

SEPT. 12, 2016 | USD 20

**DIGITAL
WEEKLY
EDITION**

OIL & GAS JOURNAL[®]

International Petroleum News and Technology | www.ogj.com

PennWell[®]

**EDITORIAL
NEWSLETTER
STATISTICS**

A photograph of an offshore oil rig in the middle of the ocean. The rig is a large, complex structure with a tall derrick. In the foreground, the deck of a support vessel is visible, with a large black chain running across it. Other support vessels are visible in the distance. The sky is overcast.

**EDITOR'S PERSPECTIVE
GENERAL INTEREST
JOURNALLY SPEAKING
WATCHING GOVERNMENT**

people powered

أرامكو السعودية
saudi aramco



The power of our resources means nothing without the energy of our people. Their focus and expertise make our energy more dependable, more sustainable, and more useful.

We are seeking talented upstream professionals in petrophysics, reservoir simulation and management, and facilities engineering to join our team.

Apply now.

www.aramco.jobs/ogj



where energy is opportunity™

OIL & GAS JOURNAL®

International Petroleum News and Technology | www.ogj.com

Sept. 12, 2016 | Volume 114.9a

7 NEWSLETTER

14 LETTERS / CALENDAR

16 JOURNALLY SPEAKING

18 EDITORIAL

26 ADVERTISERS' INDEX

27 STATISTICS

30 MARKET CONNECTION

GENERAL INTEREST



20 BHI: US rig count nears return to 500 despite drop in gulf activity

Matt Zborowski

A week in which offshore operators braced for a potential hurricane strike didn't prevent another rise in the overall US rig count.

21 Rystad: Permian to restore US onshore oil output growth

Matt Zborowski

Rystad Energy believes the Permian basin will serve as the primary catalyst in restoring US onshore oil production growth by November.

21 Barclays: Global E&P spending to trend up 5% in 2017

22 NPD: NCS development costs down by almost half since fall 2014

22 Apache notes new resource play with Alpine High

Tayvis Dunnahoe

23 Woodside buys into Scarborough gas field

Rick Wilkinson

23 FAR pushes for SNE field development offshore Senegal

Rick Wilkinson

24 WATCHING GOVERNMENT

Oklahoma's earthquake response

25 Devon increasing drilling, investment in STACK play

25 EDITOR'S PERSPECTIVE

Crusade to punish climate dissent changes course



COVER

The Njord A semisubmersible floating production platform travelled from Statoil ASA-operated Njord field in North Sea Blocks 6407/7 and 6407/10 to Klosterfjorden, Norway, for upgrading by Kvaerner. Production at Njord and neighboring Hyme field were shut down for the duration of the upgrade, which is part of the Njord Future Project. Statoil expects Njord A to return to service in 2020. Statoil has identified 177 million boe remaining to be produced. Global Maritime Consultancy & Engineering completed disconnection of Njord A and the 346 nautical-mile transport. Photo by Mats Olsvik for Global Maritime.

CONSTRUCTION MANAGEMENT ENGINEERING GIS DESIGN PROJECT MANAGEMENT PROCUREMENT



A Passion for Engineering Perfection

Gulf provides engineering excellence for pipeline systems, a focus that covers onshore pipelines, gathering systems, production facilities, pump and compressor stations, storage terminals and loading facilities. Recognized by ENR as a Top Pipeline Engineering Company, and by the Houston Chronicle as a Top Workplace, imagine what we can do for you.



**GULF INTERSTATE
ENGINEERING**
The Pipeline People®
www.gie.com/OGJ



ADVERTISING SALES

US Sales

Mike Moss, (713) 963-6221, mikem@pennwell.com
Mike McManus, (713)-963-6254, mmcmanus@pennwell.com
Stan Terry, (713) 963-6208, stant@pennwell.com
Grace Jordan, (713) 963-6291, gracej@pennwell.com

Australia / New Zealand

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

Brazil / South America

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

Canada

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

France / Belgium / Spain / Portugal / Southern Switzerland / Monaco

Stefy Picoitti Thompson, Tel: +33(0)4 94 70 82 63; Cell:
+33(0)6 21 23 67 02, stefaniat@pennwell.com.

Germany / Austria / Northern Switzerland / Eastern Europe / Russia / Former Soviet Union

Sicking Industrial Marketing, Kurt-Schumacher-Str. 16,
59872, Freienohl, Germany. Tel: 49(0)2903.3385.70,
Fax: 49(0)2903.3385.82; E-mail: wilhelms@pennwell.com;
www.sicking.de <http://www.sicking.de> Andreas Sicking

Italy

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

Japan

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

China / Korea / Singapore / Asia-Pacific

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

United Kingdom / Scandinavia / Denmark / The Netherlands / Middle East

Graham Hoyle, 10 Springfield Close, Cross, Axbridge,
Somerset BS26 2FE, Phone: +44 1934 733871 Mobile:
+44 7927 889916, grahamh@pennwell.com or ghms@btinternet.com

West Africa

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

OGJ Reprints

Rhonda Brown, Foster Printing Co., Reprint Marketing
Manager; 866.879.9144 ext 194, Fax: 219.561.2023;
4295 Ohio Street, Michigan City, IN 46360;
rhondab@fosterprinting.com. www.fosterprinting.com

Custom Publishing

Roy Markum, Vice-President/Custom Publishing, roym@pennwell.com, Phone: 713-963-6220, Fax: 713-963-6228

Marketing Solutions

For assistance with marketing strategy or ad creation,
please contact PennWell Marketing Solutions
VICE PRESIDENT — Paul Andrews
(240) 595-2352 pandrews@pennwell.com

PennWell

1455 West Loop South, Suite 400, Houston, TX 77027
www.ogj.com



In Houston

Publisher Jim Klingele, jimk@pennwell.com

Editor Bob Tippee, bobt@ogjonline.com

Managing Editor-News Steven Poruban,
stevenp@ogjonline.com

Managing Editor-Technology Christopher E. Smith,
chriss@ogjonline.com

Exploration Editor Tayvis Dunnahoe,
tayvisd@ogjonline.com

Upstream Technology Editor Paula Dittrick,
paulad@ogjonline.com

Downstream Technology Editor Robert Brelsford,
rbrelsford@ogjonline.com

Senior Editor-Economics Conglin Xu,
conglinx@ogjonline.com

Staff Writer Matt Zborowski,
matthewz@ogjonline.com

Special Correspondent Alan Petzet,
alalp@ogjonline.com

Editorial Assistant Vannetta Dibbles,
vannettad@ogjonline.com

In Tulsa

Statistics Editor Laura Bell,
laurab@ogjonline.com

Senior Art Director Michelle Gourd,
michelleg@pennwell.com

Art Director Clark Bell,
clarkb@pennwell.com

Senior Illustrators Mike Reeder, Chris Hipp, Dan Rodd

Production Director Charlie Cole

Production Manager Shirley Gamboa

Ad Services Manager Zac Nash

In Washington

Washington Editor Nick Snow,
nicks@pennwell.com Tel 703.533.1552

Editorial Advisory Board

Pat Denner Motiva Enterprises LLC, Port Arthur, Tex.

Doug Elliot Bechtel Hydrocarbon Technology
Solutions/IPSI (Advisor), Houston

Fernando Feitosa de Oliveira Pasadena Refining
System Inc., Pasadena, Tex.

Andy Flower Independent Consultant,
Caterham, UK

Michelle Michot Foss Bureau of Economic Geology's
Center for Energy Economics,
The University of Texas (Houston)

Michael Lynch Strategic Energy & Economic
Research Inc., Amherst, Mass.

Tom Miesner Pipeline Knowledge & Development,
Houston

Ralph Neumann Badger Midstream Energy LP
Kent F. Perry RPSEA, Houston

Ignacio Quintero Chevron Pipe Line Co., Houston

John A. Sheffield John M. Campbell & Co.,
Lechlade, UK

Andrew J. Slaughter Deloitte Services LP, Houston
John Thorogood Drilling Global Consultant LLP,
Insch, Scotland

Steven Tobias Hess Corp., Houston
Shree Vikas ConocoPhillips Co., Houston

Clark White Targa Resources Inc., Houston
Colin Woodward Woodward International Ltd.,
Durham, UK

Editorial Offices

Oil & Gas Journal
1455 West Loop South, Suite 400,
Houston, TX 77027
Tel 713.621.9720; Fax 713.963.6285
www.ogjonline.com

P.C. Lauinger, 1900-1988

Corporate Officers

Chairman, Robert F. Biorchini

Vice Chairman, Frank T. Lauinger

President and Chief Executive Officer Mark C.
Wilmoth

**Executive Vice President,
Corporate Development and Strategy**, Jayne
A. Gilsinger

**Senior Vice President, Finance and
Chief Financial Officer**, Brian Conway

Vice-President/Group Publishing Director

Paul Westervelt, pwestervelt@pennwell.com

Vice-President/Custom Publishing Roy Markum,
roym@pennwell.com

Subscriber Service

P.O. Box 2002, Tulsa OK 74101
Tel 1.800.633.1656; 918.831.9423;
Fax 918.831.9482 ogjsub@pennwell.com

Circulation Manager Jesse Fyler,
jessef@pennwell.com

Custom Article Reprints

Reprint Marketing Manager, Rhonda Brown,
Foster Printing Co. Tel 866-879-9144 (ext. 194);
Fax 219-561-2023 web site
www.marketingreprints.com

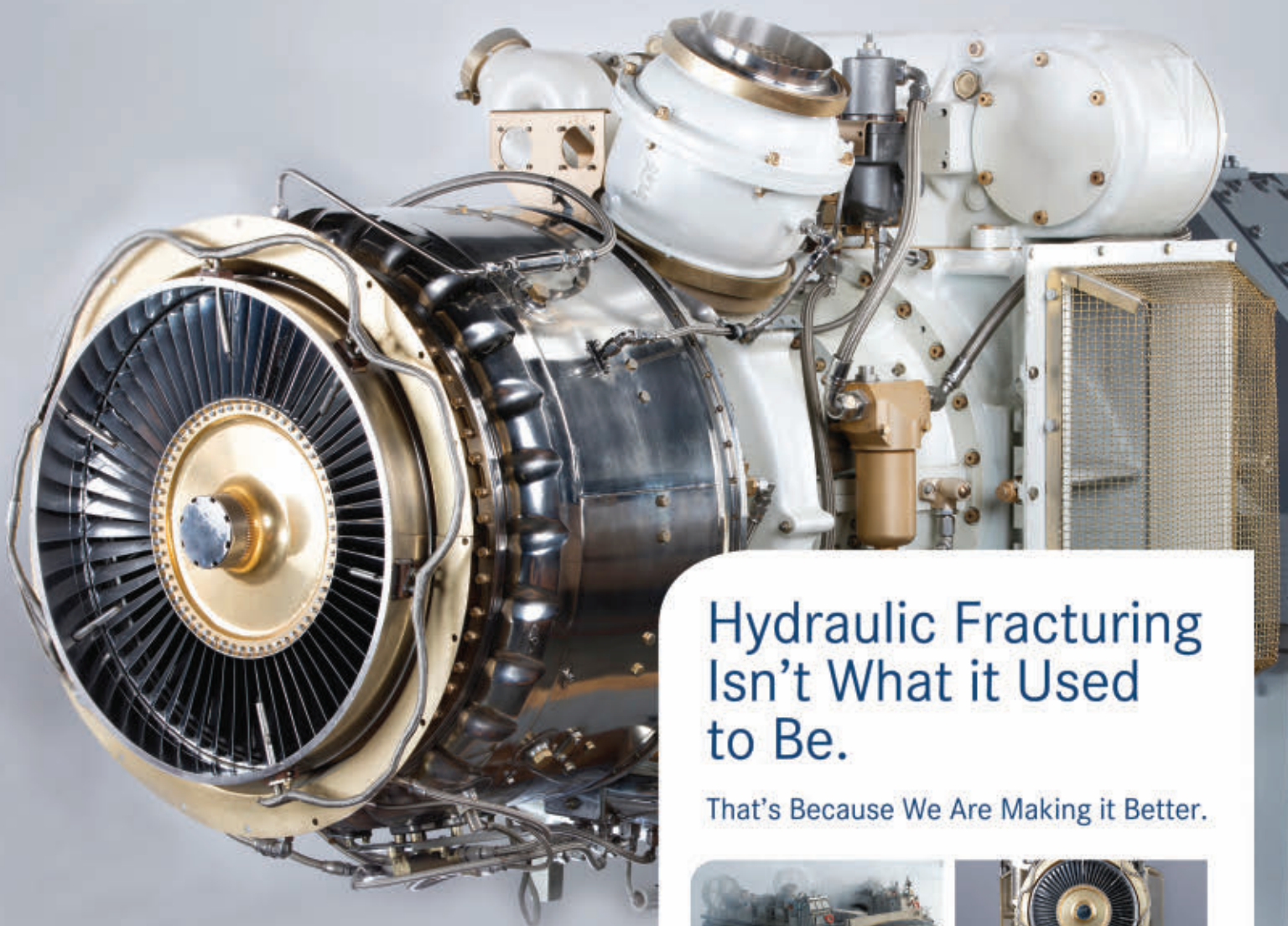
PennWell Corporate Headquarters

1421 S. Sheridan Rd., Tulsa, OK 74112



Member Alliance for Audited Media & American business
Media

Oil & Gas Journal® (ISSN 1944-9151), is a registered trademark. ©PennWell Corporation 2016. All rights reserved. Reproduction in whole or in part without permission is prohibited. Permission, however, is granted for employees of corporations licensed under the Annual Authorization Service offered by the Copyright Clearance Center Inc. (CCC), 222 Rosewood Drive, Danvers, Mass. 01923, or by calling CCC's Customer Relations Department at 978-750-8400 prior to copying. We make portions of our subscriber list available to carefully screened companies that offer products and services that may be important for your work. If you do not want to receive those offers and/or information via direct mail, please let us know by contacting us at List Services Oil & Gas Journal, 1421 S. Sheridan Rd., Tulsa, OK, 74112.



Hydraulic Fracturing Isn't What it Used to Be.

That's Because We Are Making it Better.



There is good news for the hydraulic fracturing industry because Vericor is bringing their rugged and military-proven gas turbines to the Oil and Gas market.

With twice the horsepower of standard diesel engines at a fraction of the size, you can decrease the number of rigs and the footprint of your spread. Reduce emissions, eliminate trucking diesel, and save money by running on 100% well-head gas. In addition, Vericor's technology is making improvements in various field applications, like portable electric power.

If you are ready to learn how Vericor can help you succeed, go to www.vericor.com.

 **VERICOR**

An MTU Aero Engines Company

GENERAL INTEREST QUICK TAKES**Enbridge, Spectra to merge into \$127-billion firm**

Enbridge Inc. and Spectra Energy Corp. have entered into a definitive merger agreement under which the two firms will combine in a stock-for-stock merger transaction. The combination will create the largest energy infrastructure company in North America and one of the largest globally, the companies said, based on a pro-forma enterprise value of roughly \$127 billion.

