long-term contracts. OGJ

Birchcliff to buy Encana's Gordondale assets for $625 million (Can.)

Birchcliff Energy Ltd. has agreed to acquire 100% of fellow Calgary firm Encana Corp.'s Gordondale assets in northwestern Alberta for $625 million (Can.) in cash. The deal is effective Jan. 1, and expected to close by July 28.

The acquisition covers 91,833 gross (54,206 net) acres of land and associated infrastructure within Birchcliff's Montney-Doig natural gas resource play in the Peace River Arch area of Alberta. Of that total, 46,233 gross (40,920 net) acres are core Montney lands with an average working interest of 89%.

Birchcliff says the assets include a large contiguous land base that fits between the firm's existing Pouce Coupe and Gordondale properties. The properties feature 993 gross (929 net) potential future drilling locations, and 54 million boe of proved developed producing reserves, 106 million boe of proved reserves, and 191 million boe of proved plus probable reserves, an increase of 33%.

Forecast production from the assets for this year's first half is 26,000 boe/d, of which 41% is oil and natural gas liquids. The assets have a base production decline rate of 20%, and limited new wells have been brought on production in recent years, with the last wells drilled in 2014.

On closing, Birchcliff will have a Montney-Doig land position of 263,151 gross (251,950 net) acres, including 145,106 gross (140,695 net) acres of undeveloped land.

As a result of the deal, the firm has increased its annual average production guidance for 2016 to 49,000-51,000 boe/d from 40,000-41,000 boe/d, lifting Birchcliff's current production by 25%. Birchcliff will have total proved plus probable reserves 764 million boe.

As for Encana, through the transfer of current and future obligations, the firm is reducing midstream and downstream commitments by more than $100 million (Can.) on an undiscounted basis. No drilling or completions capital has been spent or was planned for the area in 2016.

Following the sale, Encana's Montney play will comprise 9,000 potential drilling locations with two thirds of those wells in the condensate-rich part of the play.

"We are tightening our portfolio and sharpening our focus in the Montney, where we expect to grow liquids production to 50,000 b/d by the end of 2018," said Doug Suttles, Encana president and chief executive officer. OGJ

Chevron, partners finalize $37-billion investment for Tengiz oil field

Paula Dittrick
Upstream Technology Editor

Chevron Corp. affiliate Tengizchevroil (TCO) will proceed with development of its Future Growth and Wellhead Pressure Management Project (FGP-WPMP) to increase crude oil production at Kazakhstan's Tengiz oil field by 260,000 b/d.

FGP-WPMP is estimated to cost $36.8 billion. It will raise TCO's total production to about 1 million boe/d.

Chevron owns 50% of TCO, which operates Tengiz field. TCO joint venture partners are ExxonMobil Corp. 25%, KazMunayGas 20%, and LukArco 5%.

John Watson, Chevron chairman and chief executive officer, said FGP-WPMP "builds on a record of strong performance at Tengiz and will add value for Chevron."

Tengiz is a deep, supergiant oil field. The top of the reservoir is about 12,000 ft below the surface. TOC also is developing nearby Korolev field. Chevron's 2015 net share from Tengiz and Korolev fields averaged 257,000 b/d of oil, 348 MMcfd of natural gas, and 21,000 bbl of natural gas liquids.

Jay Johnson, Chevron executive vice-president upstream, said FGP-WPMP builds on previous Tengiz expansions. It follows extensive engineering and construction planning reviews.

Johnson said the final investment decision was "well-timed to take advantage of lower costs of oil industry goods and services."

FGP-WPMP is expected to end a production plateau and keep existing plants producing at full capacity. FGP-WPMP will use sour gas injection technology developed and proven during TCO's previous expansion in 2008 to enhance oil recovery.

Additional oil production from the just-announced expansion is expected to be on stream in 2022. Chevron is Kazakhstan's largest private oil producer, holding stakes in the nation's two biggest oil fields—Tengiz and Karachaganak.

Chevron also is the largest private shareholder in the Caspian Pipeline Consortium, which operates a 935-mile crude oil pipeline from Tengiz to Novorossiysk on the Russian coast of the Black Sea.

The pipeline provides the key export route for crude oil from TCO and Karachaganak.

