Week of Jan. 12, 2009/US$10.00

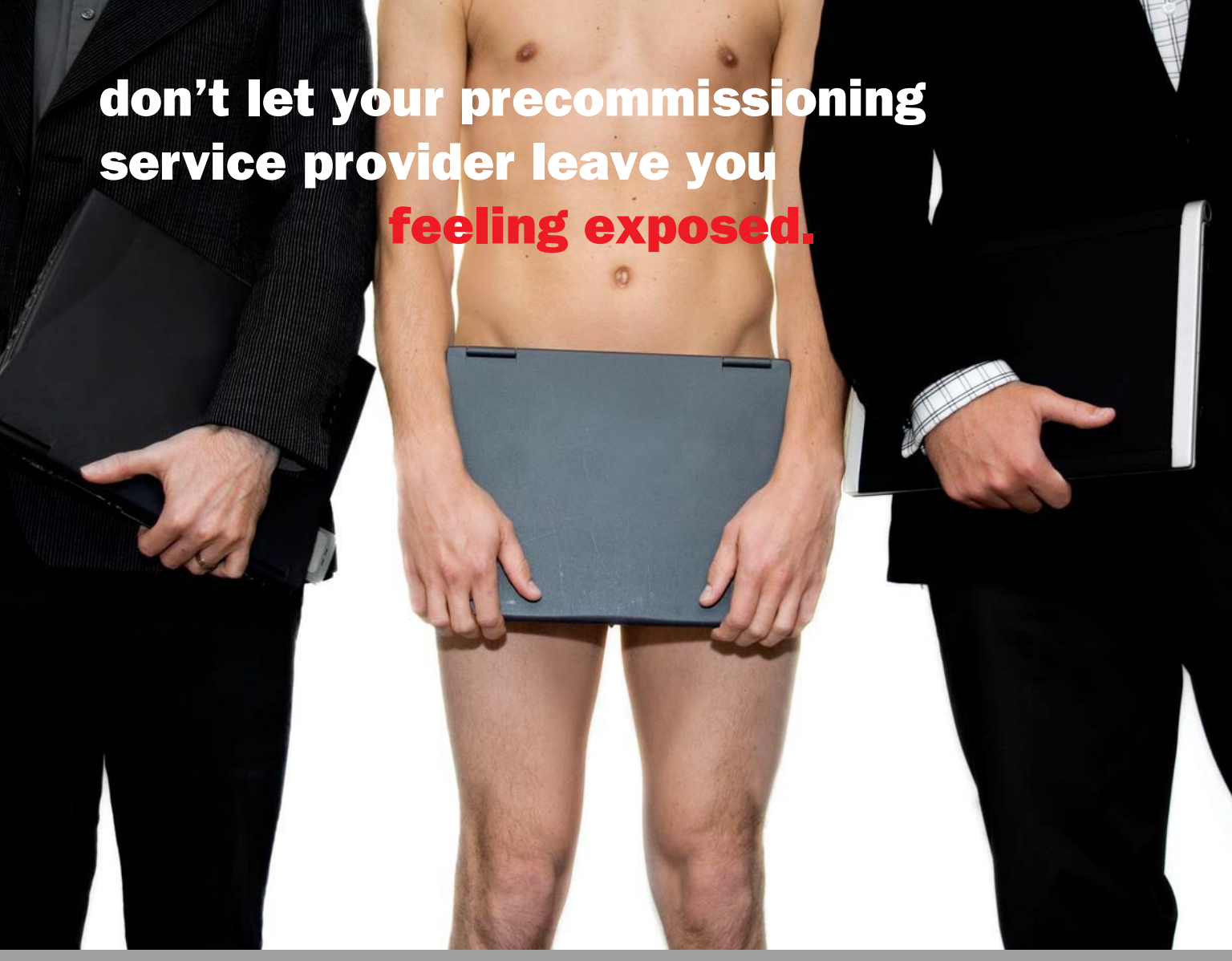
PennWell®

OIL&GAS JOURNAL®

International Petroleum News and Technology / www.ogjonline.com

US Energy Politics

Algorithm helps define final 3D seismic survey polygon
Well perforated, stimulated without wellbore intervention
Italian refiner lowers maintenance complexity, costs
Trans-Caspian gas pipeline remains contentious



We’re Intelligence at work... that’s the naked truth.

At Energy Services International we provide our clients with the best integrated approach to critical path pre commission cleaning services. With over 30 years experience, numerous patents, and a team of professionals that understands your business and your needs, makes ESI the most reliable, and cost efficient provider in the World.
ESI keeps your assets clean.