The merger, which valued Spectra common stock at \$28 billion, is expected to close in first-quarter 2017, subject to shareholder and regulatory approvals.

Spectra shareholders will receive 0.984 a share of the combined company for each share of Spectra common stock held. The consideration to be received by Spectra shareholders is valued at \$40.33/share of Spectra, based on the Sept. 2 closing price of Enbridge common shares. On completion of the merger, Enbridge shareholders are expected to own about 57% of the combined company and Spectra shareholders about 43%. The combined firm will be called Enbridge Inc.

Enbridge has a number of expansion projects currently under way, including a share of the Bakken Pipeline crude project (OGJ Online, Aug. 4, 2016). The company also recently resolved federal charges regarding 2010 leaks from its crude oil pipelines in Illinois and Michigan.

Spectra's current projects include its 2.5-bcf Infrastructure Marina del Golfo gas pipeline joint venture with TransCanada to ship gas into Mexico (OGJ Online, June 14, 2016).

Westlake Chemical, Axiall complete merger

Westlake Chemical Corp., Houston, has completed its previously announced acquisition of Axiall Corp., Atlanta, to become the third-largest chloralkali producer and the second-largest polyvinyl chloride (PVC) producer in North America.

Westlake closed the deal on Aug. 31 with the purchase of all of Axiall's outstanding shares for \$33/share in an all-cash deal, representing an enterprise value of about \$3.8 billion, including debt and certain other Axiall liabilities, Westlake said.

Alongside becoming a leader in North American chloralkali and PVC production, the combined company also will become the largest low-density polyethylene (LDPE) producer in the Americas, with anticipated combined pro forma revenues of

\$7.4 billion and adjusted earnings before interest, taxes, depreciation, and amortization of \$1.4 billion for the 12-month period ended June 30, Westlake said.

Part of Westlake's growth strategy, the acquisition creates a company with greater financial and operational flexibility that will be better able serve its customers with a more varied product slate, which in turn should create more value and growth opportunities for stockholders, said Albert Chao, Westlake's president and chief executive.

The completed merger follows the start of construction on a \$3-billion grassroots petrochemical complex in southwest Louisiana by South Korea's Lotte Chemical Corp. and LACC LLC, a subsidiary of Axiall and Lotte Chemical USA Corp.'s 50-50 joint venture Eagle US 2 LLC, which broke ground in mid-June (OGJ Online, June 14, 2016).

Under construction on the same property in Lake Charles, La., near Axiall's existing manufacturing plants in Calcasieu Parish, LACC's proposed \$1.9-billion ethane cracker complex and Lotte's associated \$1.1 billion monoethylene glycol (MEG) plant intend to take advantage of access to competitive US shale feedstock resources as well as existing ethylene-distribution infrastructure (OGJ Online, June 9, 2016).

The 1-million tonne/year ethylene and 700,000-tpy MEG plants remain on schedule for startup in early 2019.

Fitch: Russian majors balance cash flows

Progressive taxation and a weak ruble helped major Russian oil and gas companies balance cash flows in the first half of this year, reports Fitch Ratings.

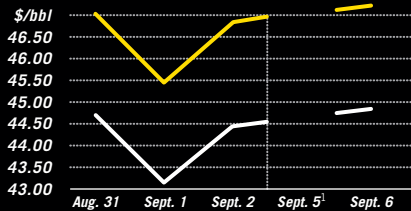
Although operating earnings denominated in dollars fell due to low oil prices and an October 2015 tax increase, local costs were down because of ruble weakness. And the tax structure allowed oil taxes to fall as a share of revenue as oil prices declined.

Fitch tracks Gazprom, Lukoil, Gazprom Neft, Novatek, Tatneft, and Bashneft.

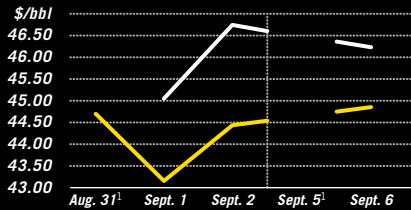
For all those companies free cash flows (FCF) averaged \$2/bbl before dividends and minus 50¢/bbl after dividends. FCF is cash generated by normal business operations less capital expenditures.

Helping FCF remain "decent," according to Fitch, were sharp decreases in dollar-denominated capital expenditures and dividends resulting from the weak ruble.

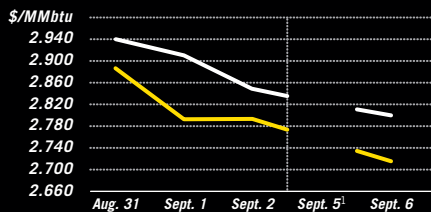
ICE BRENT / NYMEX LIGHT SWEET CRUDE



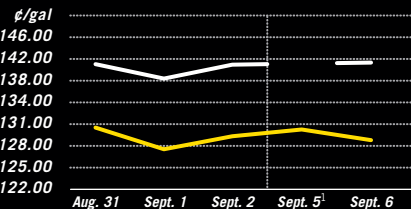
WTI CUSHING / BRENT SPOT



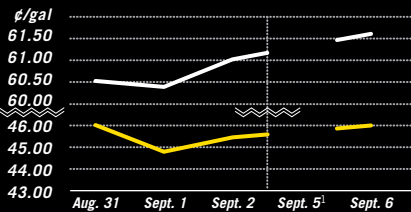
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



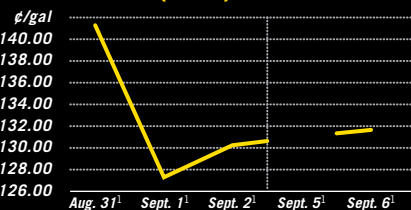
ICE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



NYMEX GASOLINE (RBOB)² / NY SPOT GASOLINE³



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

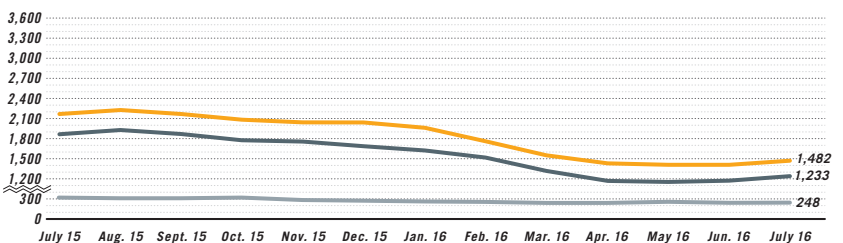
US INDUSTRY SCOREBOARD — 9/12

Latest week 8/26	4 wk. average	4 wk. avg. year ago ¹	Change, %	YTD average ¹	YTD avg. year ago ¹	Change, %
<i>Product supplied, 1,000 b/d</i>						
Motor gasoline	9,675	9,505	1.8	9,458	9,150	3.4
Distillate	3,763	3,701	1.7	3,749	3,938	(4.8)
Jet fuel	1,766	1,606	10.0	1,629	1,565	4.1
Residual	260	227	14.5	298	207	44.0
Other products	5,091	5,253	(3.1)	4,953	4,875	1.6
TOTAL PRODUCT SUPPLIED	20,555	20,292	1.3	20,087	19,735	1.8
<i>Supply, 1,000 b/d</i>						
Crude production	8,520	9,325	(8.6)	8,842	9,395	(5.9)
NGL production ²	3,593	3,249	10.6	3,442	3,143	9.5
Crude imports	8,539	7,666	11.4	7,968	7,316	8.9
Product imports	2,255	2,281	(1.1)	2,180	2,115	3.1
Other supply ^{2,3}	2,632	2,422	8.7	2,211	2,331	(5.1)
TOTAL SUPPLY	25,539	24,943	2.4	24,643	24,300	1.4
Net product imports	(1,740)	(1,509)	—	(1,726)	(1,550)	—
<i>Refining, 1,000 b/d</i>						
Crude runs to stills	16,689	17,193	(2.9)	16,255	16,200	0.3
Input to crude stills	16,989	16,978	0.1	16,482	16,443	0.2
% utilization	92.8	94.0	—	90.3	91.5	—

Latest week 8/26	Latest week	Previous week ¹	Change	Same week year ago ¹	Change	Change, %
<i>Stocks, 1,000 bbl</i>						
Crude oil	525,870	523,594	2,276	455,428	70,442	15.5
Motor gasoline	232,004	232,695	(691)	214,163	17,841	8.3
Distillate	154,753	153,257	1,496	149,951	4,802	3.2
Jet fuel-kerosine	41,034	41,751	(717)	42,546	(1,512)	(3.6)
Residual	40,026	40,493	(467)	40,161	(135)	(0.3)
<i>Stock cover (days)⁴</i>						
			Change, %		Change, %	
Crude	31.5	31.3	0.6	27.3	15.4	
Motor gasoline	24.0	23.9	0.4	22.5	6.7	
Distillate	41.1	41.4	(0.7)	40.5	1.5	
Propane	116.2	104.8	10.9	98.6	17.8	
<i>Futures prices⁵ 9/2</i>						
			Change		Change	Change, %
Light sweet crude (\$/bbl)	45.13	47.38	(2.25)	40.79	4.34	10.6
Natural gas, \$/MMBtu	2.83	2.79	0.04	2.68	0.15	5.8

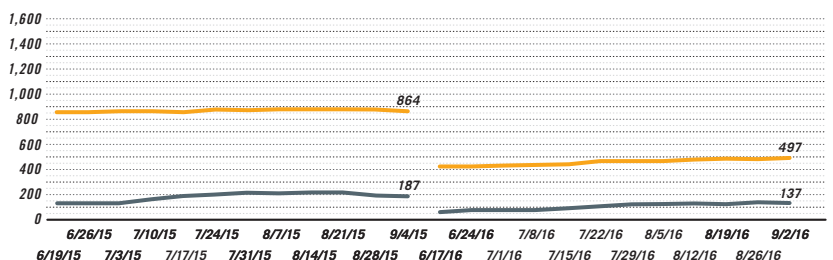
¹Based on revised figures. ²OGJ estimates. ³Includes other liquids, refinery processing gain, and unaccounted for crude oil. ⁴Stocks divided by average daily product supplied for the prior 4 weeks. ⁵Weekly average of daily closing futures prices.
Source: Energy Information Administration, Wall Street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

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



Note: Monthly average count

BAKER HUGHES RIG COUNT: US / CANADA



Note: End of week average count



ENGINEERING FOR ANY TERRAIN DESIGNING PIPELINES NATIONWIDE

WE ENGINEER ANY PIPELINE TYPE:

- + Gathering Lines
- + Transmission Pipelines
- + Distribution Pipelines
- + Water Pipelines

EXCELLENCE FROM THE GROUND UP

We specialize in helping organizations meet their digital mapping and survey needs while working hands-on with our clients.

USING OUR IN-HOUSE MOBILE APP the same information we develop to view through a web browser can be viewed on any modern portable device, including Android, iPhone and Windows Phone. This connectivity allows for seamless transitions from office to field, field to office.



GIS MAPPING

2D and 3D solutions.

CAD DESIGN

Alignment sheets, drawings.

FIELD SURVEY

Accuracy for all terrains.

218.216.1112
info@tdsmn.com
www.tdsmn.com

Tatneft performed best among the Fitch group, with FCF of \$3.70/bbl before dividends and \$1.90/bbl after.

Gazprom had negative FCF before dividend of \$1.40/bbl because of heavy capital spending.

Major European oil majors had FCF of minus \$5/bbl before dividend and minus \$11/bbl after dividend, Fitch pointed out.

“Russian oil and gas producers should remain FCF-neutral provided taxation is unchanged and the ruble broadly follows oil prices,” the credit-rating firm said.

It called the risk of further tax hikes “the key challenge for the Russian oil and gas producers.”

Fitch said it assumes Russian taxes will remain at the 2016 level but warned, “Further tax increases cannot be excluded.” **OGJ**

EXPLORATION & DEVELOPMENT QUICK TAKES

Rosneft, BP sign seismic R&D agreements

OJSC Rosneft, BP PLC, and Schlumberger Ltd. have signed collaboration agreements on seismic research and development.

Rosneft will join as an equal partner in BP’s ongoing project with Schlumberger’s seismic business, WesternGeco, to develop technology for cableless onshore seismic acquisition.

The firms said the ability to deliver faster and better-quality seismic data acquisition at lower cost compared with conventional seismic would also bring environmental and safety benefits in extreme climates and in areas that are difficult to access.

A 2-year period is expected for development. Rosneft and BP will have preferential access to the technology “for an initial period,” after which Schlumberger will have exclusive rights to market the system.

The signings took place in Vladivostok, Russia, at the Eastern Economic Forum. Rosneft also signed a cooperation agreement with PTT PCL (Thailand) for development in the areas of upstream, crude and oil product trading, refining, petrochemical projects, and LNG supplies.

Eni: Fifth well further confirms Zohr field’s potential

Eni SPA reported that the Zohr 5x well, which was drilled to a TD of 4,350 m in 1,538 m of water offshore Egypt, has proved the presence of a carbonatic reservoir and natural gas accumulation in the southwestern portion of the Zohr megastructure.

The fifth well drilled on the Zohr structure on Shorouk block, Zohr 5x encountered a 180-m continuous hydrocarbon column in the carbonate sequence with excellent reservoir characteristics, the Italian firm says.

The results confirm that Zohr field could hold a potential 30 tcf original gas in place. Zohr 5x is 12 km southwest of the Zohr 1x discovery well (OGJ Online, Aug. 31, 2015).

Zohr 5x also was successfully tested by opening 90 m of reservoir section to production. Data collected during the test confirmed the deliverability of the Zohr reservoir, in line with the Zohr 2 well test, producing more than 50 MMscfd of gas limited only by the constraints of the production facilities.

In the production configuration, the well is estimated to deliver as much as 250 MMscfd.

The Zohr drilling campaign will continue this year with a sixth well to ensure the accelerated startup production rate of 1 bcf/d. The project is slated to start production by yearend 2017.

Eni, through its subsidiary IEOC Production BV, holds 100% stake in Shorouk block. Belayim Petroleum Corp. (Petrobel) is operating on behalf of Petroshorouk, an equal joint venture of IEOC and Egyptian Natural Gas Holding Co.

Iran schedules primary oil tender for October

Iran will hold its first tender of an oil field for development under a new contract model on Oct. 21.

South Azadegan field is up for the first tender under the Iran Petroleum Contract (IPC), National Iranian Oil Co. Managing Director Ali Kardor said this week. “Next week, we will be sending invitations to foreign companies and ask them to announce if they are interested,” he told reporters at a press conference in Tehran.

Iran has been developing the IPC over the past 2 years in an effort to lure investment to its oil and gas sector. Its ministry of petroleum has modified the contract several times amid criticism that it might pave the way for renewed squandering of national wealth similar to oil concessions to the UK under the 1901 D’Arcy Agreement.

Domestic companies will be offered small and medium-size fields with the goal of developing fields with a recovery rate of less than 20%. Confidentiality agreements signed with oil companies will be sent to the Supreme National Security Council.

Kardor said the final version maintains a 20-year contract period and includes a fee per barrel that is paid as profit to the company.