Investment decision

Some analysts took the Chevron announced as an indicator that international oil companies are becoming more confident that oil prices have stabilized and will increase. An oil-price slump started in 2014.

Matthew Sagers, head of IHS Energy's Russia and Caspian research, said, "It shows that the market is on its way up." He believes the oil-price recovery will not be "fast or smooth," but he sees an upward trend.

Jason Gammel, Jefferies senior oil analyst, called Chevron's announcement "an inflection point." Gammel said it's

the first investment of more than $10 billion announced in upstream oil and gas during 2016.

"It's a very large project and it's a reflection of the companies having got their cash cycles under control," Gammel said. The investment decision had been on hold since 2015.

Barclays forecast Brent crude prices will average $57/bbl in 2017. OGJ

Tullow's TEN project nears completion offshore Ghana

The Tullow Oil PLC-operated Tweneboa-Enyenra-Ntomme (TEN) project offshore West Africa is now 96% complete and expected to begin oil production within 3-6 weeks. Nearby offshore Ghana, the firm is developing a long-term oil offtake solution at Jubilee field following an issue with the floating production, storage, and offloading vessel's turret bearing.

Nearing completion at the TEN project is hook-up and commissioning of the Prof. John Evans Atta Mills FPSO, which entails connecting the predrilled wells to the vessel via subsea systems.

During July, the integrated startup sequence is expected to be initiated with water injection to the Enyenra reservoir, which will be followed by oil production. The same sequence will then be repeated for the Ntomme reservoir.

A gradual ramp-up in production towards the FPSO capacity of 80,000 b/d is anticipated around yearend as the facilities complete performance testing and wells are brought up to optimum rates. Tullow estimates that TEN average annualized production in 2016 will be 23,000 b/d gross (11,000 b/d net).

Drilling is not expected to recommence on the field until after resolution of the Ivory Coast-Ghana border dispute through the International Tribunal for the Law of the Sea, whose decision is expected in late 2017.

Associated gas produced at TEN will be reinjected into the Ntomme reservoir gas cap until gas export begins. Gas export was planned to start 12 months after field startup, with the Tweneboa gas reservoir coming on stream 12 months later.

However, options to accelerate gas export are being evaluated as fabrication of the gas export facilities is ahead of schedule and expected to be complete in late 2016.

Improving offtake at Jubilee

The Kwame Nkrumah FPSO, whose malfunctioning turret bearing caused output to be shut in March from Jubilee field offshore Ghana, has completed 18 offtakes using a dynamically positioned shuttle tanker since production resumed in May (OGJ Online, May 9, 2016). Tullow expects to continue operating the field under the new procedures for the remainder of the year and anticipates average gross production to be about 85,000 b/d of oil in the second half.

As a preferred long-term solution, Tullow and its partners now envision converting the FPSO to a permanently spread moored facility, with offtake through a new deepwater offloading buoy. The partners are working with Ghana's government for approval of the change.

The first phase of the work will involve the installation of a stern anchoring system to replace the three heading control tugs currently in the field, which is anticipated to be completed by yearend and will require short periods of reduced production.

Tullow then plans a second phase of work to rotate the FPSO to its optimal spread moor heading in first-half 2017. The work program covering these phases is expected to cost $100-150 million gross, and it's estimated that the Jubilee FPSO will need to be shut down for 8-12 weeks during first-half 2017.

Upon completion of the spread mooring work program in mid-2017, the partners will review opportunities to improve offtake procedures, which may include the use of a larger dynamically positioned shuttle tanker, and seek to return production to levels from before the turret issue occurred. The additional gross operating expenditure of the revised procedures is expected at $115 million for 2016 and $80 million for 2017.

A deepwater offloading buoy is anticipated to be installed in first-half 2018, removing the need for the dynamically positioned shuttle and storage tankers and the associated operating costs.

In the first half, Tullow's West Africa working interest oil production averaged 51,900 b/d, below previous guidance due to lower output from Jubilee. As a result, the firm has revised its oil production guidance range in the region to a net 62,000-68,000 b/d of oil. OGJ

Petronas updates progress on Malaysian RAPID project

Robert Brelsford
Downstream Technology Editor

State-run Petronas has reached the halfway point of its long-planned project to build a refinery and petrochemical integrated development (RAPID) complex at Pengerang in southeastern Johor, Malaysia (OGJ Online, May 13, 2011).