On track | On time | Under budget

ENERGY SERVICES
INTERNATIONAL

Corporate Headquarters:
2437 Bay Area Blvd,
Suite 335
Houston, TX 77058
Tel: + 1-281-614-5800
Fax: + 1-281-309-0217
www.energyservicesinternational.com

OIL&GAS JOURNAL®

Jan. 12, 2009
Volume 107.2

US Energy Politics

Regular Features

Cover

Illinois Sen. Barack H. Obama ran for the office of the US presidency on a platform that emphasized change. As highlighted in this week's special report on US Energy Politics, starting on p. 20, Washington, DC-based oil and gas trade association officials are expecting to see Obama's plans for change unfold as the president-elect's inauguration approaches and as a Congress—with a bigger Democratic majority—goes to work. Many also think that deteriorating economic conditions will temper energy and environmental policy changes, at least in the near term. But they're also preparing for some major battles with environmental organizations and lawmakers determined to quickly move away from fossil fuels.

new **solutions** for offshore

INDUSTRY DAY - THURSDAY 29 JANUARY
FREE ENTRY TO THE EXHIBITION - REGISTER NOW*

In its 13th year of providing a lucrative platform for information exchange and new business development, Offshore West Africa is the region's premier technical forum focused exclusively on West Africa's offshore oil and gas market.

Offshore West Africa is a unique annual forum for the industry, with both a world class conference combined with the exhibition showcasing the latest technological developments. This unique event attracts senior decision makers, enabling you to make crucial contacts within the industry.

A world class conference program including:

- Regional Perspectives & Capacity Development
- Offshore Drilling Technology, Well Construction & Completion
- Local Content
- Sustainable Development
- Subsea Technology
- Geosciences & Reservoir Management
- Floating Facilities
- Ultra-Deepwater & Innovative Technology
- Flowlines, Pipelines & Flow Assurance
- Offshore Operations Management
- Finance & Risk Management
- HSE & Security

Make plans now to participate in 2009 and gain new insight into the investment and development trends continuing to gain fast momentum in this dynamic region, more than 1,500 offshore professionals are expected to attend the three-day conference and exhibition.

OFFSHORE™ West Africa®

CONFERENCE & EXHIBITION

International Conference Centre
Abuja, Nigeria
27- 29 January 2009

BOOK SPACE NOW FOR PRIME PLACEMENT!

For Exhibit and Sponsorship Information, Please Contact:

Dele Olaoye - (Nigeria/Africa)
Phone: +234 802 223 2864
Email: q-she@inbox.com

Ana Monteiro - (Europe & Middle East)
Phone: + 44(0) 1992 656 658
Email: anam@pennwell.com

Sue Neighbors - (The Americas)
Phone: +1 713 963 6256
Email: sneighbors@pennwell.com

Register now at :

www.offshorewestafrica.com

* Proof must be shown of working within the offshore industry either a company ID card or business card.

Supporting Organisation:

Flagship Media Sponsors: Oil & Gas Journal, Offshore

Owned & Managed by: PennWell

General Interest

Exploration & Development

Drilling & Production

Processing

Transportation

Oil & Gas Journal (ISSN 0030-1388) is published 47 times per year by PennWell Corporation, 1421 S. Sheridan Rd., Tulsa, Okla., Box 1260, 74101. Periodicals postage paid at Tulsa, Okla., and at additional mailing offices. Oil & Gas Journal and OGJ are registered trademarks of PennWell Corporation. **POSTMASTER:** send address changes, letters about subscription service, or subscription orders to P.O. Box 3497, Northbrook, IL 60065, or telephone (800) 633-1656. Change of address notices should be sent promptly with old as well as new address and with ZIP code or postal zone. Allow 30 days for change of address. Oil & Gas Journal is available for electronic retrieval on Oil & Gas Journal Online (www.ogjonline.com) or the NEXIS® Service, Box 933, Dayton, Ohio 45401, (937) 865-6800. **SUBSCRIPTION RATES** in the US: 1 yr. $89; Latin America and Canada: 1 yr. $94; Russia and republics of the former USSR, 1 yr. 1,500 rubles; all other countries: 1 yr. $129, 1 yr. premium digital $59 worldwide. These rates apply only to individuals holding responsible positions in the petroleum industry. Single copies are $10 each except for 100th Anniversary issue which is $20. Publisher reserves the right to refuse non-qualified subscriptions. Oil & Gas Journal is available on the Internet at http://www.ogjonline.com. (Vol. 107, No. 2) Printed in the US. GST No. 126813153. Publications Mail Agreement Number 602914. Return Undeliverable Canadian Addresses to: P.O. Box 1632, Windsor, ON N9A 7C9.

PennWell, Houston office
1455 West Loop South, Suite 400, Houston, TX 77027
Telephone 713.621.9720/Fax 713.963.6285/Web site www.ogjonline.com
Editor Bob Tippee, bobt@ogjonline.com
Chief Editor-Exploration Alan Petzet, alanp@ogjonline.com
Chief Technology Editor-LNG/Gas Processing Warren R. True, warrent@ogjonline.com
Production Editor Guntis Moritis, guntism@ogjonline.com
Drilling Editor Nina M. Rach, ninar@ogjonline.com
Refining/Petrochemical Editor David N. Nakamura, davidn@ogjonline.com
Pipeline Editor Christopher E. Smith, chriss@ogjonline.com
Senior Editor-Economics Marilyn Radler, marilynr@ogjonline.com
Senior Editor Steven Poruban, stevenp@ogjonline.com
Senior Associate Editor Judy R. Clark, judyrc@ogjonline.com
Senior Writer Sam Fletcher, samf@ogjonline.com
Senior Staff Writer Paula Dittrick, paulad@ogjonline.com
Survey Editor/News Writer Leena Koottungal, lkoottungal@ogjonline.com
Editorial Assistant Linda Barzar, lbarzar@pennwell.com