Unlike Iran’s previous buyback deals, there will be no ceiling on capital expenditure. Oil companies would have a chance in the annual work program and budget to revise the scope of work and the cost according to changes.

About 50 projects, a combination of brown and green fields as well as exploration blocks, are being considered for development, but the current priority is to develop oil and gas fields owned jointly with neighboring countries.

Minister of Petroleum Bijan Zangeneh said this week that oil and gas fields shared with Iraq, including Yaran, Azadegan, and Yadavaran, will be the primary targets for tendering.

South and North Azadegan is the world’s third-largest oil field with in-place reserves of 33.2 billion bbl and recoverable resources of 6 billion bbl, NIOC says.

Iran first awarded development of South Azadegan to Japan’s Inpex Corp. in 2001, but later withdrew from the country. Iran also terminated a contract with China National Petroleum Corp. amid dissatisfaction with its development pace.

Company to assess Yamal-Nenets gas fields

Gazprom and RusGazDobycha, part of National Chemical Group, have signed an agreement that will guide formation of a

Collaborate. Innovate. Deliver.

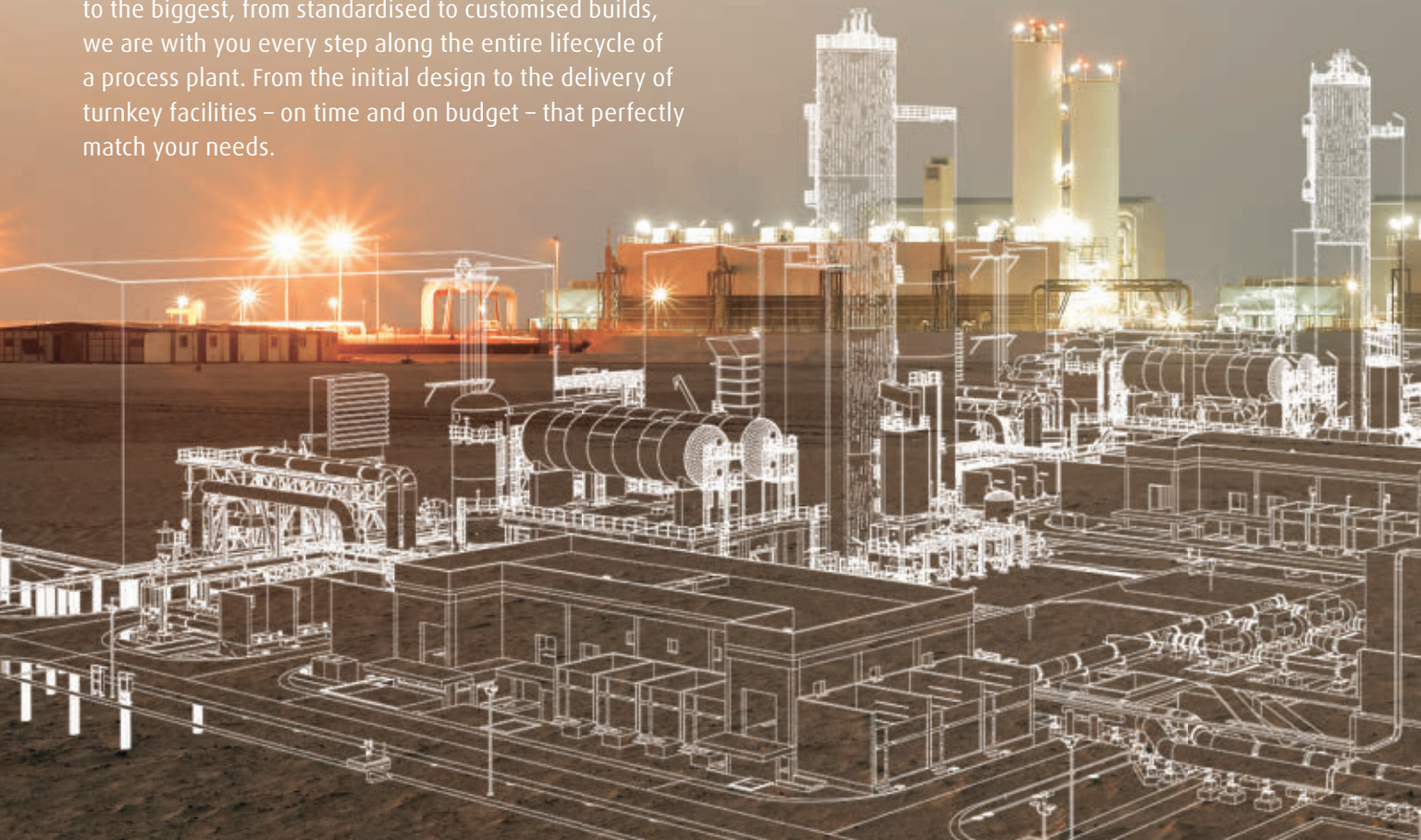
You need a reason to trust us? We have over 4,000.

When it comes to plant engineering, trust the industry leaders. Linde's cutting-edge technologies and proven process know-how make us your perfect partner in all sectors of industry: from crude oil, natural gas extraction and refining to chemical and metal processing.

We have delivered over 4,000 process plants worldwide. Our experts specialise in reliable and efficient plants that work under all conditions. From the smallest of scales to the biggest, from standardised to customised builds, we are with you every step along the entire lifecycle of a process plant. From the initial design to the delivery of turnkey facilities – on time and on budget – that perfectly match your needs.

Discover more about how we support your success at

www.linde-engineering.com



joint company to assess development of three natural gas fields in the Yamal-Nenets Autonomous Area of Russia.

Gazprom Dobycha Yamburg and RusGazDobycha will establish the project company, RusGazAlians, on equal terms.

The Gazprom unit holds development licenses for Parusovoye, Severo-Parusovoye, and Semakovskoye fields.

RusGazAlians is to conduct an investment feasibility study, perform design and survey work, and compile design documentation for predevelopment of the fields and for construction of links to Gazprom's transmission system. **OGJ**

DRILLING & PRODUCTION QUICK TAKES

Shell starts production from Stones field

Shell Offshore Inc. has reported the start of production from the company's wholly owned and operated Stones development in the Walker Ridge area of the deepwater Gulf of Mexico. Production from Stones field, 200 miles southwest of New Orleans, is expected to reach 50,000 boe/d when fully ramped up at year-end 2017. The host facility for what Shell is calling the world's deepest offshore oil and gas project is a floating production, storage, and offloading vessel that produces through subsea systems in 9,500 ft of water. It is Shell's 13th FPSO in its global deepwater portfolio. Stones is Shell's second producing field from the Lower Tertiary frontier in the gulf, following the start-up of Perdido in 2010 (OGJ Online, Mar. 31, 2010).



Production from Stones field, 200 miles southwest of New Orleans, is expected to reach 50,000 boe/d when fully ramped up at yearend 2017. Photo from Shell Offshore Inc.

Stones employs an innovative lazy-wave riser configuration, consisting of a steel catenary riser with buoyancy added with an arch bend to decouple the FPSO's dynamic motions and subsequently increase riser performance. An ultra-deepwater mooring system maintains the vessel's location over the field.

The development will start with two subsea production wells tied back to the FPSO vessel, followed later by six additional production wells. Multiphase seafloor pumping is planned for a later phase to pump oil and gas from the seabed to the vessel.

Origin's Otway basin fields brought on stream

Sydney-based Origin Energy Ltd.'s wholly owned Halladale

and Speculant natural gas fields in the offshore Otway basin of Victoria have been brought on stream.

The joint development is expected to increase production at the company's Otway gas plant near Port Campbell by as much as 80 terajoules/day.

The development involved directional drilling from land from a site about 30 km east of the town of Warrnambool to reach reservoirs 5 km offshore. A 33-km pipeline was laid from the wellhead to connect to the existing gas plant.

Speculant field was discovered in 2014; Halladale in 2006. The gas is being used for domestic supply.

Daman project starts production offshore India

Production of natural gas and condensate has begun from Oil & Natural Gas Corp.'s Daman project in the Arabian Sea offshore India (OGJ Online, Apr. 14, 2016).

The project's first well, C24-P4 No. 3, flowed 3.8 MMcf/d of sweet gas and 176 b/d of condensate. ONGC said three more wells will begin producing within a month.

The first phase of the project includes installation of two wellhead platforms, C24-P3 and C24-P4, and a riser platform, C24-RP, and associated marine pipelines.

The full project will include seven wellhead platforms, the riser platform, and 28 wells.

It covers development of C-24 field and monetization of marginal fields designated B-12-11, B-12-13, and B-12-15, 90-100 km offshore Daman.

Gas and condensate flow through processing facilities on Tapti field to Hazira.

ONGC expects the project to produce 953 bcf of gas and 31.5 million bbl of condensate over 20 years. **OGJ**

PROCESSING QUICK TAKES

Monroe Energy lets contract Trainer refinery revamp

Delta Air Lines Inc. unit Monroe Energy LLC, through a contractor, has let a contract to a unit of Matrix Service Co., Tulsa, for construction services related to the previously announced ultralow-sulfur gasoline (ULSG) project at its 185,000-b/d refinery in Trainer, Pa. (OGJ Online, June 23, 2016).

Matrix North American Construction (Matrix NAC), Chicago, will provide mechanical, electrical, and instrumentation construction services for the ULSG project, including deconstruction and reconstruction of an idled 60,000-b/d selective cat-naphtha hydrofining (SCANfining) unit from another plant that will be moved to the Trainer refinery, Matrix Service said.

Awarded directly by KBR Engineering Inc., which serves as Monroe Energy's primary engineering, procurement, and construction services contractor for the project, Matrix NAC's contract is valued at more than \$70 million.

With site mobilization activities already under way on the project, the SCANfining unit remains on schedule for start-up in late 2017, the service provider said.

Approved by the Pennsylvania Department of Environmental Protection's Bureau of Air Quality earlier this year, the USLG project comes as part of the Monroe Energy's plan to reduce sulfur content of its gasoline production to comply with the US Environmental Protection Administration's Tier 3 gasoline standards, which take effect Jan. 1, 2017.

Licensed by ExxonMobil Corp., SCANfining hydroprocessing technology is a catalytic hydrodesulfurization process based on a proprietary catalyst system developed specifically for selective removal of sulfur from fluid catalytic cracking naphtha that limits olefins hydrogenation to preserve octane content.

Lucid Energy buys gas gatherer, processor

Subsidiaries of Lucid Energy Group II LLC, Dallas, have bought assets of Agave Energy Co., a natural gas gatherer and processor, and all outstanding stock of Agave Energy Holdings Inc.

Agave's high-growth properties are mainly in the Delaware basin, concentrated in Eddy and Lea counties, NM. They include 280 MMcf/d of gas processing capacity, more than 1,300 miles of gathering pipeline, and more than 60,000 hp of compression. The company also has assets in the Powder River basin of eastern Wyoming.

In the Delaware basin, Lucid Energy plans to expand the Agave gathering system and is adding a 200-MMcf/d cryogenic processing plant at the acquired company's Red Hills complex in Lea County.

At commissioning in mid-2017, total capacity at the complex will be 310 MMcf/d.

The Agave purchase, terms of which weren't reported, boosts holdings of privately held Lucid companies to 660 MMcf/d of gas processing capacity and more than 3,300 miles of pipeline.

Lucid I and Lucid II have equity capital commitments exceeding \$850 million from EnCap Flatrock Midstream, San Antonio.

Nigerian topping refinery due 10,000-b/d expansion

Niger Delta Petroleum Resources Ltd. (NDPR), a subsidiary of Niger Delta Exploration & Production PLC (NDEP), has let a contract to Chemex Modular LLC, New Waverly, Tex., to provide equipment and technological services for the planned expansion of its 1,000-b/d topping refinery in Ogbale field in Rivers State, Nigeria, 45 km northwest of Port Harcourt.

Chemex will provide a series of units under the contract, including additional crude distillation units, a naphtha hydrotreater, a naphtha splitter, and a catalytic reforming unit for the production of gasoline, the modular refining and gas processing equipment supplier said.

Due to be commissioned in early 2018, the planned expansion will increase crude processing capacity at the refinery to 11,000 b/d, according to Chemex.

This latest contract follows NDPR's previous contract award Chemex for design and fabrication of the original Ogbale topping refinery, which upon its 2012 commissioning, became the first—and to date, remains the only—privately held crude pro-

cessing plant in the country to operate under an official license issued by Nigeria's federal government.

The proposed expansion comes as part of NDPR's plan to boost company revenues by expanding its production and sales of diesel, jet fuel, gasoline, and marine diesel to local markets, NDEP said in its latest annual report.

While the Ogbale mini-refinery currently targets production of diesel mostly for internal consumption, NDPR's operating license allows the company to sell excess volumes into the immediate locality, according to Nigeria's Department of Petroleum Resources.

Approved in 2015, the refinery's original plan for expansion included only a 5,000-b/d increase in capacity to be commissioned no later than the end of first-quarter 2018, according to NDEP's annual report. **OGJ**

TRANSPORTATION QUICK TAKES

RIO Pipeline starts up in Delaware basin

Rangeland Energy, Sugar Land, Tex., has started commercial shipments on its RIO Pipeline in the Delaware basin and envisions expansion of the system as demand grows (OGJ Online, Apr. 14, 2016).

The 110-mile, 12-in. OD pipeline carries crude oil and condensate from Rangeland's RIO State Line Terminal in Loving County, Tex., to its Geneva and Zurich terminals, which are connected to pipelines in Midland. Capacity is 125,000 b/d.

The Zurich Terminal remains under construction, scheduled for completion in spring 2017. The other terminals are complete.

Rangeland expects to build a 10-in. bidirectional pipeline connecting the State Line Terminal with the RIO Hub near Loving, NM. The RIO Hub provides unit train service and storage for inbound frac sand and outbound crude and condensate.

Phillips 66 Partners to buy NGL logistics assets

Phillips 66 Partners LP has agreed to acquire a natural gas liquids logistics system in southeast Louisiana owned by Chevron Corp.

The system covers 500 miles of pipelines and a storage cavern connecting multiple fractionation facilities, refineries, and a petrochemical facility. The deal is expected to close in the fourth quarter.

The assets include:

- The TENDS pipeline system, a 300-mile, bidirectional NGL pipeline system connected to third-party fractionators, refineries, including the Phillips 66 Alliance refinery, and a petrochemical plant.
- The VP pipeline-EP pipeline, comprising 200 miles of regulated pipelines that carry raw NGLs from a third-party gas processing plant to pipeline and fractionation infrastructure.
- The Sorrento Cavern, a salt dome cavern with 1.5 million bbl of NGL storage capacity in Ascension Parish. **OGJ**

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

SEPTEMBER 2016

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**.

IADC Advanced Rig Technology Conference & Exhibition, Galveston, Tex., web site: www.iadc.org/event/2016-iadc-advanced-rig-technology-conference-exhibition/ **13-14**.

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: energyconferencenet-work.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**.