"We are now at the midpoint of the project schedule and are on track towards achieving the overall [RAPID] startup in the first quarter of 2019," said Colin Wong Hee Huing, Petronas senior vice-president and chief executive of Petronas Refinery & Petrochemical Corp.

The announcement came alongside the delivery on June 25 of major processing equipment for the complex's steam

cracker from South Korea to RAPID's material offloading facility (MOLF) port in Tanjung Setapa, Johor, which was built specifically to handle imports of heavy-lift, oversized equipment and materials as well as some break-bulk and containerized cargo during construction and implementation of the project.

In addition to a smaller-scale propylene fractionator and ethylene fractionator, the equipment delivery included the main 1,808.6-tonne, 121.3-m propylene fractionator process column, which, to date, is the tallest and heaviest process column ever to arrive in Malaysia, Petronas said.

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

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

RAPID is part of Petronas's Pengerang integrated complex, which alongside the refinery and petrochemical production sites, will include six associated facilities, namely the Pengerang cogeneration plant, an LNG regasification terminal, an air-separation unit, a raw-water supply project, a liquid bulk terminal, as well as central and shared utilities and installations.

Overview of contracts

Alongside contracts for MOLF, Petronas has let a series of contracts for engineering, procurement, construction, and commissioning for RAPID's refinery and steam cracker, including:

- Toyo Engineering Corp. and Toyo Engineering & Construction for the steam cracker complex.
- A consortium of CTCI Corp., Chiyoda Corp., Synerlitz (Malaysia), and MIE Industrial for the residue fluid catalytic cracking units, LPG treating unit, propylene recovery unit, and caustic neutralization units.
- Sinopec Engineering (Group) Co. Ltd. and Sinopec Engineering Group (Malaysia) for the crude distillation unit, atmospheric residue desulfurization units, and hydrogen collection and distribution units.
- Tecnicas Reunidas SA and Tecnicas Reunidas Malaysia for the kerosine hydrotreater, diesel hydrotreater, naphtha hydrotreater, cracked-naphtha hydrotreater, and continuous catalytic reformer.
- Petrofac International (UAE) LLC and Petrofac E&C for units for amine recovery, sulfur recovery, sour water stripping, liquid sulfur storage, and sulfur solidification.

The Malaysian operator has let contracts for technology licensing to CB&I for steam-cracking technology, Technip SA for equipment and technology related to hydrogen production, MECS Inc., a unit of EI DuPont de Nemours & Co., for sulfur-removal technology, and Axens SA for the supply of a series of its proprietary processing technologies for the refining portion of the RAPID complex.

An additional six contracts, which involve construction of the project's related infrastructure, have been awarded to a consortium of UEM Builders and Projek Penyelenggaraan Lebuhraya for EPCC of temporary common-camp installations and infrastructure, Zelan Construction for the basic design and EPCC of the material offloading facilities jetty at Tanjung Setapa, WCT for common construction access and permanent roads within the project site, Syarikat Ismail Ibrahim for the temporary access road within the project site, Bumi Dagang for construction of the main haulage road as well as an access road outside the project site, and Gadang Engineering (M) and Menta Construction for the Phase 2 site preparation works.

A Technip-led JV with Fluor Corp. is providing project management consultancy, including site management as well as PMC for specific EPCC packages within RAPID. OGJ

THE EDITOR'S PERSPECTIVE

Energy costs help explain the UK's vote to leave EU

by **Bob Tippee**, Editor

On energy and the European Union, the UK follows the arc of David Cameron's career as prime minister: from bright green to olive drab to out.

Cameron took office in 2010 proclaiming the start of "the greenest government ever."

Promises like that win leaders access to executive washrooms at EU headquarters, that fortress of climate-change sanctimony.

By the end of 2013, however, Cameron was dismantling the subsidies and other favors his government had created for uncompetitive energy forms.

British voters, it turns out, dislike double-digit annual percentage increases in the price of electricity. Inevitably, as pain like that grows, popular support for climatological central planning shrinks.

Little has been reported about how this political evolution might relate to the UK's historic vote on June 23 to quit the EU.

Supposedly expert observers attribute the surprising outcome to worry about immigration and general discontent with EU imperiousness.