Petroleum Group President Michael Silber, msilber@pennwell.com
Vice-President/Group Publishing Director Paul Westervelt, pwestervelt@pennwell.com
Vice-President/Custom Publishing Roy Markum, roym@pennwell.com

PennWell, Tulsa office
1421 S. Sheridan Rd., Tulsa, OK 74112
PO Box 1260, Tulsa, OK 74101
Telephone 918.835.3161 / Fax 918.832.9290
Presentation/Equipment Editor Jim Stilwell, jims@ogjonline.com
Associate Presentation Editor Michelle Gourd, michelleg@pennwell.com
Statistics Editor Laura Bell, laurab@ogjonline.com
Illustrators Kermit Mulkins, Mike Reeder, Kay Wayne
Editorial Assistant Donna Barnett, donnab@ogjonline.com
Production Director Charlie Cole

London
Tel +44 (0)20.8884.4246
International Editor Uchenna Izundu, uchennai@pennwell.com

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

Los Angeles
Tel 310.595.5657
Oil Diplomacy Editor Eric Watkins, hippalus@yahoo.com

OGJ News
Please submit press releases via e-mail to: news@ogjonline.com

Subscriber Service
P.O. Box 2002, Tulsa OK 74101
Tel 1.800.633.1656 / 918.831.9423 / Fax 918.831.9482
E-mail ogjsub@pennwell.com
Circulation Manager Tommie Grigg, tommieg@pennwell.com

PennWell Corporate Headquarters
1421 S. Sheridan Rd., Tulsa, OK 74112

P.C. Lauinger, 1900-1988
Chairman Frank T. Lauinger
President/Chief Executive Officer Robert F. Biolchini

Member Audit Bureau of Circulations & American Business Media




Held under the Patronage of H.E. Dr Abdul Hussain Bin Ali Mirza,
Minister of Oil & Gas Affairs, Chairman-National Oil & Gas Authority, Kingdom of Bahrain

The Gulf International Convention & Exhibition Centre
Manama, Kingdom of Bahrain
19 - 21 January 2009

OIL&GAS OGMT MAINTENANCE TECHNOLOGY

PIPELINE REHABILITATION & MAINTENANCE™

REGISTER NOW ONLINE & SAVE $200

www.oilandgasmaintenance.com / www.pipeline-rehab.com

The Gulf's premiere forum for oil & gas maintenance, reliability technologies and the latest developments in pipeline rehabilitation and maintenance.

CONFIRMED KEYNOTE SPEAKERS INCLUDE:

H.E. Dr. Abdul-Hussain Bin Ali Mirza,
Minister of Oil & Gas Affairs and Chairman of National Oil & Gas Authority,
Kingdom of Bahrain

Mr. Abdulkarim Jaffer Al-Sayed,
Chief Executive
The Bahrain Petroleum Company "BAPCO"

Mr. Amer Al Sulaim,
Executive Director of Industrial Services, Saudi Aramco

TOP REASONS TO ATTEND OGMT / PRM 2009:

- High quality speakers providing detailed insight into the region's oil and gas maintenance & pipeline rehabilitation industries
- Interactive panels and sessions
- Networking receptions providing opportunities to meet key industry players
- Leading industry exhibition. Don't miss the opportunity to update your knowledge and skills and see the latest industry developments and technology for the oil and gas industries at Oil &Gas Maintenance Technology / Pipeline Rehabilitation & Maintenance 2009

For further information contact:

Frances Webb
Event Director
T: +44 (0) 1628 810 562 E: francesw@pennwell.com

Register Today & Save $200.

Platinum Sponsors & Co-Hosted by: ارامكو السعودية Saudi Aramco, Bapco, Energy for generations

Supported by: nogaholding

Sponsor: TC GULF, NDT

Flagship Media Sponsors: Offshore, Oil&Gas Journal, Oil, Gas & Petrochem EQUIPMENT

Owned & Produced by: PennWell

OGJ Newsletter

Jan. 12, 2009

International news for oil and gas professionals
For up-to-the-minute news, visit www.ogjonline.com

General Interest — Quick Takes

SEC approves reserves reporting requirements

The US Securities and Exchange Commission unanimously approved changes to its reporting requirements for oil and gas producers. The adjustments reflect technological improvements over the last 25 years, SEC said Dec. 29, 2008.

SEC said the renewed disclosure requirements include provisions that permit use of technologies to determine proved reserves if those technologies have been demonstrated empirically to lead to reliable conclusions about reserves volumes. They also allow producers to disclose probable and possible reserves, which contrasts with earlier rules that limited disclosures to proved reserves.

"These updated rules consider the significant changes that have taken place in the oil and gas industry since the adoption of the original reporting requirements more than 25 years ago," said John W. White, director of the SEC's corporate finance division.

The revised disclosure requirements also require producers to report the independence and qualifications of entities that evaluate or audit reserves, file reports when a third party is used to prepare estimates or audit reserves, and report reserves using an average price based on the prior 12 months instead of yearend prices, according to SEC.