Society of Petroleum Resources Economists Meeting, Houston, web site: www.spreconomists.org/events.htm **15**.

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**.

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

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

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

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

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

SPE Liquids-Rich Basins Conference—North America,

Midland, Tex., web site: www.spe.org/events/lrbc/2016/ **21-22**.

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

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

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

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

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

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

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

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

3rd Annual Unconventional Production & Well Site Facilities Design, Onshore 2016, Houston, web site: www.facilities-design-

onshore.com/program/ **28-29**.

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

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

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

OCTOBER 2016

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

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

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

USEA 9th Annual Energy Supply Forum, Washington, DC, web site: <https://www.usea.org/event/usea-9th-annual-energy-supply->

forum **6**.

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

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

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

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

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

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

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

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

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

The 8th Saudi Arabia

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

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

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

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

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

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

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

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

■ USAEE/IAEE North American Conference, Tulsa, web site: www.

- usaee.org/usaee2016/ **23-26.**
- Arctic Technology Conference (ATC), St. John's, Newfoundland & Labrador, web site: www.arctictechnology-conference.org/ **24-26.**
- SPE Russian Petroleum Technology Conference & Exhibition, Moscow, web site: www.spe.org/events/rpc/2016/ **24-26.**
- SPE North America Artificial Lift Conference & Exhibition, The Woodlands, Tex., web site: www.spe.org/events/alce/2016/ **25-27.**
- SPE Asia Pacific Oil & Gas Conference & Exhibition (APOGCE), Perth, web site: www.spe.org/events/apogce/2016/ **25-27.**
- The 10th Element Oil-field Engineering with Polymers Conference, London, web site: oilfieldpolymers.nace.org/ **25-27.**
- Produced Water Quality Recycling & Reuse, Denver, web site: www.produced-water-quality-recycling-reuse-rockies.com/ **26-27.**
- Bottom of the Barrel Technology Conference (BBTC) Middle East & Africa 2016, Manama, web site: www.bbtc-mena.biz **26-27.**
- International Conference & Expo on Oil & Gas, Rome, web site: oil-gas.conferenceseries.com/ **27-28.**
- Gulf Safety Forum (GSF) 2016, Doha, web site: www.gulfsafetyforum.com/ **30-31.**
- 23rd Africa Oil Week Africa Upstream Conference 2016, Cape Town, web site: www.oilgas-events.com/Find-an-Event/Africa-Oil-Week/ **Oct 31-Nov 04.**
- NOVEMBER 2016**
- SPE Annual Caspian Technical Conference & Exhibition, Astana, Kazakhstan, web site: www.spe.org/events/en/2016/conference/16ctce/homepage.html **1-3.**
- 4th Iran Europe Oil & Gas Summit, Berlin, web site: www.iran-summit.com/1-3.
- 2nd International Conference & Expo on Oil & Gas, Istanbul, web site: oil-gas.omics-group.com/ **2-3.**
- 7th Annual Summit Operational Excellence in Oil & Gas, Houston, web site: www.opex-inoilandgas.com **7-9.**
- The Abu Dhabi International Petroleum Exhibition & Conference, (ADIPEC), Abu Dhabi, web site: www.adipec.com/ **7-10.**
- RefComm Mumbai 2016, Mumbai, web site: refiningcommunity.com/refcomm-mumbai-2016/ **7-11.**
- International Petroleum Technology Conference (IPTC), Bangkok, web site: www.iptcnet.org/pages/about/future-dates.php **14-16.**
- 4th East Africa Oil & Gas Summit & Exhibition, Nairobi, web site: eaogs.com/ **15-17.**
- International Conference on Oil, Gas & Petrochemistry, Dubai, web site: www.waset.org/conference/2016/11/dubai/ICOGP **16-17.**
- 21st Annual Oil & Gas of Turkmenistan (OGT) Conference 2016, Ashgabat, web site: ogt.theenergyexchange.co.uk/ **16-17.**
- Project Financing in Oil & Gas, London, web site: www.smi-online.co.uk/energy/uk/conference/Project-Financing-in-Oil-and-Gas **21-22.**
- EIC Connect Oil & Gas Conference & Exhibition, Manchester Central, UK, web site: www.the-eic.com/EIC-Connect/OilGas/About-theEvent.aspx **22-23.**
- International Conference on Shale Oil & Gas Engineering, London, web site: www.waset.org/conference/2016/11/london/ICSOG **24-25.**
- 5th International Conference on Petroleum Geology & Petroleum Industry, Dubai, web site: petroleumgeology.conferenceseries.com/ **24-25.**
- Oil & Gas Safety & Health Conference 2016 OSHA Exploration & Production, Houston, web site: www.oshasafetyconference.org/Events/ugm/Osha2016/default.aspx **29-30.**
- OSEA2016 Exhibition & International Conference, Marina Bay Sands, Singapore, web site: www.osea-asia.com **Nov. 29-Dec. 2.**
- SPE Thermal Well Integrity & Design Symposium, Banff, Alta., web site: www.spe.org/events/en/2016/symposium/16twid/homepage.html **Nov. 29-Dec. 1.**
- Society of Petroleum Engineers (SPE) Middle East Artificial Lift Conference & Exhibition, Manama, Bahrain, web site: www.spe.org/events/meal/2016/ **Nov. 30-Dec. 1.**
- DECEMBER 2016**
- International Conference on Energy Engineering & Oil Reserves, Hong Kong, web site: www.waset.org/conference/2016/12/hong-kong/ICEEOR **5-6.**
- International Conference on Oil Reserves & Energy Technologies, Hong Kong, web site: www.waset.org/conference/2016/12/hong-kong/ICORET **5-6.**
- Kurdistan-Iraq Oil & Gas Conference & Exhibition, London, web site: www.cwckio.com/conference/ **5-7.**
- SPE/AAPG Africa Energy & Technology Conference, Nairobi City, Kenya, web site: www.spe.org/events/en/2016/conference/16afr/homepage.html **5-7.**
- 5th World Congress on Petrochemistry & Chemical Engineering, Phoenix, web site: www.petrochemistry.omicsgroup.com/ **5-7.**
- Third EAGE Integrated Reservoir Modelling Conference, Kuala Lumpur, web site: www.eage.org/event/index.php?eventid=1477&Opendsivs=s3 **5-7.**
- OpEx MENA 2016—Operational Excellence in Oil, Gas & Petrochemicals, Abu Dhabi, web site: www.opex.biz **5-7.**
- Oil & Gas Supply Chain Procurement, Houston, web site: energyconference.network.com/oil-gas-supply-chain-procurement-2016/ **6-7.**
- SPE Heavy Oil Conference & Exhibition, Kuwait City, web site: www.spe.org/events/hoce/2016/ **6-8.**
- Green Forum: Oil, Gas & Petrochemicals, Abu Dhabi, web site: www.greenforum.ae **8.**
- IADC Critical Issues Middle East Conference & Exhibition, Dubai, web site: www.iadc.org/event/critical-issues-me-2016/ **13-14.**
- ICOGPE 2016: 18th International Conference on Oil, Gas & Petrochemical Engineering, Dubai, web site: www.waset.org/conference/2016/12/dubai/ICOGPE/home/ **26-27.**
- JANUARY 2017**
- Global Oil & Gas Middle East & North Africa Conference, Cairo, web site: www.oilgas-events.com/Find-an-Event/Global-Oil-Gas-Middle-East-North-Africa-(1) **24-26.**
- SPE Hydraulic Fracturing Technology Conference, The Woodlands, Tex., web site: www.spe.org/events/hftc/2017/ **24-26.**
- NACE International Pipeline Coating Technology Conference, Houston, web site: pipelinecoating.nace.org/ **24-26.**
- Offshore West Africa, Lagos, web site: www.offshorwestafrica.com/index.html **24-26.**
- 2017 API Inspection Summit, Galveston, Tex., web site: www.api.org/Events-and-Training/Calendar-of-Events/2017/inspection **Jan. 30-Feb 2.**
- FEBRUARY 2017**
- 7th Basra Oil & Gas International Conference & Exhibition, Basra, web site: www.basraoilgas.com/Conference/ **8-11.**
- SPE Canada Unconventional Resources Conference, Calgary, web site: www.spe.org/events/en/2017/conference/17urc/homepage.html **15-16.**
- SPE Canada Heavy Oil Technical Conference, Calgary, web site: www.spe.org/events/en/2017/conference/17choc/homepage.html/ **15-16.**
- NAPE Summit, Houston, web site: napeexpo.com/shows/about-the-show/summit **15-17.**
- International Conference on Petroleum & Petrochemical Engineering, London, web site: www.waset.org/conference/2017/02/london/ICPPE **16-17.**

Developing through slump

Some operators have pressed ahead on notable offshore projects in the Norwegian North Sea and Gulf of Mexico despite a collapse in oil prices during the last 2 years.

In the North Sea, Statoil ASA slashed its spending estimates for giant Johan Sverdrup field, saying more efficient drilling and better contractor terms both helped trim costs.

“We are now seeing the results of good cooperation between Statoil, its partners, and suppliers, Statoil Chief Executive Eldar Saetre said late last month.

Consequently, Saetre reports reduced investment requirements along with greater capacity, a bigger resource estimate, and higher field value.

Statoil revised its Johan Sverdrup Phase 1 spending outlook to 99 billion kroner from 123 billion kroner. Full-field investment was improved to 140-170 billion kroner from 170-220 billion kroner.

Phase 1 production capacity currently is estimated at 440,000 b/d up from an earlier range of 315,000-380,000 b/d.

Statoil plans to expand the Johan Sverdrup production capacity by introducing an extra processing platform, boosting anticipated full-production capacity to 660,000 b/d.

The full-field resource estimate was improved to 1.9-3 billion boe from 1.7-3 billion boe.

The adjustments helped reduce the break-even price for the full-field Johan Sverdrup development to less than \$30/bbl.

Stampede progressing

In the Gulf of Mexico, Hess Corp. reports ongoing progress with its \$6-billion Stampede project—the company’s largest deepwater development.

“The project leverages Hess’s proven capability to safely execute deepwater development,” said Stephen Whitaker, Stampede project director.

“When it comes onstream in 2018, we expect Stampede will provide a significant contribution to future growth,” for Hess, Whitaker said.

Stampede lies 115 miles south of Port Fourchon, La., in about 3,350 ft of water. It spans Green Canyon Blocks 469, 511, and 512. Gross resources are estimated at 300-350 million boe.

The project calls for six subsea production wells and four water injection wells.

A tension-leg platform was sanctioned in 2014, Whitaker said, adding oil prices have plummeted since then.

Hess installed the 12 pilings in late 2015 and plans to complete the topsides and main deck yet this year.

Diamond Offshore’s drillship Ocean Blacklion started development drilling this year. A second drillship, the Blackrhino, is expected in 2017, Whitaker said.

“Key suppliers are working together as a team,” Whitaker told a Marine Technology Society Houston luncheon Aug. 25.

Stampede oil and gas reserves are Miocene reservoirs at a depth of 30,000 ft.

Backlogs disappearing

Offshore drilling contractors typically enter long-term contracts that provide some protection during oil-price downturns.

Contracts in place before 2014 helped during 2015 but the backlog of existing contracts is growing smaller.

Moody’s Investors Service Assistant Vice-Pres. Sajjad Alam said a simultaneous collapse in drilling and contract expirations through 2018 is diminishing drillers’ backlogs.

“In a depressed oil market, Moody’s expects limited drilling opportunities, low dayrates, and short duration contracts—all pressuring backlogs,” he said.

Alam said backlogs tumbled 47% for Moody’s top 10 offshore drillers since 2014. He expects the decline will continue.

In other research, Moody’s found the entire offshore drilling industry faces \$110 billion in debt, much of it maturing in 2018. **OGJ**



PAULA DITTRICK
Upstream Technology
Editor



First hole drilled in Johan Sverdrup field. Photo from Statoil and Oceaneering.



The Arab Republic of Egypt
Ministry of Petroleum and Mineral Resources



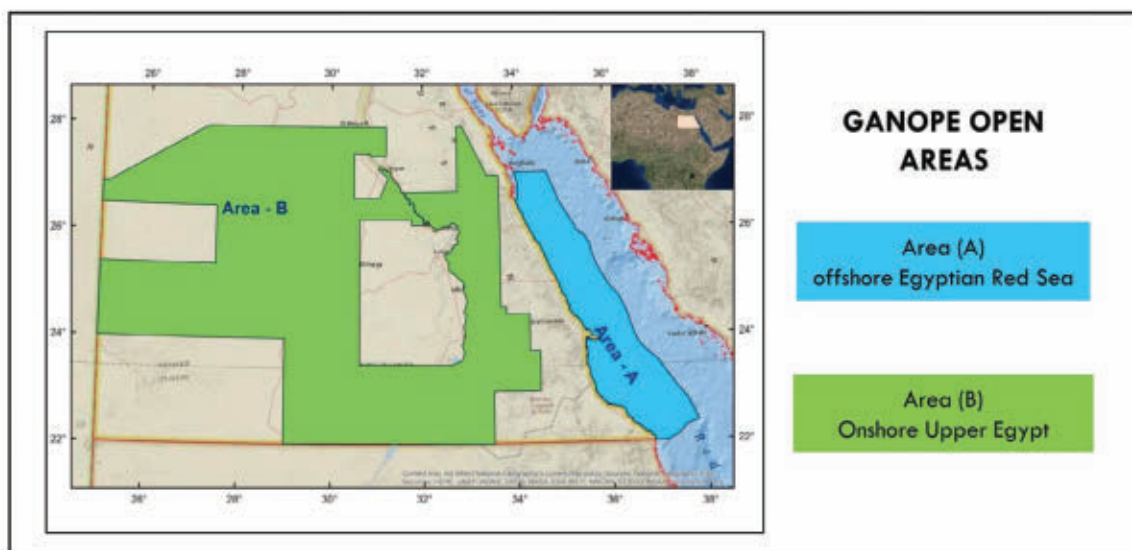
Ministry of
Petroleum and
Mineral Resources

Ganoub El Wadi Petroleum Holding Company

Announcement For

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

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



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

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

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

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

For more information, please contact:

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

Trump or Clinton?

Donald Trump or Hillary Clinton?

If based only on energy positions stated by major-party candidates for the US presidency, the choice for the oil and gas industry would be easy.

A President Trump would accelerate oil and gas leasing of the Outer Continental Shelf, rescind the Clean Power Plan, reject the Paris agreement on climate, revive Keystone XL pipeline expansion, and “lift restrictions on American energy.” A President Clinton would set aggressive targets for renewable energy and reduction in energy “waste,” cut US oil consumption by one-third, eliminate “the billions of wasteful tax subsidies oil and gas companies have enjoyed for too long and invest in clean energy,” and “make environmental justice and climate justice central priorities.”

Little influence

Republican Trump would encourage work by the oil and gas industry. Democrat Clinton would divert money from the industry to renewable energy. For the oil and gas business, Trump’s approach clearly is superior.