But immigration is nothing new to the UK, where an influx of Middle Eastern refugees is certainly no greater a problem than it is on the European mainland. And officials in Brussels didn't suddenly turn high-handed.

There had to be a catalyst—probably several.

In freedom-loving cultures, few catalysts act more powerfully than imposed cost. The British know that from historic experience.

And recent experience gives them reason to connect burdensome energy bills with a "greenest-ever" government once eager to show EU leaders how to do climate leadership.

Cameron didn't resign as prime minister because his anticarbon energy program provoked an uprising, of course.

He quit because he wagered his job on a referendum about EU membership thinking voters would choose to stay.

And for the shock that proved him wrong and deflated his leadership, pundits offer analyses that make the British, perhaps the worldliest people in history, seem suddenly xenophobic.

There has to be a better explanation for Brexit. Part of it must be that Brits resent having their pockets picked from abroad for reasons with which they no longer agree.

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IMPORTS OF CRUDE AND PRODUCTS

	Districts 1-4		District 5		Total US		
	6-24 2016	6-17 2016	6-24 2016	6-17 2016	6-24 2016	6-17 2016	6-26* 2015
	1,000 b/d						
Total motor gasoline	899	833	6	44	905	877	761
Mo. gas. blending comp.	734	732	4	37	738	769	729
Distillate	25	50	0	96	25	146	173
Residual	73	170	92	44	165	214	169
Jet fuel-kerosine	40	41	157	39	197	80	284
Propane-propylene	57	119	16	14	73	133	75
Other	1,456	829	91	3	1,546	832	1,092
Total products	**2,550**	**2,042**	**362**	**240**	**2,911**	**2,282**	**2,554**
Total crude	**6,273**	**7,082**	**1,282**	**1,357**	**7,555**	**8,439**	**7,514**
Total imports	**8,823**	**9,124**	**1,644**	**1,597**	**10,467**	**10,721**	**10,068**

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

EXPORTS OF CRUDE AND PRODUCTS

	Total US		
	6-24-16	6-17-16	*6-26-15
	1,000 b/d		
Finished motor gasoline	395	374	366
Jet fuel-kerosine	138	152	144
Distillate	1,305	1,178	1,228
Residual	353	366	390
Propane/propylene	661	649	600
Other oils	1,042	1,010	1,013
Total products	**3,894**	**3,729**	**3,741**
Total crude	**598**	**489**	**571**
Total exports	**4,492**	**4,218**	**4,312**
NET IMPORTS			
Total	5,974	6,503	5,755
Products	(983)	(1,447)	(1,187)
Crude	6,957	7,950	6,942

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

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

OIL&GAS JOURNAL online research center. PennEnergy research

OGJ CRACK SPREAD

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

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

CRUDE AND PRODUCT STOCKS

		Motor gasoline			Fuel oils		
District	Crude oil	Total	Blending comp.	Jet fuel, kerosine	Distillate	Residual	Propane-propylene
	1,000 bbl						
PADD 1	17,391	72,465	67,361	9,632	57,934	10,398	3,887
PADD 2	151,014	52,837	45,978	6,584	29,582	1,463	24,655
PADD 3	272,432	78,047	68,920	15,194	46,285	23,267	50,884
PADD 4	24,005	7,398	5,348	498	3,352	210	[1] 2,646
PADD 5	61,731	28,250	26,223	8,338	13,360	4,833	—
June 24, 2016	**526,573**	**238,997**	**213,830**	**40,246**	**150,513**	**40,171**	**82,072**
June 17, 2016	**530,627**	**237,632**	**212,615**	**41,388**	**152,315**	**40,275**	**79,561**
June 26, 2015[2]	**465,378**	**216,736**	**190,993**	**41,383**	**135,820**	**40,085**	**83,546**