The use of an average price for oil and gas will lead to more reliable comparisons of reserves among producers and mitigate distortion of estimates that can result from using a single pricing date, SEC said. The full text of the changes will be posted on the commission's web site as soon as possible, the commission said.

"In the more than a quarter century since the SEC last reviewed its rules in this area, there have been significant changes in technology that have increasingly limited the usefulness of current disclosures to the market and investors. These updates to the SEC rules will help ensure more meaningful and comprehensive disclosure of information that, even though it does not appear on a company's balance sheet, is of significance to investors in making informed investment decisions," said SEC Chairman Christopher Cox.

DOE to resume SPR fill in wake of oil-price slump

The US Department of Energy plans to take advantage of the recent crude oil price decline and resume filling the Strategic Petroleum Reserve, it reported Jan. 2.

DOE said it issued a solicitation to buy about 12 million bbl of crude to replenish supplies that were sold following Hurricanes Katrina and Rita in 2005. Congress overwhelmingly passed a law ordering DOE to suspend SPR purchases in May after prices broke the $100/bbl barrier. The ban expired Dec. 31, 2008.

The energy department also said it plans to seek repayments from refiners for emergency oil it released from the SPR following Hurricanes Gustav and Ike in 2008, to deliver deferred royalty-in-kind oil, and to solicit new RIK deliveries this spring. The actions are required under the 2005 Energy Policy Act, it said.

Planned acquisitions during 2009 will bring the SPR back to its 727 million bbl storage capacity and provide the US with about 70 days of net import protection.

China, Indonesia sign energy agreements

Indonesia and China have signed eight energy-related agreements, valued at $3.13 billion, during the third Indonesia-China Energy Forum (ICEF) in Jakarta.

The first agreement extended an oil and gas contract for a development in the Madura Strait, East Java, operated by China National Offshore Oil Corp. and Canada's Husky Energy Inc.

Indonesia's upstream oil and gas regulator BPMigas signed the 20-year extension of the two companies' contracts, which were due to expire in 2012.

ICEF also witnessed two agreements on coal mining, one on biodiesel plants, and four on electric power production projects.

The eight agreements, and amount of finance, include:

- Oil and gas contract extension in Madura Strait (BP Migas, CNOOC, and Husky Madura Ltd.; $642 million).
- Biodiesel development in Jambi and South Sumatra (PT Kurnia Selaras and China Development Bank; $255 million).
- Coal mining joint venture in Muara Enim (Bukit Asam and Huadian Corp.; $14.40 million).
- Coal mining cooperation in East Kalimantan (PT Budi Dharma Kencana and Lark Guangdong Power Resources Inc.; $350 million).
- Power plant financing in Pelabuhan Ratu (Exim Bank of China and PT PLN; $481.94 million).
- Power plant financing in Pacitan (Exim Bank of China and PT PLN; $293.23 million).
- Power plant construction in Cilacap (PLN, CNTIE, and Shanghai Electric; $605.29 million).
- Power purchase agreement for Muara Enim (PT PLN and PT GH EMM Indonesia; $330 million). ✦

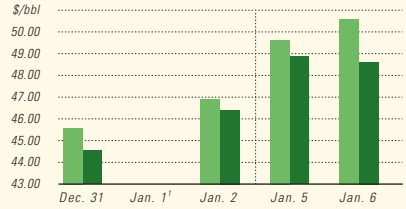
Exploration & Development — Quick Takes

Saudi Arabia announces eight oil, gas finds

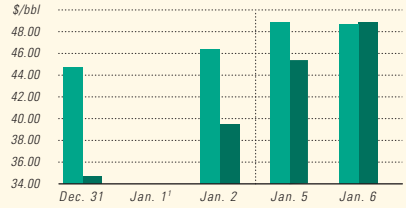
Saudi Arabia's minister of petroleum and mineral resources Ali bin Ibrahim Al-Naimi reported Jan. 5 that the state-owned Saudi Aramco has discovered five more oil fields and three gas fields in the country's Eastern Province.

Al-Naimi said four of the oil fields are on land and one is in

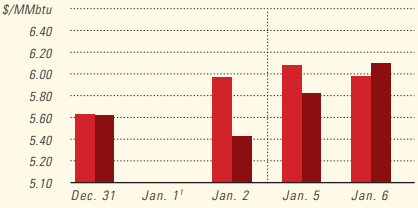
IPE BRENT / NYMEX LIGHT SWEET CRUDE



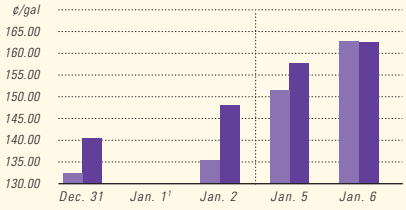
WTI CUSHING / BRENT SPOT



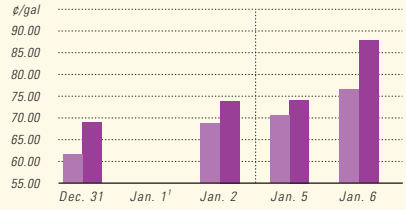
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