But energy policy will influence the election very little. Voters have other priorities. Furthermore, energy policy interacts with other issues, such as trade and international relations. On those topics, Trump’s appeal fades. Improved access to OCS opportunities would lose allure amid global recession born of a trade war. And the more-solid energy policy belongs to the candidate still trailing in polls and dependent for victory on scandals besetting his opponent.

As this bizarre campaign has shown, surprises happen. But the oil and gas industry should prepare for a Clinton victory. That outcome needn’t be ruinous. Four more years of centrally planned energy would deliver hard lessons America somehow must learn.

A President Clinton would inherit whatever the Supreme Court lets stand of the forced greening of electric power. By perhaps halfway through her first term, therefore, electricity would be rising in cost and sagging in reliability. By then, too, the costs of poorly designed health-care reform would have claimed a palpable share of American incomes. Damage control thus would consume the administration. Clinton and her political party

would be receiving condign blame for sacrificing economic welfare to governmental activism and for misrepresenting benefits and costs. Nothing focuses the popular mind quite like officially imposed hardship.

Americans didn’t ask for the energy impoverishment that Europeans, for example, already experience and increasingly resent. President Barack Obama brought it to them with executive orders and regulatory fanaticism. For his preferred successor to have to manage the consequences would be fitting. Quite likely, she would serve only one term. And Americans now smitten with energy utopianism would have come to their senses. It wouldn’t be the first time they surrendered energy choice to politicians only to reclaim it once the costs hit.

The purpose here is not to endorse Clinton. It is merely to suggest what might be necessary to clarify American thinking about a national priority stressed recently by statist manipulation by both political parties. If Americans really need a painful reminder about the realities of energy and costs of mistakes, righteous policy intentions expressed without ideological context before a Trump victory would not, by themselves, be enough.

During a Trump administration, activists now writing regulations would retreat to think tanks and pressure groups to raise money for the next election, leveraging a demonic image the real estate mogul has done little to discredit. Energy illusions that need discarding would slip instead into political dormancy, postponing rather than averting an economic reckoning.

Breaking the cycle

Trump could break this dreadful cycle if he made energy the foundation of a broad appeal for governmental restraint. From price controls of the past to renewable fuel standards of the present, examples abound in the history energy of problems created by official expansionism. A clever Republican might apply them analogously to a competitor’s promises of, say, free college tuition, forced profit-sharing, or climate justice.

A call by Trump for limited government, based on ideals of freedom rather than insults of bureaucrats, would be refreshing. Scandals might then handle the rest. **OGJ**

OFFSHORE West Africa

Follow Oil & Gas Events on:



6-8
JUNE
2017

THE EKO
HOTEL & SUITES
LAGOS
NIGERIA

NEW 2017
EVENT
DATES

JOIN US IN LAGOS FOR THE PREMIER WEST AFRICAN OIL & GAS EVENT

www.offshorewestafrica.com

CALL FOR PAPERS NOW OPEN SUBMIT YOUR ABSTRACT BY 30 SEPTEMBER 2016

Offshore West Africa Conference & Exhibition will return once again to The Eko Hotel & Suites, Lagos, Nigeria on 6-8 June 2017.

Over the past 20 years, Offshore West Africa has delivered the premier technical forum focused exclusively on West African offshore exploration and production, looking at ways to develop the vast potential that exists within the region.

Offshore West Africa still remains the leading source of information on new innovative technology and operating expertise, as well as providing solutions for this booming deepwater and subsea market.

The Advisory Board of Offshore West Africa is now accepting abstracts for the Offshore West Africa 2017 Conference. We invite you to submit an abstract for Offshore West Africa 2017 and share your knowledge, experience and solutions with industry colleagues from around the world. Please submit your 150 - 400 word abstract on one or more of the technical focus areas listed at www.offshorewestafrica.com by 30 September 2016.

For further information please visit:
www.offshorewestafrica.com

Owned & Produced by:



Presented by:

Offshore

Supporting Publication:

OIL & GAS
JOURNAL



3500+
Attendees



50+
Exhibitors



40+
International Speakers



BHI: US rig count nears return to 500 despite drop in gulf activity

Matt Zborowski
Staff Writer

A week in which offshore operators braced for a potential hurricane strike didn't prevent another rise in the overall US rig count.

The tally of active units increased by 8 to 497 during the week ended Sept. 2, according to Baker Hughes Inc. data. The rebound from the prior week's 2-unit drop was bolstered by a 14-unit jump in onshore rigs (OGJ Online, Aug. 26, 2016).

Exploration and production activity in the Gulf of Mexico is returning after some rig and platform evacuations and production shut-ins due to the threat of Tropical Depression No. 9, which eventually became Tropical Storm and Hurricane Hermine.

Albeit temporary in nature, BHI's gulf tally and overall US offshore tally for the week was down 7 units to just 10 rigs working. Total shut-in oil output in the gulf during Aug. 30-31 surpassed 300,000 b/d, or more than 20% of total gulf output, but has since fallen to less than 200,000 b/d as of midday Sept. 2, the US Bureau of Safety and Environmental Enforcement reported.

As of Sept. 2, there were no remaining evacuated production platforms. Personnel had been returned to all 11 nondynamically positioned rigs currently operating, and 3 dynamically positioned rigs were back on location after previously moving off.

Changes in US crude output

Overall US crude oil production, meanwhile, dropped 60,000 b/d during the week ended Aug. 26 to 8.49 million b/d, the US Energy Information Administration reported on Aug. 31. The Lower 48 accounted for 50,000 b/d while Alaska represented the remaining 10,000 b/d.

For June, EIA said US crude output fell 2.2% month-over-month and 6.6% year-over-year to 8.7 million b/d. Production in Texas declined just 0.7% compared with its May level to 3.17 million b/d, still down 8.4% year-over-year.

In North Dakota, where the rig count in June was roughly a third of its total in June 2015, output was down 15% year-over-year and 1.9% month-over-month to 1.02 million b/d. Production in Alaska during June declined 6.9% compared

with its May level to 470,000 b/d, still up 5.3% year-over-year.

The Gulf of Mexico took a 4.5% month-over-month hit to 1.54 million b/d, which was still up 9.1% year-over-year.

Rystad Energy foresees continued upward revisions to EIA's short-term US oil production outlook in the coming months. Data from the oil and gas consulting service indicate Lower 48 oil output was 120,000 b/d higher in August than EIA's estimate in its most recent Short-Term Energy Outlook (OGJ Online, Aug. 31, 2016).

The firm in large part attributes the higher number to increased activity in the Permian, where horizontal drilling is comparable to levels observed during the final three quarters of 2015 (see story, p. 21). The basin is forecast to serve as the primary catalyst in restoring US onshore oil production growth by November.

The basin encompassing West Texas and southeastern New Mexico has accounted for 65 of the 93 overall rigs added in the US since May 27.

Horizontal wells springing up

After staying flat the week before, the US oil-directed rig count gained only 1 unit this week to 407, still up 91 units since May 27. Gas-directed rigs jumped 7 units to 88.

The 14-unit rise in onshore rigs to 482 reflected the biggest jump in horizontal rigs since Aug. 8, 2014, when more than 1,300 units were operating. The 16-unit increase brought their total to 395, up 81 units since May 27. Directional drilling rigs, however, dropped 6 units to 42.

Texas, Oklahoma, and Wyoming paced the major oil- and gas-producing states with a 4-unit rise each to 241, 66, and 13, respectively. Texas now counts 67 more units compared with its total on May 27.

The Permian and Eagle Ford each gained 3 units to respective totals of 202 and 38. The Barnett and Mississippian each dropped a unit to 3 and 2, respectively.

Pennsylvania's tally grew by 2 to 21. North Dakota and West Virginia each gained a unit to 28 and 8, respectively. The Marcellus recorded a 2-unit increase to 27. As with its home state, the Williston was up 1 to 28. The Utica also

added a unit and now counts 14.

The offshore exodus caused Louisiana's count to fall by 7 to 35. On land, Colorado and its DJ-Niobrara took a 1-unit loss to respective totals of 19 and 15.

Canada's rig count has seesawed in recent weeks, posting a 9-unit drop this week to 137, still up 101 units since May 6. Oil-directed rigs were down 7 to 77, while gas-directed rigs shed 2 units to 60. **OGJ**

Rystad: Permian to restore US onshore oil output growth

Matt Zborowski
Staff Writer

Rystad Energy believes the Permian basin will serve as the primary catalyst in restoring US onshore oil production growth by November.

The oil and gas consulting service bases the projection in part on its own data showing US Lower 48 oil production was 120,000 b/d higher in August compared with the US Energy Information Administration's estimates in its Short-Term Energy Outlook for the month.

The higher production number coincides with increased drilling activity in the Permian, where 62 more rigs have started operations since May 27, according to data published Aug. 26 by Baker Hughes Inc. (OGJ Online, Aug. 26, 2016). The West Texas and southeastern New Mexico basin has accounted for more than two thirds of the entire US rig count increase during the country's recent rebound.

Rystad notes the Permian's current horizontal drilling activity is comparable to levels observed during the final three quarters of 2015. Additional completion work on drilled but uncompleted (DUC) wells also has been initiated.

Major operators in the Bakken and Eagle Ford, meanwhile, are yet to accelerate hydraulic fracturing work, with several companies saying a West Texas Intermediate price of \$55-60/bbl is necessary for them to resume such activity. However, Rystad's revisions do reflect decelerating declines outside the Permian.

The firm foresees continued upward revisions to EIA's short-term US oil production outlook in the coming months, possibly slowing an oil-price recovery despite counter-seasonal global stock draws during the second and third quarters.

While the August STEO already includes an upward revision of 200,000-240,000 b/d for Lower 48 output during the fourth quarter, its current yearend projections are

450,000 b/d below Rystad's base-case scenario.

Even with no shale well completions during September-December, Rystad projects Lower 48 production to exit the year at 6.07 million b/d, just 90,000 b/d fewer than the current STEO forecast. "Thus, further STEO upward revisions in the coming months are inevitable and the market should take notice," the firm said. **OGJ**

Barclays: Global E&P spending to trend up 5% in 2017

Oil and gas companies are poised to increase spending on exploration and production globally by 5% in 2017, while offshore spending may continue to fall next year, based on Barclays' midyear global spending survey of more than 200 companies.

This survey has been conducted over the last 5 weeks throughout the month of August with most oil companies basing full-year 2016 upstream spending on \$50/bbl Brent and \$45/bbl West Texas Intermediate.

This midyear update to the Barclay's Upstream Spending Survey shows global upstream spending declining 22% in 2016, an upward revision from their March estimate of a 27% decline. Spending for 2015 has been revised down slightly to a 26% decrease from 23% previously in January, now reflecting actual reported figures.

North America spending is forecast to decline 37% in 2016, slightly better than a drop of 40% estimated in March but could decline further if oil prices drop back down to \$40/bbl. Based on Barclays' preliminary estimates, North America spending set to increase 17-23% in 2017. This assumes oil prices stabilize in the \$55-60/bbl (WTI) range on average next year and E&P spending in line with cash flows.

More than 77% of survey respondents said they expect onshore well costs in North America to trend down during the next 12 months, despite more than 51% expecting pressure pumping pricing to increase over the same period.

International spending will decline 17% in 2016, the survey said. This compares with Barclays' 2016 estimated decline of 21% in March and 11% decline in January, as national oil companies are now budgeting a 13% decline, European international oil companies down 20%, US-based IOCs down 26%, and international exploration and production firms down 15%. Middle East is the only area of growth in 2016, while Latin America will fall 33% this year.

"International spending in 2017 to be flat to up single-digits based on our preliminary estimates as the IOCs' continued focus on dividends, capital preservation and balance sheet strength will outweigh any opportunities to increase spending. Our 2017 estimate assumes a 5-10% increase in spending from NOCs, offset by declines for all other customer types which are expected to see declines

for a 3rd straight year,” said Barclays.

After a 34% estimated decline in offshore spending in 2016, Barclays expects a further decline of 25% in 2017, driven by day rate reductions, contract cancellations and delayed deliveries for rigs. **OGJ**

NPD: NCS development costs down by almost half since fall 2014

The cost for developing a field on the Norwegian continental shelf has declined by around 45% since autumn 2014, according to the Norwegian Petroleum Directorate.

The decline is the result of simpler development concepts, more efficient drilling, and lower prices for work and equipment.

NPD analyzed eight planned developments that are approaching startup: Utgard, Oda, Zidane, Trestakk, Snilehorn, Johan Castberg, Snorre Expansion, and Johan Sverdrup Phase 2. The investment estimate for those projects now totals about 150 billion kroner, down from 270 billion kroner.

“This is a significant and very welcome reduction,” said Ingrid Solvberg, NPD’s director of development and operations. “The oil companies and the supplier industry have made a tremendous effort in streamlining the activities, and now we can see that these measures are working.”

The biggest savings are a result of “altered development solutions.” The second largest reduction is within “drilling and wells,” where rental rates for drilling rigs have declined and companies are planning wells that can be drilled faster.

In the area of pipelines and cables, NPD said costs have been affected by falling prices for materials and companies choosing different routes.

But Solvberg cautioned against short-term savings at the expense of “long-term value creation on the shelf” and warned against cutting technical staff “as it could impair the capacity for innovation and the ability to find smart solutions.”

NPD has noted tendencies where companies prioritise minimum investment in the development phase, but those decisions could limit subsequent upgrades of the facilities, or make them more expensive.

“We must not put ourselves in a situation where cost cuts reduce the future flexibility on the fields, or have a detrimental impact on our ability and willingness to use technology that can provide better and more efficient resource management,” Solvberg said. **OGJ**

Apache notes new resource play with Alpine High

Tayvis Dunnahoe
Exploration Editor

After 2 years of extensive geologic and geophysical work, Apache Corp. estimates its southern Delaware basin Alpine High play to contain 75 tcf of rich gas and 3 billion bbl of oil in 4,000-5,000 ft of stacked pay in up to five distinct formations including Bone Springs, Wolfcamp, Pennsylvanian, Barnett, and Woodford.

The Houston independent said it has secured 307,000 (352,000 gross) contiguous net acres in the wet gas and oil windows, primarily in Reeves County, Tex. The average cost was stated as \$1,300/acre. The company also said it has identified 2,000-3,000 future drilling locations in the oil-bearing Woodford and Barnett formations alone. Both formations are in the wet gas window and are expected to deliver a combination of rich gas and oil. The pretax, net present value range for these zones is \$4-20 million/well at the benchmark oil and natural gas prices of \$50/bbl and \$3/Mcf.

Apache has drilled 19 wells in the play and expects future well costs for a 4,100-ft lateral to be \$4 million in normally pressured settings with over-pressured wells costing \$6 million. A report published by Cowen & Co. cites the 24-hr IP for the Woodford Mont Blanc 1H well as high as 17,068 Mcfd. The Ortler 1H came in as the lowest well at 1,752 Mcfd, the report said. Four additional wells have reported production in the range of 6,484-7,122 Mcfd. Estimated ultimate recoveries are between 1.1-2.7 MMboe.