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

REFINERY REPORT—JUNE 24, 2016

	REFINERY OPERATIONS		REFINERY OUTPUT				
District	Gross inputs	Crude oil inputs	Total motor gasoline	Jet fuel, kerosine	Fuel oils: Distillate	Fuel oils: Residual	Propane-propylene
	1,000 b/d						
PADD 1	1,172	1,087	3,328	91	370	46	156
PADD 2	3,754	3,751	2,798	246	1,021	60	388
PADD 3	8,778	8,692	2,148	824	2,856	203	938
PADD 4	652	650	337	34	209	9	[1] 191
PADD 5	2,677	2,515	1,664	462	564	109	—
June 24, 2016	**17,033**	**16,695**	**10,275**	**1,657**	**5,020**	**427**	**1,673**
June 17, 2016	**16,718**	**16,505**	**10,033**	**1,633**	**4,957**	**371**	**1,700**
June 26, 2015[2]	**16,976**	**16,530**	**9,927**	**1,639**	**5,015**	**384**	**1,641**
	18,307	**Operable capacity**	**93.0**	**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 6-29-16	Pump price* 6-29-16	Pump price 7-1-15
		¢/gal	
(Approx. prices for self-service unleaded gasoline)			
Atlanta	164.5	213.9	262.7
Baltimore	175.9	226.9	266.2
Boston	172.9	217.9	269.2
Buffalo	166.8	227.9	279.7
Miami	161.9	216.9	272.7
Newark	172.0	204.9	257.7
New York	189.8	250.9	296.2
Norfolk	207.1	247.9	246.2
Philadelphia	157.1	225.9	250.2
Pittsburgh	175.1	243.9	287.2
Wash., DC	199.0	240.9	277.2
PAD I avg	176.6	228.9	273.2
Chicago	243.2	291.8	310.7
Cleveland	192.8	239.2	279.5
Des Moines	192.3	242.7	281.5
Detroit	191.7	240.6	279.5
Indianapolis	193.5	241.8	270.5
Kansas City	193.7	229.4	260.5
Louisville	191.7	236.1	300.5
Memphis	198.2	238.0	262.5
Milwaukee	177.7	229.0	286.5
Minn.-St. Paul	184.8	231.8	279.5
Oklahoma City	181.3	216.7	263.5
Omaha	184.7	230.8	261.7
St. Louis	186.0	221.7	279.5
Tulsa	182.3	217.7	260.5
Wichita	184.1	226.5	262.5
PAD II avg	191.9	235.6	275.9
Albuquerque	165.4	202.7	263.5
Birmingham	175.5	214.8	254.5
Dallas-Fort Worth	172.0	210.4	263.4
Houston	177.4	215.8	255.4
Little Rock	171.3	211.5	260.4
New Orleans	169.0	207.4	259.3
San Antonio	172.1	210.5	254.5
PAD III avg	171.8	210.4	258.7
Cheyenne	183.5	225.9	260.9
Denver	195.5	235.9	265.9
Salt Lake City	190.0	237.9	295.4
PAD IV avg	189.7	233.2	274.0
Los Angeles	254.9	313.9	384.1
Phoenix	191.4	228.8	278.5
Portland	188.3	237.8	293.7
San Diego	228.8	287.8	371.2
San Francisco	234.8	293.8	384.1
Seattle	207.9	270.8	262.3
PAD V avg	217.7	272.1	329.0
Week's avg.	**188.0**	**234.7**	**279.8**
June avg.	**188.3**	**234.9**	**276.9**
May avg.	**176.1**	**222.8**	**267.0**
2016 to date	**157.6**	**204.3**	—
2015 to date	**198.1**	**245.4**	—

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

BAKER HUGHES RIG COUNT

	7-1-16	7-3-15
Alabama	1	—
Alaska	8	10
Arkansas	—	4
California	5	11
Land	5	11
Offshore	—	—
Colorado	19	37
Florida	—	1
Illinois	2	2
Indiana	—	—
Kansas	2	12
Kentucky	1	2
Louisiana	42	73
N. Land	16	27
S. Inland waters	4	5
S. Land	4	12
Offshore	18	29
Maryland	—	—
Michigan	—	—
Mississippi	1	3
Montana	—	1
Nebraska	1	2
New Mexico	19	45
New York	—	—
North Dakota	26	76
Ohio	12	18
Oklahoma	58	106
Pennsylvania	13	47
South Dakota	—	—
Texas	198	363
Offshore	—	—
Inland waters	—	—
Dist. 1	15	52
Dist. 2	14	40
Dist. 3	3	17
Dist. 4	10	22
Dist. 5	1	4
Dist. 6	8	19
Dist. 7B	6	3
Dist. 7C	20	32
Dist. 8	107	145
Dist. 8A	7	12
Dist. 9	3	2
Dist. 10	4	15
Utah	4	8
West Virginia	11	19
Wyoming	7	21
Others HI-1	1	1
Total US	**431**	**862**
Total Canada	**76**	**139**
Grand total	**507**	**1,001**
US oil rigs	341	640
US gas rigs	89	219
Total US offshore	19	29
Total US cum. avg. YTD	**489**	**1,144**