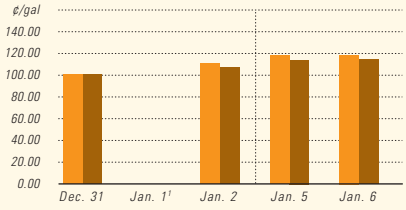
IPE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



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



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

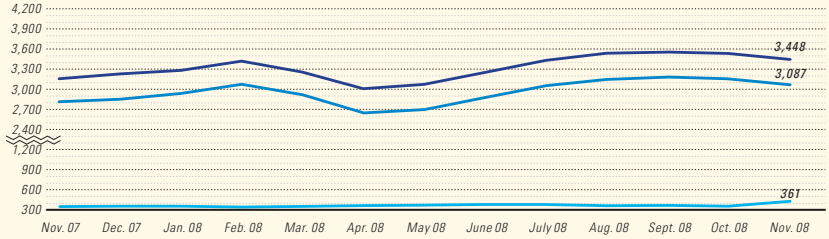
US INDUSTRY SCOREBOARD — 1/12

Latest week 12/26	4 wk. average	4 wk. avg. year ago[1]	Change, %	YTD average[1]	YTD avg. year ago[1]	Change, %
Demand, 1,000 b/d						
Motor gasoline	9,041	9,249	–2.2	8,980	9,286	–3.3
Distillate	4,044	4,180	–3.3	3,955	4,196	–5.7
Jet fuel	1,404	1,603	–12.4	1,510	1,623	–7.0
Residual	697	676	3.1	606	724	–16.3
Other products	4,750	4,991	–4.8	4,630	4,834	–4.2
TOTAL DEMAND	19,936	20,699	–3.7	19,460	20,680	–5.9
Supply, 1,000 b/d						
Crude production	5,018	5,052	–0.7	4,951	5,064	–2.2
NGL production[2]	2,385	2,485	–4.0	2,274	2,412	–5.7
Crude imports	9,500	9,851	–3.6	9,769	10,027	–2.6
Product imports	3,138	3,051	2.9	3,124	3,444	–9.3
Other supply[3]	1,226	1,058	15.9	1,373	1,025	34.0
TOTAL SUPPLY	21,267	21,497	–1.1	21,491	21,972	–2.2
Refining, 1,000 b/d						
Crude runs to stills	14,647	15,634	–6.3	14,647	15,156	–3.4
Input to crude stills	14,907	15,474	–3.7	14,907	15,443	–3.5
% utilization	84.9	88.7	—	84.9	88.5	—

Latest week 12/26	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	318,737	318,188	549	289,577	29,160	10.1
Motor gasoline	208,103	207,295	808	207,842	261	0.1
Distillate	136,031	135,337	694	127,177	8,854	7.0
Jet fuel–kerosine	37,389	37,347	42	39,026	–1,637	–4.2
Residual	35,808	35,993	–185	39,595	–3,787	–9.6
Stock cover (days)[4]			Change, %		Change, %	
Crude	21.9	21.7	0.9	19.0	15.3	
Motor gasoline	23.0	23.0	0.0	22.2	3.6	
Distillate	33.6	34.4	–2.3	28.2	19.1	
Propane	39.9	43.5	–8.3	35.1	13.7	
Futures prices[5] **1/2**			Change		Change	%
Light sweet crude ($/bbl)	42.50	37.99	4.51	95.68	–53.18	–55.6
Natural gas, $/MMbtu	5.90	5.69	0.21	7.16	–1.26	–17.6

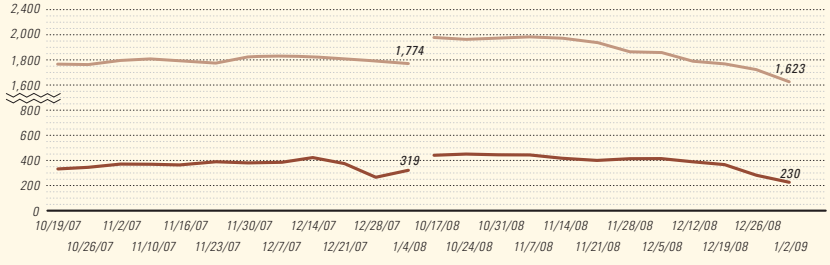
[1]Based on revised figures. [2]Includes adjustments for fuel ethanol and motor gasoline blending components. [3]Includes other hydrocarbons and alcohol, refinery processing gain, and unaccounted for crude oil. [4]Stocks divided by average daily product supplied for the prior 4 weeks. [5]Weekly average of daily closing futures prices.
Sources: Energy Information Administration, Wall Street Journal