A key setback in this region is the lack of gas processing ca-



Apache estimates its southern Delaware basin Alpine High play to hold 75 tcf of rich gas and 3 billion bbl of oil. Photo from Apache.

capacity. As a result, nine of Apache's wells are producing in limited quantities, including six wells in the Woodford, one well in the Barnett, and one well each in the shallower Wolfcamp and Bone Springs oil formations. Cowen's report cited this as a key setback in the region. Apache plans to install temporary infrastructure before yearend to add capacity.

The play contains a comparatively low clay content of 10-20%, Cowen said. The Alpine High well results show a declining water rate, which acts as positive catalyst for operating expenses, the consultancy added.

Benjamin Shattuck, analyst with Wood Mackenzie Ltd., recently said "average penetration rates in the Delaware basin are up 20-25% compared to 2 years ago." Service prices are down roughly 40-45% and a well that would have cost \$10-11 million in 2014 is closer to \$6.5-7.5 million today (OGJ Online, Sep. 5, 2016). The Delaware basin holds promise in 2017 with spending in the Permian falling 37% compared with 2015. "Other US unconventional plays are down more than 50%," Shattuck added. **OGJ**

Woodside buys into Scarborough gas field

Rick Wilkinson

OGJ Correspondent

Woodside Petroleum Ltd., Perth, has purchased a portion of BHP Billiton Ltd.'s interests on the Exmouth Plateau, offshore Western Australia, including the yet-to-be-developed Scarborough gas field, for \$400 million.

The deal also includes some of BHP Billiton's interest in nearby permits containing the undeveloped Thebes and Jupiter gas fields.

Scarborough, discovered by ExxonMobil Corp. and BHP Petroleum in 900-970 m of water in 1979, is covered by two retention leases: WA-62-R and WA-1-R. Woodside has acquired 25% of WA-1-R and 50% of WA-62-R.

Jupiter field was originally discovered by Phillips Petroleum in 1979 and is now held in retention lease WA-61-R. Woodside has acquired 50% of this permit.

BHP Billiton found the smaller Thebe field in 1,173 m of water 50 km north of Scarborough in 2007. It is held in retention lease WA-63-R. Woodside has acquired 50% in this permit.

Woodside will become operator of WA-61-R, WA-62-R, and WA-63-R. ExxonMobil will retain operatorship of WA-1-R, which contains the bulk of Scarborough field.

Overall total resources for the three fields has been estimated at 8.7 tcf of gas on a 2C confidence level. Woodside's share is an estimated 2.6 tcf. No further appraisal work is scheduled.

All the discoveries are 220-250 km northwest of the town of Exmouth on the Western Australian coast.

Under the terms of the acquisition, Woodside will pay BHP Billiton an upfront amount of \$250 million and a further \$150 million contingent upon a final investment decision to develop Scarborough.

The acquisition is subject to preemption rights, foreign investment review board clearance, and National Offshore Petroleum Titles Administrator approval and registration.

Completion is expected by yearend.

The Australian government renewed the retention lease over the Scarborough area fields in November 2015 for 5 years when the then ExxonMobil-BHP Billiton joint venture pledged to spend about \$250 million (Aus.) to move the proposed Scarborough gas development to an FID.

Due to its remote location, deep water, and the lack of accompanying liquids, the companies had struggled to design a viable development concept. The dip in world oil prices exacerbated the problem.

The preferred option was a \$10-billion floating LNG (FLNG) scheme, but the alternative of piping the gas to either the North West Shelf project or the Pluto project, both operated by Woodside Petroleum, with LNG trains on the Burrup Peninsula, had not been ruled out.

The retention leases were granted last year on condition that front-end engineering and design is completed before the expiry date in 2020 or the government would strip the companies of ownership. It is not known if this condition still applies with the change of ownership.

Initial plans for the FLNG facility included a 495 m-by-75 m vessel with a capacity for producing 6-7 million tonnes/year of LNG. The field life is expected to be 25-35 years. **OGJ**

FAR pushes for SNE field development offshore Senegal

Rick Wilkinson

OGJ Correspondent

FAR Ltd., Perth, is pushing hard in favor of development of SNE oil field offshore Senegal in which it is a 15% participant.

Following the release last month of new estimates for contingent resources compiled for FAR by independent consultant RISC Operations, FAR has assessed SNE field to be a commercially viable project having now achieved a minimum economic field size threshold (OGJ Online, Aug. 23, 2016).

FAR points to operator Cairn Energy PLC's previous statement of minimum economic field size for the SNE project as being about 200 million bbl.

FAR's recent resources upgrade put 1C resources at 348 million bbl, 2C resources at 641 million bbl, and 3C resources at



**NICK
SNOW**

Washington Editor | Blog at www.ogj.com

Oklahoma's earthquake response

Oklahoma authorities moved quickly after a magnitude 5.6 earthquake occurred the morning of Sept. 3 in Pawnee County. Members of the Oklahoma Corporation Commission's seismicity team went to work immediately to identify potential risks, a spokesman said on Sept. 6. Using emergency authority it received from the state's legislature last session, the OCC ordered 37 Arbuckle disposal wells shut down, he told OGJ.

"This isn't everything we might do," the spokesman said. "We'll take whatever steps we can based on what the data shows." The agency has begun to work closely with the US Environmental Protection Agency, which has jurisdiction over 211 sq miles in nearby Osage County within the quake's 750-sq-mile area of interest.

The earthquake was felt in multiple states and was Oklahoma's strongest since November 2011, when a magnitude 5.6 quake occurred in Lincoln County. "I'm glad to hear no one was seriously hurt in today's earthquake and damage appears to be limited," Gov. Mary Fallin (R) said on Sept. 3.

She promptly declared a state of emergency for Pawnee County on Sept. 3, allowing state agencies to make emergency purchases related to disaster relief and preparedness. The declaration also was a first step toward seeking federal aid should it be necessary, her office said.

Under the executive order, the state of emergency lasts 30 days. Additional counties may be added if necessary.

Fallin and state emergency manage-

ment officials asked residents to use the OK Emergency mobile device application to submit photos of earthquake damage to their homes or businesses.

"Information on the earthquake is still being collected, and will be reviewed by my coordinating council on seismic activity, chaired by Secretary of Energy and Environment Michael Teague, as we continue to move forward to make our state safe," the governor said.

More incidents recently

State officials obviously were able to move quickly because the government has had to deal with more quakes recently. Prior to Sept. 3, the surrounding region of Oklahoma and Kansas hosted close to 80 other magnitude 4 or larger events over the past decade, according to the US Geological Survey's report on the latest quake.

The number of induced events across the central and eastern US has risen rapidly in the last 7 years, the report continued. In Oklahoma, the growth has been more than one in magnitude, it noted.

Scientific studies have linked this to wastewater injection in deep disposal wells, although fluid withdrawal, enhanced oil recovery, or hydraulic fracturing also may be involved. "In addition, regions with frequent induced earthquakes may also be subject to damaging earthquakes that would have occurred independently of human activity," the USGS report said. **OGJ**

1,128 million bbl.

These figures are more generous than Cairn's latest figures of 1C at 274 million bbl, 2C at 473 million bbl, and 3C at 906 million bbl disclosed in Cairn's half-yearly report. Cairn also states that 2C in-place resources are estimated at 2.7 billion bbl of oil.

FAR says it has now completed pre-engineering studies with Melbourne-based engineering consultancy AMOG and has prepared an SNE field concept development plan based on the 2C resource of 641 million bbl.

The company envisions a stand-alone floating production, storage, and offloading facility with topside expansion capability for later SNE field development phases and satellite tie-backs. This concept is a phased development approach with a plateau production rate of 140,000 b/d to come on stream in 2022.

FAR's estimates of development costs range \$13-15/bbl. Operating expenditures would be \$12-14/bbl including FPSO lease costs. The development costs split would be 45% spent on drilling and well completions, 46% on subsea work, and 9% on the overall project administration and other costs.

FAR says the development is well placed to benefit from cost deflation resulting from the current low global oil prices where offshore drilling and subsea costs have declined by 20% and more in the last 2 years.

The development concept is based on 70-80 development wells throughout the field life, half of which would be producers and half injectors. The first phase of development would require 20-25 wells, most of them horizontal, 1,500-m laterals or high-angle wells.

Further appraisal drilling in the field, starting later this year, will provide more delineation of the structure to improve definition and scale of the first development phase.

Cairn agrees with FAR's statement that the project is now in the pre-FEED stage and development planning is under way, but has confined its statement of development prospects to "a range of options, including a phased approach."

In related news, there has been no further announcement about the validity or otherwise of SNE joint-venture participant ConocoPhillips's proposed sale of its interests in Senegal—including the SNE project—to Woodside Petroleum Ltd of Perth. Woodside agreed a binding purchase and sale agreement with ConocoPhillips in July to acquire 100% of its interests in Senegal for \$350 million plus a completion adjustment of \$80 million (OGJ Online, July 14, 2016).

After taking legal advice FAR said last month that ConocoPhillips failed to comply with the terms of the joint operating agreement in relation to the proposed sale of its interests in Senegal. As a consequence FAR believes that the preemption period had not then commenced.

Both ConocoPhillips and Woodside say that the preemption period had been completed and the sale is valid.

FAR has not yet said whether it will try to preempt the sale to Woodside, although this recent release about possible development plans could be construed as an attempt to win the confidence of potential backers for such a move. The company has said it will participate in prompt efforts to reach an amicable solution to the matter.

Cairn has 40% of the permits, ConocoPhillips 35%, FAR 15%, and Senegal national company Petrosen 10%. **OGJ**

Devon increasing drilling, investment in STACK play

Devon Energy Corp. sees potential for tighter spacing and increased drilling inventory in the overpressured oil window of Oklahoma's STACK play, where it is increasing drilling and investment (OGJ Online, Aug. 2, 2016).

The company's third spacing pilot targeting the Mississippian Meramec formation tested a seven-well pattern across a single-section interval in the upper part of the formation.

Initial 15-day production rates in

the Pump House pilot averaged 2,200 boe/d, 55% oil, and cost \$6 million/well.

Drilled with 4,700-ft laterals, the Pump House wells were completed with 2,200 lb/lateral-ft of proppant across 35 frac stages with perforation clusters 25 ft apart. Choke sizes increased gradually over the initial 15-day periods to 26/64 in. from 14/64 in.

The Pump House wells are in Kingfisher County adjacent to Devon's Born Free pilot and 3 miles north of its Alma pilot. Average 120-day production of the Born Free pilot's two wells is 1,400 boe/d/well. Average 60-day production of the Alma pilot's five wells is 1,300 boe/d/well.

Tony Vaughn, Devon chief operating officer, said the flow rates exceed type-curve expectations with minimal interference between wells.

The company is conducting more than 10 additional spacing pilots, preparing for full-field development in 2017.

The pilots test as many as eight wells each in a single Meramec interval, evaluating joint development of multiple, stacked-pay intervals.

In eastern Blaine County, Devon recently started production at high rates from two extended-reach Meramec wells, Marmot 19-1HX and Blue Ox 3130-4AH.

Drilled with 10,000-ft laterals, the wells reached average peak 24-hr rates of 3,700 boe/d/well, 70% oil, on 28/64-in. chokes. Completion of the Marmot and Blue Ox wells used 2,600 lb/lateral-ft of proppant across 50 frac stages, 30 ft apart.

Vaughn said the wells help the company understand optimum development of its STACK properties.

"It is our expectation that we will develop the majority of our stacked-pay Meramec position with extended-reach laterals, which will significantly increase rates of return from this world-class reservoir," he said.

Devon is adding up to four operated rigs to the play in this year's second half, bringing the total to as many as six. It expects to invest \$450 million in the play, up 40% from earlier estimates. **OGJ**

THE EDITOR'S PERSPECTIVE

Crusade to punish climate dissent changes course

by Bob Tippee, Editor

New York Atty. Gen. Eric Schneiderman has changed course in his crusade to cleanse the republic of free speech.

Schneiderman led the group of 17 state AGs who in March launched a subpoena siege against organizations, including ExxonMobil and the Competitive Enterprise Institute (CEI), doubtful about the need for sacrificial climate remedies.

Because democracies tend to clean their own gutters, Schneiderman's attempt to punish political disagreement is unraveling.

CEI defeated the witch hunt that came its way via the Virgin Islands and has sued to learn which groups backed the effort.

Meanwhile, at least a few erstwhile supporters have decided that usurpation of democratic processes looks bad on AG resumes.

So Schneiderman is regrouping.

Initially, he suggested ExxonMobil opposed costly precaution while fully aware of the supposed perils of climate change.

This is absurd. Certitude essential to the assertion doesn't exist. Activists insisting otherwise are wrong.

Now, Schneiderman is investigating not what ExxonMobil knew and when it knew it but what the company tells shareholders about climate-related risks.

The company might have to leave oil and gas in the ground, he told the New York Times last month. It might be overstating the value of reserves. That might represent fraud.

Nonsense. Reserves values, like climate science, are inherently uncertain. That's why companies assess them every year.

"If, collectively, the fossil fuel companies are overstating their assets by trillions of dollars, that's a big deal," Schneiderman told the Times. He obviously doesn't know that the only values related to reserves on oil-company balance sheets, where assets appear, are capitalized development costs.

Schneiderman also doesn't account for a scenario far more probable than his speculation about stranded assets.

That's the political backlash sure to replace indifference of the moment when remediation costs slam energy consumers.

Then the movement fizzles, as it's doing at the popular level in much of Europe, and what proves to have been fraudulent is expansionist regulation imposed before voters understood what was happening.

That's really a big deal.

(From the subscription area of www.ogj.com, posted Sept. 2, 2016; author's e-mail: bobt@ogjonline.com)

14TH ANNUAL • NOV. 8-10, 2016

DEEPWATER OPERATIONS™ CONFERENCE & EXHIBITION

MOODY GARDENS HOTEL & CONVENTION CENTER • GALVESTON, TX
WWW.DEEPWATEROPERATIONS.COM

HOSTED BY: **bhpbilliton**
reimagining the future



EVENT MOBILE APP DOWNLOAD NOW

1. Search for and download the Deepwater Operations mobile app. Search for "Deepwater Operations" in the App Store or Google Play.
2. Plan your entire day all from within the app. Here you will find:

- + Conference information
- + An interactive floor plan
- + Exhibitor profiles
- + Special events
- + Events social feed
- + Favorites
- + Notifications/Alerts
- + And much more...all in the palm of your hand!



OWNED & PRODUCED BY:



PRESENTED BY:



SUPPORTED BY:



17TH ANNUAL SUBSEATIEBACK™ FORUM & EXHIBITION

MARCH 21-23, 2017

HENRY B. GONZALEZ CONVENTION CENTER
SAN ANTONIO, TEXAS USA

WWW.SUBSEATIEBACKFORUM.COM

#SUBSEATIEBACK



EVENT MOBILE APP DOWNLOAD NOW!

With so much going on at this year's event, we've made it easier and more convenient for you to maximize your event experience. Gain access to every aspect of the event on the go – with a swipe of your finger.