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]6-24-16	[2]6-25-15
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	19	27
Alaska	494	447
California	545	564
Colorado	300	329
Florida	6	7
Illinois	19	26
Kansas	95	125
Louisiana	1,297	1,345
Michigan	13	18
Mississippi	52	69
Montana	57	79
New Mexico	353	419
North Dakota	1,047	1,201
Ohio	67	70
Oklahoma	342	430
Pennsylvania	15	21
Texas	3,557	3,727
Utah	83	103
West Virginia	18	24
Wyoming	199	240
Other states	49	69
Total	**8,627**	**9,340**

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

US CRUDE PRICES

	7-1-16 $/bbl*
Alaska-North Slope 27°	22.77
Light Louisiana Sweet	44.36
California-Midway Sunset 13°	38.55
California Buena Vista Hills 26°	46.24
Wyoming Sweet	45.24
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	39.50

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

WORLD CRUDE PRICES

			$/bbl
OPEC reference basket	**Wkly. avg.**	**7-1-16**	**45.42**
		— Mo. avg., $/bbl —	
		Apr.-16	May-16
OPEC reference basket		37.86	43.21
Arab light-Saudi Arabia		38.22	43.48
Basrah light-Iraq		36.62	42.05
Bonny light 37°-Nigeria		41.51	46.85
Es Sider-Libya		40.48	45.83
Girassol-Angola		41.25	46.58
Iran heavy-Iran		36.65	41.67
Kuwait export-Kuwait		36.33	41.60
Marine-Qatar		38.97	44.13
Merey-Venezuela		28.84	34.28
Minas 34°-Indonesia		38.52	48.64
Murban-UAE		42.47	47.12
Oriente-Ecuador		35.04	41.96
Saharan blend 44°-Algeria		42.33	47.73
Other crudes			
Fateh 32°-Dubai		39.00	44.29
Isthmus 33°-Mexico		38.14	44.76
Brent 38°-UK		41.48	46.83
Urals-Russia		39.89	45.08
Differentials			
WTI/Brent		(0.53)	0.01
Brent/Dubai		2.48	2.54

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

REFINED PRODUCT PRICES

	6-24-16 ¢/gal		6-24-16 ¢/gal
Spot market product prices			
Motor gasoline (Conventional-regular)		No. 2 Distillate Low sulfur diesel fuel	
New York Harbor	144.40	New York Harbor	145.60
Gulf Coast	145.90	Gulf Coast	142.00
		Los Angeles	152.60
Motor gasoline (RBOB-regular)		Kerosine jet fuel	
New York Harbor	171.60	Gulf Coast	134.90
No. 2 heating oil		Propane	
New York Harbor	138.10	Mont Belvieu	52.40

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

IHS PETRODATA RIG COUNT

JULY 1, 2016

	Total supply of rigs	Marketed supply of rigs	Marketed contracted	Marketed utilization rate (%)
US Gulf of Mexico	110	54	39	72.2
South America	58	54	43	79.6
Northwest Europe	107	87	70	80.5
West Africa	66	54	30	55.6
Middle East	166	157	124	79.0
Southeast Asia	94	79	36	45.6
Worldwide	833	696	501	72.0

Source: IHS Petrodata
Data available in PennEnergy Research Center

US NATURAL GAS STORAGE[1]

	6-24-16	6-17-16	6-24-15	Change, %
		bcf		
East	632	612	544	16.2
Midwest	742	724	538	37.9
Mountain	198	194	154	28.6
Pacific	315	318	333	(5.4)
South Central	1,253	1,255	990	26.6
Salt	360	366	293	22.9
Nonsalt	893	890	696	28.3
Total US	**3,140**	**3,103**	**2,559**	**22.7**
	Apr.-16	Apr.-15	Change, %	
Total US[2]	**2,653**	**1,805**	**47.0**	