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

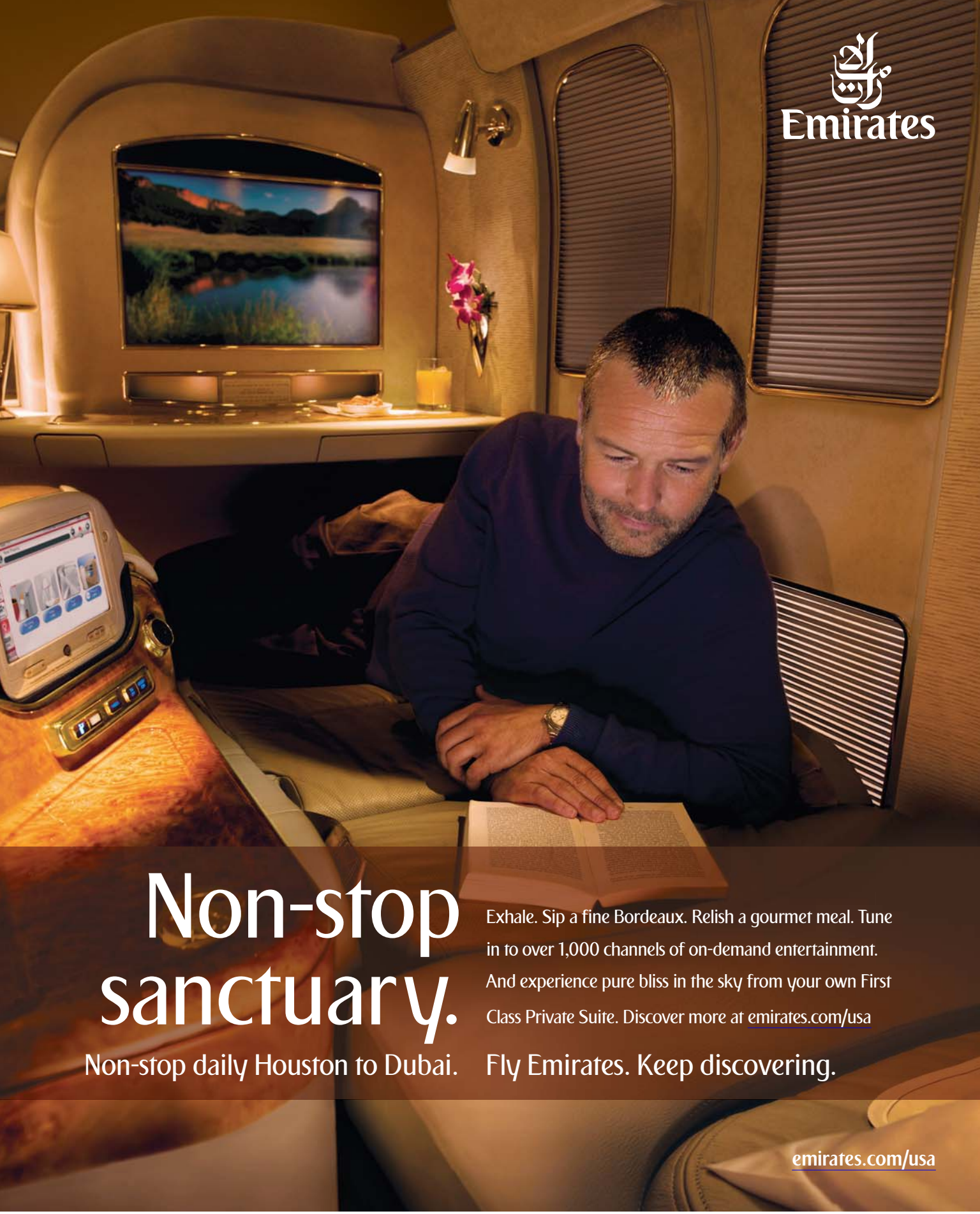


Note: Monthly average count

BAKER HUGHES RIG COUNT: US / CANADA



Note: End of week average count



400 international awards and over 100 destinations worldwide. For more details contact Emirates at 800-777-3999. Discover frequent flyer benefits at skywards.com

the Persian Gulf. They include Jaouf-11, Ramthan-9, Nayashin-1, Jareed-101, and Khorsaniya-114. The minister named the three gas fields—all offshore—as Arabiya-1, Rabib-1, and Hisbah-16.

Ramthan-9 is 400 km northwest of Dhahran, Jareed-101 is 130 km north of Dhahran, Khorsaniya-114 is 138 km northwest of Dhahran, and the gas fields Rabib-1 and Hisbah-16 are 125-200 km northeast of Dhahran.

Al-Naimi released first test production results from three of the wells, saying that Jaouf-11, about 300 km northwest of Dhahran, is producing 2,551 b/d of oil and 33,980 cu m/day of associated gas; Nayashin-1, 60 km northwest of Ramthan, is producing 2,076 b/d of oil; and the Arabiya-1 gas discovery 185 km northeast of Dhahran is producing 1.16 million cu m/day, he said.

Pemex to drill deep in Bay of Campeche

Pemex Exploration & Production is drilling its first deepwater well, Catamat-1, off Tuxpan, Veracruz state, using the Noble Max Smith semisubmersible. The wellsite lies in 1,200 m of water. The rig will take 150 days to drill to 5,200 m.

The rig will be serviced by seven supply vessels and two helicopters from the marine terminal at Cobos, 400 km from Veracruz. Pemex improved an access road to Cobos and began upgrading port facilities in April 2008 to accommodate the drilling.

The governor of Veracruz, Fidel Herrera Beltran, and assistant director of Pemex's north region, Jorge Andres Perez Fernandez, inaugurated the drilling project Jan. 1 in Tuxpan. Tuxpan is the closest port to Mexico City; Pemex maintains a facility on the Tuxpan River to build and maintain drilling rigs.