- 1 Search for and download the Subsea Tieback mobile app. Search for "Subsea Tieback" in the App Store or Google Play.
- 2 Plan your entire day all from within the app. Here you will find:
 - Conference information
 - An interactive floor plan
 - Exhibitor profiles
 - Favorites
 - Notifications/Alerts
 - Events social feed
 - And much more... all in the palm of your hand!



Owned & Produced by:



Presented by:



Supported by:



OIL & GAS JOURNAL

ARTICLES FOR DISTRIBUTION

Use published editorial content to validate your marketing initiatives.

Repurpose editorial content for distribution

- Electronic Reprints
- High-Quality Glossy Handouts
- Personalized Direct Mail Products
- Cross Media Marketing
- Plaques & Framed Prints

For additional information, please contact Foster Printing Service, the official reprint provider for Oil & Gas Journal.

Call 866.879.9144 or sales@fosterprinting.com



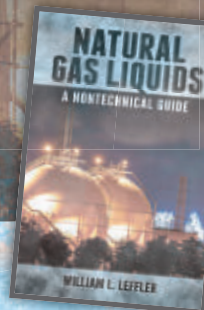
NATURAL GAS LIQUIDS

A NONTECHNICAL GUIDE WILLIAM L. LEFFLER

"I can think of no one better to translate the complexities of natural gas liquids into a more easily understandable subject."

— Frank H. Richardson, President and CEO, Shell Oil Company, Retired

Natural Gas Liquids: A Nontechnical Guide is a comprehensive overview of NGLs from production in the oil patch to consumption in the fuels and petrochemicals industries.



ORDER YOUR COPY TODAY AT
WWW.PENNWELLBOOKS.COM
OR CALL 800-752-9764

226 Pages / Hardcover / 2014
ISBN 978-1-59370-324-0 / \$79.00

ADVERTISERS INDEX

COMPANY NAME	PAGE
Aramco Services Co. www.aramco.jobs/logj	02
Deepwater Operations www.deepwateroperations.com	26
Ganoub El Wadi Holding Petroleum Company www.ganope.com	17
Gulf Interstate Engineering www.gie.com/OGJ	04
Linde AG, Engineering Division www.linde-engineering.com	11
Offshore West Africa www.offshorewestafrica.com	19
PennWell Books www.pennwellbooks.com	26
Reprints pennwellreprints@fosterprinting.com	16
Subsea Tieback www.subseatiebackforum.com	26
TDS - Technical Design Services www.tdsmn.com	09
Vericor Power Systems www.vericor.com	06

This index is provided as a service. The publisher does not assume any liability for errors or omission.

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



IMPORTS OF CRUDE AND PRODUCTS

	— Districts 1-4 —		— District 5 —		— Total US —		
	8-26 2016	8-19 2016	8-26 2016	8-19 2016	8-26 2016	8-19 2016	8-28* 2015
	1,000 b/d						
Total motor gasoline.....	781	777	50	23	831	800	834
Mo. gas. blending comp.....	736	683	48	17	784	700	796
Distillate.....	114	161	13	63	127	224	77
Residual.....	130	152	134	138	264	290	249
Jet fuel-kerosine.....	43	10	175	34	218	44	179
Propane-propylene.....	66	69	17	21	83	90	76
Other.....	516	966	79	112	596	1,079	703
Total products.....	1,650	2,135	468	391	2,119	2,527	2,118
Total crude.....	7,278	7,254	1,639	1,388	8,917	8,642	7,856
Total imports.....	8,928	9,389	2,107	1,779	11,035	11,168	9,974

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

EXPORTS OF CRUDE AND PRODUCTS

	8-26-16	Total US 8-19-16	*8-28-15
	1,000 b/d		
Finished motor gasoline	549	454	419
Jet fuel-kerosine	225	156	133
Distillate	1,049	1,266	1,223
Residual	229	362	414
Propane/propylene	644	668	505
Other oils	1,582	995	1,001
Total products	4,278	3,901	3,695
Total crude	698	677	477
Total exports	4,976	4,578	4,172
NET IMPORTS			
Total	6,060	6,591	5,801
Products	(2,159)	(1,374)	(1,577)
Crude	8,219	7,965	7,378

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

CRUDE AND PRODUCT STOCKS

District	Crude oil	— Motor gasoline —			— Fuel oils —		Propane-propylene
		Total	Blending comp.	Jet fuel, kerosine 1,000 bbl	Distillate	Residual	
PADD 1.....	20,259	67,178	61,090	9,305	63,491	10,814	6,896
PADD 2.....	151,032	49,859	43,590	6,724	30,209	1,231	28,803
PADD 3.....	275,550	78,513	69,174	14,818	43,558	23,013	59,073
PADD 4.....	26,974	6,578	4,795	778	3,076	178	¹ 3,738
PADD 5.....	52,055	29,876	27,398	9,408	14,419	4,789	—
Aug. 26, 2016.....	525,870	232,004	206,047	41,033	154,753	40,025	98,510
Aug. 19, 2016.....	523,595	232,694	206,797	41,751	153,257	40,493	96,135
Aug. 28, 2015².....	455,427	214,163	187,823	42,546	149,951	40,161	96,343

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

REFINERY REPORT—AUG. 26, 2016

District	REFINERY OPERATIONS		REFINERY OUTPUT			
	Gross inputs	Crude oil inputs	Total motor gasoline	Jet fuel, kerosine	Fuel oils	Propane-propylene
	1,000 b/d		1,000 b/d			
PADD 1.....	1,108	1,115	3,294	75	358	149
PADD 2.....	3,806	3,802	2,601	279	1,121	388
PADD 3.....	8,817	8,580	2,237	862	2,687	952
PADD 4.....	584	583	331	37	190	¹ 197
PADD 5.....	2,694	2,534	1,721	498	618	—
Aug. 26, 2016.....	17,009	16,614	10,184	1,751	4,974	1,686
Aug. 19, 2016.....	16,937	16,678	10,028	1,786	4,850	1,715
Aug. 28, 2015².....	16,673	16,388	10,126	1,565	4,923	1,635
	18,320 Operable capacity		92.8 utilization rate			

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

OGJ CRACK SPREAD

	9-2-16*	9-4-15*	Change	Change,
	\$/bbl			%
SPOT PRICES				
Product value	58.84	62.64	(3.80)	(6.06)
Brent crude	NA	48.33	NA	NA
Crack spread	NA	14.32	NA	NA

FUTURES MARKET PRICES

One month				
Product value	58.60	64.01	(5.41)	(8.45)
Light sweet crude	44.87	46.73	(1.86)	(3.98)
Crack spread	13.73	17.28	(3.55)	(20.55)
Six month				
Product value	59.23	64.16	(4.92)	(7.67)
Light sweet crude	48.03	49.96	(1.93)	(3.87)
Crack spread	11.21	14.19	(2.99)	(21.04)

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

OGJ GASOLINE PRICES

	Price ex tax 8-31-16	Pump price* 8-31-16 ¢/gal	Pump price 9-2-15
(Approx. prices for self-service unleaded gasoline)			
Atlanta	156.8	206.2	241.5
Baltimore	163.2	214.2	237.7
Boston	160.3	205.2	255.0
Buffalo	154.5	215.6	254.3
Miami	148.9	203.9	257.1
Newark	169.0	201.9	227.2
New York	177.2	238.2	277.3
Norfolk	192.5	233.2	219.3
Philadelphia	144.4	213.2	256.5
Pittsburgh	162.4	231.2	256.5
Wash., DC	186.0	227.9	251.9
PAD I avg	165.0	217.4	248.6
Chicago	226.0	274.6	316.8
Cleveland	177.1	223.5	227.9
Des Moines	170.5	220.9	271.9
Detroit	171.8	220.8	247.0
Indianapolis	173.6	221.9	228.0
Kansas City	167.8	203.5	244.1
Louisville	176.1	220.5	264.7
Memphis	183.3	223.1	238.3
Milwaukee	162.2	213.5	272.7
Minn.-St. Paul	169.5	216.5	246.3
Oklahoma City	161.1	196.5	210.6
Omaha	165.5	211.6	240.8
St. Louis	170.8	206.5	221.5
Tulsa	167.4	202.8	215.4
Wichita	169.0	211.5	229.2
PAD II avg	174.1	217.8	245.0
Albuquerque	155.4	192.7	254.3
Birmingham	167.0	206.2	218.3
Dallas-Fort Worth	164.9	203.3	216.3
Houston	163.7	202.1	224.0
Little Rock	162.5	202.7	228.6
New Orleans	165.0	203.5	221.6
San Antonio	160.9	199.3	226.6
PAD III avg	162.8	201.4	227.1
Cheyenne	175.0	217.4	264.0
Denver	187.5	227.9	276.0
Salt Lake City	181.5	229.4	280.3
PAD IV avg	181.3	224.9	273.4
Los Angeles	244.9	303.9	364.3
Phoenix	181.5	218.9	250.0
Portland	178.4	227.9	300.8
San Diego	218.9	277.9	358.0
San Francisco	224.9	283.9	342.4
Seattle	198.0	260.9	317.6
PAD V avg	207.8	262.3	322.2
Week's avg.	175.2	221.8	256.0
Aug. avg.	170.1	216.7	264.7
July avg.	178.7	225.4	278.7
2016 to date	161.8	208.5	—
2015 to date	204.4	251.7	—

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

BAKER HUGHES RIG COUNT

	9-2-16	9-4-15
Alabama	2	2
Alaska	4	12
Arkansas	—	4
California	5	14
Land	5	13
Offshore	—	1
Colorado	19	34
Florida	—	—
Illinois	2	2
Indiana	—	—
Kansas	—	11
Kentucky	1	2
Louisiana	35	75
N. Land	16	30
S. Inland waters	5	4
S. Land	5	10
Offshore	9	31
Maryland	—	—
Michigan	—	—
Mississippi	4	3
Montana	—	1
Nebraska	—	4
New Mexico	30	48
New York	—	—
North Dakota	28	71
Ohio	13	18
Oklahoma	66	106
Pennsylvania	21	35
South Dakota	—	—
Texas	241	375
Offshore	1	—
Inland waters	—	—
Dist. 1	21	43
Dist. 2	14	42
Dist. 3	3	21
Dist. 4	8	16
Dist. 5	4	6
Dist. 6	8	18
Dist. 7B	5	5
Dist. 7C	24	32
Dist. 8	130	155
Dist. 8A	15	18
Dist. 9	1	3
Dist. 10	7	16
Utah	3	4
West Virginia	8	17
Wyoming	13	25
Others ID-1, NV-1	2	1
Total US	497	864
Total Canada	137	187
Grand total	634	1,051
US oil rigs	407	662
US gas rigs	88	202
Total US offshore	10	33
Total US cum. avg. YTD	485	1,077

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

OGJ PRODUCTION REPORT

	'9-2-16 1,000 b/d	'9-4-15
(Crude oil and lease condensate)		
Alabama	17	26
Alaska	470	418
California	547	571
Colorado	305	344
Florida	5	6
Illinois	20	26
Kansas	95	125
Louisiana	1,280	1,439
Michigan	16	18
Mississippi	51	67
Montana	59	76
New Mexico	358	421
North Dakota	1,057	1,185
Ohio	63	76
Oklahoma	254	424
Pennsylvania	16	19
Texas	3,551	3,743
Utah	80	100
West Virginia	21	21
Wyoming	188	235
Other states	49	46
Total	8,502	9,386

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

US CRUDE PRICES

	9-2-16 \$/bbl*
Alaska-North Slope 27°	37.05
Light Louisiana Sweet	39.81
California-Midway Sunset 13°	35.25
California Buena Vista Hills 26°	41.60
Wyoming Sweet	40.69
East Texas Sweet	37.25
West Texas Sour 34°	34.75
West Texas Intermediate	39.75
Oklahoma Sweet	39.75
Texas Upper Gulf Coast	33.50
Michigan Sour	31.75
Kansas Common	32.50
North Dakota Sweet	40.00

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

WORLD CRUDE PRICES

OEPC reference basket	Wkly. avg.	9-2-16 Mo. avg., June-16	\$/bbl 43.63 \$/bbl July-16
OEPC reference basket	45.84	42.68	42.68
Arab light-Saudi Arabia	46.28	43.14	43.14
Basrah light-Iraq	44.63	41.37	41.37
Bonny light 37°-Nigeria	48.48	45.30	45.30
Es Sider-Libya	47.28	44.00	44.00
Girassol-Angola	48.30	45.09	45.09
Iran heavy-Iran	44.68	41.59	41.59
Kuwait export-Kuwait	44.50	41.37	41.37
Marine-Qatar	46.37	43.53	43.53
Meruy-Venezuela	38.22	36.71	36.71
Minas 34°-Indonesia	51.56	41.84	41.84
Murban-UAE	49.28	46.54	46.54
Oriente-Ecuador	44.03	40.72	40.72
Saharan blend 44°-Algeria	48.98	45.30	45.30
Other crudes			
Fateh 32°-Dubai	46.25	42.64	42.64
Isthmus 33°-Mexico	47.51	45.07	45.07
Brent 38°-UK	48.28	45.00	45.00
Urals-Russia	46.60	43.76	43.76
Differentials			
WTI/Brent	0.46	(0.10)	(0.10)
Brent/Dubai	2.03	2.36	2.36

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

US NATURAL GAS STORAGE¹

	8-26-16 bcf	8-19-16 bcf	8-26-15	Change, %
East	796	775	744	7.0
Midwest	904	875	802	12.7
Mountain	222	219	187	18.7
Pacific	310	310	345	(10.1)
South Central	1,169	1,171	1,085	7.7
Salt	287	292	289	(0.7)
Nonsalt	883	879	796	10.9
Total US	3,401	3,350	3,163	7.5
	June-16	June-15	Change, %	
Total US²	3,196	2,656	20.3	

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

REFINED PRODUCT PRICES

	8-26-16 ¢/gal	8-26-16 ¢/gal
Spot market product prices		
Motor gasoline (Conventional-regular)	No. 2 Distillate	Low sulfur diesel fuel
New York Harbor	142.20	New York Harbor
Gulf Coast	157.40	Gulf Coast
		Los Angeles
Motor gasoline (RBOB-regular)	Kerosine jet fuel	Gulf Coast
New York Harbor	154.70	Gulf Coast
No. 2 heating oil	Propane	Mont Belvieu
New York Harbor	142.70	Mont Belvieu

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

IHS PETRODATA RIG COUNT

	Total supply of rigs	Marketed supply of rigs	Marketed contracted	Marketed utilization rate (%)
US Gulf of Mexico	105	51	37	72.6
South America	52	45	38	84.4
Northwest Europe	108	86	63	73.3
West Africa	69	52	27	51.9
Middle East	170	159	124	78.0
Southeast Asia	95	80	42	52.5
Worldwide	835	684	487	71.2