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

WORLDWIDE CRUDE OIL AND GAS PRODUCTION

	Apr. 2016	Mar. 2016	4 month average production 2016	4 month average production 2015	Change vs. previous year Volume	Change vs. previous year %	Apr. 2016	Mar. 2016	Cum. 2016
	Crude, 1,000 b/d						Gas, bcf		
Argentina	521	521	520	532	(12)	(2.3)	105.4	108.2	418.04
Bolivia	50	50	50	50	—	(0.7)	65.0	65.0	260.00
Brazil	2,296	2,267	2,315	2,428	(114)	(4.7)	102.0	102.0	364.02
Canada	3,800	3,770	2,894	3,751	(856)	(22.8)	480.0	487.6	1,913.50
Colombia	920	920	960	1,000	(40)	(4.0)	30.0	30.0	120.00
Ecuador[1]	530	550	540	547	(7)	(1.3)	1.0	1.0	4.00
Mexico	2,177	2,218	2,217	2,276	(59)	(2.6)	177.6	186.9	745.36
Peru	40	39	44	62	(17)	(28.0)	39.4	40.2	141.41
Trinidad	72	74	74	82	(8)	(10.2)	102.5	108.8	426.59
United States	8,933	9,155	9,109	9,450	(341)	(3.6)	2,363.8	2,451.0	9,586.66
Venezuela[1]	2,310	2,350	2,345	2,405	(60)	(2.5)	68.0	68.0	272.00
Other Latin America	87	86	86	89	(2)	(2.5)	4.5	4.5	18.38
Western Hemisphere	**21,736**	**22,001**	**21,154**	**22,671**	**(1,516)**	**(6.7)**	**3,539.3**	**3,653.3**	**14,269.97**
Austria	13	17	15	17	(2)	(9.0)	3.3	3.5	14.30
Denmark	147	149	136	158	(23)	(14.3)	13.3	14.7	48.84
France	17	17	17	16	1	4.6	0.1	0.1	0.43
Germany	48	47	47	46	1	1.6	24.8	23.8	96.67
Italy	29	92	76	96	(20)	(20.4)	18.7	18.7	74.16
Netherlands	24	22	23	31	(8)	(26.8)	167.3	175.4	745.91
Norway	1,650	1,630	1,646	1,611	35	2.2	370.8	395.5	1,532.63
Turkey	49	49	49	48	1	2.6	1.1	1.2	4.73
United Kingdom	1,010	1,010	996	845	151	17.8	125.7	126.2	494.27
Other Western Europe	5	5	5	8	(3)	(33.3)	3.2	3.2	12.71
Western Europe	**2,997**	**3,043**	**3,009**	**2,875**	**134**	**4.7**	**728.3**	**762.3**	**3,024.64**
Azerbaijan	800	810	795	861	(66)	(7.7)	58.0	58.3	227.72
Croatia	14	13	14	12	2	12.5	5.3	5.4	21.58
Hungary	13	13	14	12	2	14.9	5.3	5.8	21.82
Kazakhstan	1,350	1,348	1,353	1,369	(15)	(1.1)	145.0	145.0	579.79
Romania	77	77	77	80	(4)	(4.7)	29.7	33.8	131.93
Russia	10,226	10,680	10,402	10,123	280	2.8	1,771.5	1,924.9	7,717.77
Other FSU	400	400	399	408	(9)	(2.1)	516.0	516.0	2,063.23
Other Eastern Europe	61	62	62	59	3	4.7	25.6	26.7	105.01
Eastern Europe and FSU	**12,941**	**13,403**	**13,115**	**12,923**	**192**	**1.5**	**2,556.5**	**2,715.9**	**10,868.85**
Algeria[1]	1,090	1,110	1,100	1,108	(8)	(0.7)	230.0	230.0	920.00
Angola[1]	1,750	1,800	1,765	1,763	3	0.1	4.0	4.0	16.00
Cameroon	82	82	82	82	—	—	2.0	2.0	8.00
Congo (former Zaire)	28	28	28	28	—	—	—	—	—
Congo (Brazzaville)	290	290	290	290	—	—	—	—	—
Egypt	684	684	684	690	(6)	(0.8)	127.0	127.0	508.00
Equatorial Guinea	248	248	248	248	—	—	0.1	0.1	0.24
Gabon	260	260	260	260	—	—	0.3	0.3	1.20