This is the first exploration project since Mexico's Congress passed the 2008 energy reform bill in October 2008 (OGJ, Dec. 15, 2008, p. 18).

Noble Max Smith can drill in 7,000 ft of water. It's under a 3-year contract to Pemex, from Aug. 1, 2008, to July 31, 2011. Noble said the rig was upgraded in second-quarter 2008, mobilized from the US to Mexico, and is working at a dayrate of $484,000.

Noble also has 10 jack up rigs working in Mexico's Bay of Campeche, with contracts ending December 2009 to December 2011. Noble's rigs in Mexico contributed 20% of the company's overall revenue in the first 9 months of 2008, according to the company's investor presentations in December.

Reindeer gas field development to proceed

The Apache Energy-Santos development of Reindeer gas field off Western Australia and the associated Devil Creek processing plant 45 km south of Dampier is back on track following Santos' signing of CITIC Pacific as the project's foundation gas buyer.

Under the $812 million (Aus.) contract, Santos will supply CITIC's Sino Iron magnetite mining project at Cape Preston 100 km south of Dampier with 75 petajoules (69.75 bcf) of gas over 7 years beginning in the latter half of 2011. The gas will be used as generation fuel for Sino's 450 Mw electric power plant now under construction.

Reindeer field, discovered in 1997 on permit WA-209-P, has reserves of 390-610 bcf of gas. The gas will be transported via subsea pipeline 105 km to the Devil Creek plant. Flow capacity will be about 215 terajoules/day (200 MMcfd). All the gas will be fed into the domestic market.

The project was deferred in December when Santos said there were delays in the execution of a gas sales agreement because of the poor financial climate.

Although Santos said the project is again viable, Clough Australia said it is still waiting to hear if its contracts for engineering, procurement, and construction of the Devil Creek plant and the offshore facilities at Reindeer will be reinstated.

Apache holds 55% of the project, and Santos holds 45%.

Nexus: Libra, Crux fields are separate structures

The successful Libra-1 wildcat drilled in Browse basin permit AC/P41 off Western Australia has confirmed that Libra field is a separate structure from nearby Crux field, said the permit's partners.

Royal Dutch Shell PLC holds 65% interest in the permit; Mitsui holds 20%, and Nexus Energy, 15%.

Logging and pressure data indicate that Libra-1 intersected a 206-m gross gas column in a better-than-predicted reservoir section on the way to a total depth of 3,918 m.

The gas-water contact in the well is shallower than that encountered in Crux as well, also suggesting that Libra is a separate accumulation.

Nexus says the find has boosted confidence in the prospectivity of the Greater Crux region and provides additional incentive for follow-up drilling at the adjacent Auriga and Caelum prospects.

Libra-1 was drilled by the Ocean Epoch semisubmersible and is now plugged and abandoned as planned.

ExxonMobil eyes Sandakan basin exploration

ExxonMobil Corp. plans to invest as much as $100 million exploring for oil and gas in southwestern Philippine waters, press reports said.

The disclosure, contained in Philippines Department of Energy documents, refers to a mid-2008 farmout under which Mitra Energy Ltd., a private company registered in Hamilton, Bermuda, farmed out a 50% interest and operatorship of Service Contract 56 to ExxonMobil (OGJ Online, June 13, 2008). The Philippines DOE approved the farmout in July 2008.

The partnership plans to drill two deepwater exploration wells in 2009, Mitra Energy's web site said.

SC 56 covers more than 8,600 sq km of acreage in as much as 3,000 m of water in the Sulu Sea northeast of Borneo Island in the Sandakan basin.

"The principle hydrocarbon play is contained within Miocene deepwater turbidite depositional systems in the distal setting of the Sandakan basin. Gravity-induced thin-skinned tectonism has given rise to a number of large toe-thrust anticlinal structures, which have significant hydrocarbon potential analogous to other circum-Borneo proven deepwater toe-thrust belts," Mitra Energy said.

Norway awards four licenses to Lundin

Norway awarded Lundin Petroleum AB's wholly owned subsidiary Lundin Norway AS four exploration license interests in the 2008 Norwegian Licensing Round, Awards in Predefined Areas (APA). The licenses are in the North Sea.

Lundin will operate Blocks 7/2, 4, 5, and 8 with a 60% stake and Blocks 16/2, 3, 5, and 6 with a 40% stake.

In addition, Lundin holds a 40% interest in Block 15/12 and a 30% interest in Block 25/7, 10. ✦

Japan protests Chinese drilling in E. China Sea

Japan said it "cannot accept" China's development of the Tianwaitian gas field near a disputed part of the East China Sea, saying instead that the area should be under negotiation.

"The Japanese government expresses its regret that China is unilaterally developing the field," said Chief Cabinet Secretary Takeo Kawamura, adding, "Japan cannot accept China's unilateral development."

Japanese Foreign Minister Hirofumi Nakasone, describing the Chinese actions as "regrettable," called for the early resumption of negotiations between the two sides.

"I can't say exactly when it would be, but I believe the most important thing right now is for working-level discussions on this issue to resume soon," said Nakasone.