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

WORLDWIDE CRUDE OIL AND GAS PRODUCTION

	June 2016	May 2016	6 month average production		Change vs. previous year		June 2016	May 2016	Cum. 2016
			2016	2015	Volume	%			
Argentina.....	500	520	516	533	(16)	(3.1)	108.1	110.9	637.00
Bolivia.....	50	50	50	50	—	0.7	65.0	65.0	390.00
Brazil.....	2,564	2,493	2,386	2,422	(36)	(1.5)	83.5	83.6	531.14
Canada.....	3,300	2,516	3,469	3,636	(167)	(4.6)	450.0	455.0	2,788.75
Colombia.....	890	910	940	990	(50)	(5.0)	30.0	30.0	180.00
Ecuador ¹	550	550	545	545	—	(0.1)	1.0	1.0	6.00
Mexico.....	2,178	2,174	2,203	2,264	(60)	(2.7)	182.3	181.1	1,108.75
Peru.....	37	43	43	60	(17)	(28.7)	39.8	44.8	226.03
Trinidad.....	69	73	73	82	(8)	(10.4)	99.5	106.9	631.10
United States.....	8,701	8,894	9,007	9,419	(412)	(4.4)	2,323.0	2,422.0	14,331.66
Venezuela ¹	2,160	2,210	2,290	2,413	(123)	(5.1)	68.0	68.0	408.00
Other Latin America.....	86	86	86	89	(3)	(3.0)	4.5	4.5	27.46
Western Hemisphere.....	21,085	20,519	21,609	22,502	(893)	(4.0)	3,454.7	3,572.8	21,265.89
Austria.....	19	3	14	17	(3)	(17.8)	3.3	3.3	20.94
Denmark.....	153	143	140	159	(19)	(11.8)	13.3	13.3	75.47
France.....	16	17	17	17	—	2.0	0.1	0.1	0.65
Germany.....	48	47	47	46	1	2.2	23.2	24.0	143.90
Italy.....	28	28	60	98	(38)	(38.5)	18.7	18.7	111.52
Netherlands.....	19	19	21	29	(8)	(27.9)	145.0	144.3	1,035.20
Norway.....	1,474	1,584	1,607	1,598	9	0.6	370.8	371.0	2,274.42
Turkey.....	50	49	49	48	1	2.1	1.1	1.1	6.99
United Kingdom.....	927	998	1,000	877	123	14.0	135.5	123.9	706.18
Other Western Europe.....	5	5	5	7	(2)	(30.2)	3.2	3.2	19.06
Western Europe.....	2,739	2,898	2,960	2,894	65	2.3	714.3	703.0	4,394.34
Azerbaijan.....	800	794	795	865	(70)	(8.0)	54.0	53.9	332.34
Croatia.....	14	14	14	12	2	13.9	5.3	5.3	32.17
Hungary.....	14	14	14	12	2	18.6	5.3	5.3	32.49
Kazakhstan.....	1,303	1,315	1,335	1,349	(13)	(1.0)	137.7	116.5	808.69
Romania.....	77	77	77	81	(4)	(4.8)	28.0	27.3	187.20
Russia.....	10,226	10,219	10,342	10,124	219	2.2	1,529.1	1,628.0	10,874.84
Other FSU.....	480	350	405	415	(10)	(2.5)	561.1	400.5	2,877.74
Other Eastern Europe.....	60	60	61	57	4	7.6	25.6	25.7	156.39
Eastern Europe and FSU.....	12,974	12,843	13,042	12,913	130	1.0	2,346.2	2,262.5	15,301.86
Algeria ¹	1,100	1,090	1,098	1,108	(10)	(0.9)	230.0	230.0	1,380.00
Angola ¹	1,740	1,720	1,753	1,767	(13)	(0.8)	4.0	4.0	24.00
Cameroon.....	82	82	82	82	—	—	2.0	2.0	12.00
Congo (former Zaire).....	28	28	28	28	—	—	—	—	—
Congo (Brazzaville).....	290	290	290	290	—	—	—	—	—
Egypt.....	684	684	684	687	(3)	(0.4)	127.0	127.0	762.00
Equatorial Guinea.....	248	248	248	248	—	—	0.1	0.1	0.36
Gabon.....	260	260	260	260	—	—	0.3	0.3	1.80
Libya ¹	320	280	340	412	(72)	(17.4)	45.0	45.0	270.00
Nigeria ¹	1,560	1,440	1,655	1,807	(152)	(8.4)	70.0	70.0	420.00
Sudan.....	258	258	258	258	—	—	—	—	—
Tunisia.....	47	48	47	52	(5)	(9.6)	7.5	7.5	45.02
Other Africa.....	285	285	285	285	—	—	7.8	7.8	46.64
Africa.....	6,902	6,998	7,029	7,283	(255)	(3.5)	493.6	493.6	2,961.82
Bahrain.....	50	48	50	51	(1)	(1.7)	32.0	32.0	192.00
Iran ¹	3,620	3,610	3,378	2,833	545	19.2	465.0	465.0	2,790.00
Iraq ¹	4,250	4,260	4,285	3,708	577	15.6	82.0	82.0	497.26
Kuwait ^{1,2}	2,870	2,850	2,820	2,783	37	1.3	48.1	48.1	293.78
Oman.....	1,000	1,010	1,010	976	35	3.5	86.0	86.0	516.00
Qatar ¹	660	660	660	668	(8)	(1.2)	550.0	550.0	3,300.00
Saudi Arabia ^{1,2}	10,500	10,250	10,258	10,088	170	1.7	250.0	250.0	1,500.00
Syria.....	30	30	30	30	—	—	14.0	14.0	84.00
United Arab Emirates ¹	2,950	2,910	2,853	2,857	(3)	(0.1)	165.0	165.0	990.00
Yemen.....	160	160	160	160	—	—	—	—	—
Other Middle East.....	1	1	1	1	—	—	26.5	26.5	159.00
Middle East.....	26,091	25,789	25,506	24,155	1,350	5.6	1,718.6	1,718.6	10,322.03
Australia.....	280	264	287	297	(9)	(3.2)	167.3	137.1	934.87
Brunei.....	105	107	112	118	(7)	(5.9)	37.0	33.7	226.26
China.....	4,046	3,984	4,129	4,289	(160)	(3.7)	358.9	382.6	2,433.52
India.....	736	739	736	764	(28)	(3.7)	91.8	93.8	540.14
Indonesia.....	740	740	741	799	(58)	(7.3)	213.0	213.0	1,278.00
Japan.....	11	11	11	11	—	—	11.1	11.8	78.75
Malaysia.....	742	698	729	604	125	20.7	202.9	195.7	1,143.59
New Zealand.....	36	32	36	40	(4)	(9.5)	15.7	15.9	90.33
Pakistan.....	83	83	85	93	(9)	(9.5)	122.5	124.3	724.72
Papua New Guinea.....	30	30	30	30	—	—	0.5	0.5	3.00
Thailand.....	253	244	263	241	21	8.9	90.6	97.1	658.18
Vietnam.....	300	300	300	300	—	—	33.0	33.0	198.00
Other Asia-Pacific.....	27	27	27	35	(7)	(20.9)	114.4	114.2	683.66
Asia-Pacific.....	7,389	7,259	7,485	7,622	(136)	(1.8)	1,458.6	1,452.6	8,993.02
TOTAL WORLD.....	77,180	76,306	77,631	77,370	261	0.3	10,186.1	10,203.1	63,238.96
OPEC.....	33,020	32,570	32,677	31,789	888	2.8	1,978.1	1,978.1	11,879.03
Offshore Europe.....	2,581	2,752	2,774	2,660	114	4.3	519.6	551.7	3,305.60

¹OPEC member. ²Kuwait 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.

PRODUCTS & EQUIPMENT

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
NITROGEN REJECTION: 25 - 100 MMCFD
MANY OTHER REFINING/GAS PROCESSING UNITS
We offer engineered surplus equipment solutions.
Bexar Energy Holdings, Inc.
Phone 210 342-7106/ Fax 210 223-0018
www.bexarenergy.com
Email: info@bexarenergy.com

GAS PROCESSING RECENTLY AVAILABLE: 20 MM/day Chapman Engineering Propane Refrigeration Plant

Complete with: EG System, 2-Refrigeration Compressors, Stabilization, 60,000 Gallon Product Storage

Regard Resources Co, Inc.
For Details Please Contact Eric:
Eric@regardresources.com
(318) 393-1692 (318) 425-2533

FOR SALE Unused 7.5 MMSCFD Hydrogen Plant



Contact:
Steve Rotenberg
Louisiana Chemical
Equipment Co.
Stephenjr@LCEC.com
(225) 923-3602

For IMMEDIATE SALE

(7) 95,000 Gallon 275 PSI
(4) 95,000 Gallon 125 PSI
Propane & Butane Tanks Available

Gas Corporation of America

We Buy, Sell & Rent Natural Gas Plants
gascorp@wf.net * www.gas-corp.com * 800-762-6015



FETE-TEK
Welding procedures made easy.
www.FE-TEK.com

MARKET CONNECTION
WHERE THE INDUSTRY GOES TO CLASSIFY

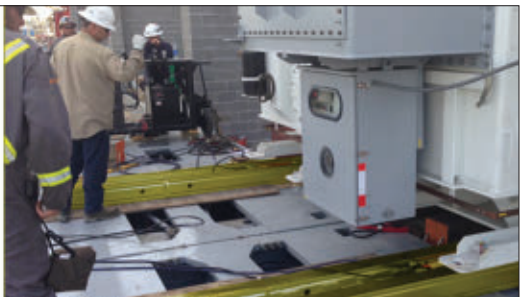
www.ogi.com/market-connection.html



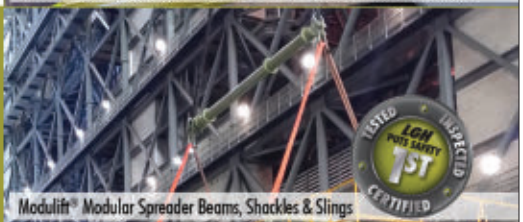
Hoisting | Pulling | Jacking | Rigging | Material Handling | Safety

rent safety.

LIFTING EQUIPMENT RENTAL SPECIALISTS



Hydro-Slide™: Hydraulic Skidding System
Move Transformers, Generators, Compressors, Pressure Vessels & Machines



Modulift® Modular Spreader Beams, Shackles & Slings



Hoisting: Manual, Electric & Air Up to 50 Ton.

Stop leaving things to chance and start renting your gear from the single largest organization devoted exclusively to the rental of hoisting and lifting equipment – Lifting Gear Hire.

At LGH, we promise to provide:

- ✓ Safe & Ready-To-Use Equipment
- ✓ A Fully Stocked Warehouse Near Your Job-Site
- ✓ Local Rental Representatives To Guide You
- ✓ A Variety of Equipment – 50,000+ Pieces Available

Get a FREE quote, call us at (800) 878-7305.



Lifting Gear Hire

Lifting Equipment Rental Specialists

Call: (800) 878-7305

Web: www.lgh-usa.com/ogj

Email: rentals@lgh-usa.com



The Oil & Gas Journal has a circulation of **over 100,000 readers** and has been the world's most widely read petroleum publication for over 100 years

EMPLOYMENT OPPORTUNITIES



Let's make a deal...

Are you selling equipment, land, or other assets?

List your business opportunity in **Oil & Gas Journal's Market Connection**, and reach +100,000 potential buyers.

To learn more, contact:
GraceJ@PennWell.com • 713-963-6291

Offshore Catering Jobs Available

Offshore Experience Required

- Cooks
- UTs (Housekeeper/Janitorial)
- Lead Stewards
- Bakers (Pastry Chefs)

How to Apply:

Online: www.essgulf.com
 Email: carrie.ivey@compass-usa.com

VALID TWIC CARD IS REQUIRED TO APPLY



Employment Opportunities

For more information:

(985) 746-1722



premieroffshorecatering.com

Sodexo IS HIRING Cooks, Bakers, Housekeeping & Janitorial workers

Full benefit package
 Must be able to work any shift, day, night and weekends, holidays during the hitch rotations (i.e. 28/14, 21/7, 14/7).

TWIC Card Required!
 Background check, substance screening, physical exam also required

Please apply online
www.sodexoremotesitesjobs.com
 EOE/AA/M/F/D/V

YOUR AD HERE

Connect with the market and reach 100,000+ paid subscribers
INCLUDES AN ONLINE LISTING!

BUSINESS OPPORTUNITIES

Major Three Day Online Auction

On the instructions of The Barton Family Holdings Ltd, the stock assets of an oil/ gas pipe fabrication business Piecemeal (subject to conditions of sale and unless sold previously)

Oil & Gas Pipe Fabrication Stock, Portable Offices/ Welfare Buildings, Scaffolding, Industrial Plant & Equipment, Consumables & Civil Engineering Stocks

Photographs and Online Bidding via sw.co.uk/auctions

- Large Quantity Stainless Steel / Steel Pipe (some certified - super duplex/ 316 - approx. 300 tonnes up to 1040mm dia., up to 12m long, up to 60mm wall)
- Stainless Steel Blanking Plates, Flanges, Weld Necks & Spectacle Blinds
- Stainless Steel, Galvanised & Zinc Coated Nuts, Bolts & Studs (up to M72 x 1750mm)
- Approx. 2,000 lin.m. Stainless Steel Cable Tray (incl. radius) up to 900mm wide & components
- **Future Pipe Industries** Wavistrong & Fibrestrong GRP Pipe/Radius/Tees
- **Klinger** Industrial Gaskets, Seals, Ring Joints; **3M** Scotchcast Resin & Coldshrink; **Filoform** Cable Jointing Kits & Cleats; **Rehau** Covers; **Furseweld** Exothermic Kits; Stainless Steel Strap Banding; **MCT Brattberg** Insert Blocks
- Approx. 1800 **Layher** Alloy Scaffolding Beams, 8m 6m & 4m
- Three **Rubb** Galvanised Steel Frames Temporary Structures (approx. 60ft x 30ft); 17 Jackleg & Containerised Offices & Welfare Units
- 60 Mainly Open Top 40ft Cargo Containers
- Electric Distribution Multi Outlet Panels (up to 1600 amps); Lighting; **Atex** Junction Boxes & Consumables
- Lifting Spreader Beams & Wire Rope Lifting Slings; Tank/ Cylinder Cradles
- Building Materials, Re-Bar; Galvanised Tie Rods
- CCTV/Light Columns; Anchor Bolts; Polystyrene; Land Drainage Corripipe; Pre-cast Concrete Products; Fencing Panels; Roofing Bolts & Nuts, Anchors & Channel Nuts
- **Presto** Geosystems Geoweb Cellular Confinement
- **Cubis** 4 way Multiduct; Approx. 1500 Crowd Control Barriers; Flexible Piping
- Pallet Racking; Portable Oil Fired Space Heaters; Steel Staircases; Plant Bridges; Tool Vaults; Spill Kits
- **Mitsubishi** 4x4 Ambulance (2010)

Bidding: Closes from 10am Wednesday 14, Thursday 15 & Friday 16 September 2016

View: Strictly by appointment with the agents

At: Former Petrofac Storage Facility (Behind Scatsta Airport), Shetland, ZE2 9QP, UK



+44 (0) 161 259 7050
auctions@sw.co.uk | sw.co.uk