Libya[1]	350	340	360	403	(43)	(10.6)	45.0	45.0	180.00
Nigeria[1]	1,620	1,680	1,733	1,823	(90)	(4.9)	70.0	70.0	280.00
Sudan	258	258	258	258	—	—	—	—	—
Tunisia	46	46	46	53	(7)	(13.6)	7.5	7.5	30.02
Other Africa	285	285	285	285	—	—	7.8	7.8	31.09
Africa	**6,991**	**7,111**	**7,139**	**7,289**	**(150)**	**(2.1)**	**493.6**	**493.6**	**1,974.55**
Bahrain	50	51	50	49	1	2.6	32.0	32.0	128.00
Iran[1]	3,560	3,260	3,260	2,833	428	15.1	465.0	465.0	1,860.00
Iraq[1]	4,360	4,190	4,300	3,553	748	21.0	82.0	82.0	333.33
Kuwait[1,2]	2,730	2,830	2,800	2,800	—	—	48.1	52.1	197.58
Oman	1,019	1,019	1,017	969	49	5.0	86.0	86.0	344.00
Qatar[1]	660	670	660	673	(13)	(1.9)	550.0	550.0	2,200.00
Saudi Arabia[1,2]	10,210	10,190	10,198	9,938	260	2.6	250.0	250.0	1,000.00
Syria	30	30	30	30	—	—	14.0	14.0	56.00
United Arab Emirates[1]	2,820	2,730	2,815	2,848	(33)	(1.1)	165.0	165.0	660.00
Yemen	160	160	160	160	—	—	—	—	—
Other Middle East	1	1	1	1	—	—	26.5	26.5	106.00
Middle East	**25,600**	**25,132**	**25,291**	**23,851**	**1,440**	**6.0**	**1,718.6**	**1,722.6**	**6,884.91**
Australia	284	292	296	296	—	—	156.7	166.4	630.46
Brunei	91	113	114	116	(2)	(1.9)	36.8	40.7	155.56
China	4,048	4,102	4,187	4,258	(71)	(1.7)	373.6	433.2	1,692.03
India	733	735	735	763	(28)	(3.7)	87.9	89.7	354.58
Indonesia	730	730	741	794	(53)	(6.6)	213.0	213.0	852.00
Japan	11	11	11	11	—	—	12.9	14.7	55.94
Malaysia	716	735	734	609	125	20.5	179.3	195.7	744.93
New Zealand	39	33	37	38	(1)	(2.8)	15.6	13.7	58.76
Pakistan	80	86	85	95	(10)	(10.4)	119.5	119.3	477.94
Papua New Guinea	30	30	30	30	—	—	0.5	0.5	2.00
Thailand	269	265	270	243	27	11.1	1,181.3	116.4	1,533.62
Vietnam	300	300	300	300	—	—	33.0	33.0	132.00
Other Asia–Pacific	32	30	28	33	(5)	(15.9)	113.6	114.5	455.11
Asia–Pacific	**7,363**	**7,481**	**7,567**	**7,586**	**(19)**	**(0.2)**	**2,523.7**	**1,550.8**	**7,144.94**
TOTAL WORLD	**77,628**	**78,170**	**77,276**	**77,195**	**81**	**0.1**	**11,559.9**	**10,898.5**	**44,167.87**
OPEC	32,720	32,430	32,616	31,483	1,133	3.6	1,978.1	1,982.1	7,922.91
Offshore Europe	2,834	2,816	2,805	2,641	163	6.2	509.8	586.6	2,238.63

[1]OPEC member. [2]Kuwait and Saudi Arabia production each include half of Neutral Zone. Totals may not add due to rounding.
Source: Oil & Gas Journal. Data available at PennEnergy Research Center.

SURPLUS GAS PROCESSING/ REFINING EQUIPMENT

25 MMCFD x 1100 PSIG PROPAK REFRIGERATION PLANT
28 TPD SELECTOX SULFUR RECOVERY UNIT
1100 BPD LPG CONTACTOR x 7.5 GPM CAUSTIC REGEN
NGL/LPG PLANTS:10 - 600 MMCFD
AMINE PLANTS:60 - 3300 GPM
SULFUR PLANTS:10 - 180 TPD
FRACTIONATION:1000 – 25,000 BPD
HELIUM RECOVERY: 75 & 80 MMCFD
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