The governments of Japan and China agreed on joint development of the gas fields in June 2008.

The accord includes joint development in the area near the Asunaro (known in China as Longjing) gas field, and Japan's investment in the development of the Shirakaba (known in China as Chunxiao) gas field.

The Tianwaitian field (known in Japan as Kashi) was not mentioned by name in the June agreement but Japan contends it is part of further negotiations and should be left undeveloped.

"Our understanding is that the status of the [fields] outside of the political agreement is blank. Therefore the status quo is the way it should be," Kawamura said. But China disputes the Japanese claim.

"The gas field development activities of the Chinese side are being carried out within China's inherent sovereign rights," said foreign ministry spokesman Qin Gang.

According to a recent report in Japan's Sankei Shimbun newspaper, China has already finished the drilling in Kashi-Tianwaitian, and "there is the strong possibility that China has entered the stage of production."

Venture starts production from Grouse oil field

Venture Production PLC, Aberdeen, has brought Grouse oil field on Block 21/19 on stream in the UK Central North Sea.

The field is expected to produce 10,000 b/d of oil and 3.25 MMscfd of natural gas in 2009. Production is through a single subsea well tied back to the company's operated Kittiwake platform—the production hub for the Greater Kittiwake Area (GKA). Natural gas will be used as fuel or exported via the Shell Fulmar line to St Fergus.

Venture said it saved money by laying Grouse's required pipeline when it developed Chestnut and Stamford fields, which began production in 2008.

"Grouse has also made use of a pipeline tie-in point that was preinstalled during the construction of the Goosander infrastructure in 2006," Venture said. Goosander started production in August 2006 in the GKA production hub.

Mallard oil field, also in the GKA, resumed production in mid-December following production optimization initiatives. It is a high-pressure, high-temperature subsea tieback to the Kittiwake platform.

Mike Wagstaff, chief executive of Venture, said Grouse was the third GKA satellite to have been brought into production since Venture assumed operatorship 5 years ago.

Venture operates Grouse with a 50% working interest. Its partner, Dana Petroleum PLC, holds the other 50%.

BC's first commercial CBM project on line

GeoMet Inc., Houston, and Canada Energy Partners Inc., Vancouver, BC, began deliveries from British Columbia's first commercial coalbed methane project near Hudson's Hope west of Dawson Creek, BC.

Flow started on Dec. 31, 2008, from eight wells at the Peace River project, and GeoMet plans to book initial proved reserves as of that date.

The companies have drilled 12 production wells and four coreholes to Lower Cretaceous Gething coals that average 52 ft thick with 400 cf/ton across 50,788 acres. More drilling is planned in mid-2009.

GeoMet is operator with 50% interest, and Canada Energy Partners has 50%. Canada Energy Partners said the companies have invested more than $45 million in the project the past 8 years. The project has 315 potential well locations on 160-acre spacing.

Canada Energy Partners said the project's modular, scalable gas treating and compression facilities will be strategic in commercialization of the Moosebar shale, the Montney shale, and other deeper formations. Exploration programs on Moosebar and Montney-Doig formations are under way on the lands covered by the project.

GeoMet said Peace River has thicker coal with higher gas content than its project in Alabama's Cahaba basin. Operating costs are higher in Canada, but it expects a similar return because it pays no severance tax, no royalty for 5-7 years, and then 10% average royalty for the life of project.

US 2007 drilling outlays rise to $226.4 billion

US oil and gas drilling expenditures soared to a record $226.4 billion in 2007, more than doubling the previous record of $109.8 billion a year earlier, the American Petroleum Institute said on Jan. 5.

API said the Joint Association Survey of Drilling Costs for 2007, the latest year for which figures are available, showed that records also were set in average costs per well and per foot.

Average costs per US oil well grew 82% to $4 million in 2007 from $2.2 million, while per foot costs climbed 78% year-to-year to an average of $717 from $412, according to API. It said that average costs per domestic natural gas well rose 105% to $3.9 million in 2007 from $1.9 million in 2006 as average costs per foot grew 74% year-to-year to $604 from $348.

Total oil well expenditures jumped 94% to $72.3 billion in 2007 from $37.3 billion in 2006, while gas well expenditures grew by nearly 101% to $119.1 billion from $59.3 billion, API said.

Hazem Arafa, director of API's statistics department, said strong demand and historically high prices increased competition for labor, services, and equipment, which pushed drilling costs higher along with record-high steel costs.

"But despite a doubling of the cost to drill and develop wells, we also witnessed a rise in both the number of wells drilled, which

increased 4% from 2006, and the average depth of those wells, which increased 9%," he continued.

API said the latest numbers showed more spending for gas wells (53%) in the US in 2007 than for oil wells (32%) for a 20th consecutive year despite exceptionally strong oil exploration. Dry holes represented the remaining 15% of the total, it indicated. ✦

Processing — *Quick Takes*

ExxonMobil to spend $1 billion in refineries

ExxonMobil Refining & Supply announced that it is planning to invest more than $1 billion in three refineries to increase the production of ultralow-sulfur diesel by about 6 million gpd.

The company is adding new units and modifying existing facilities at its 567,000-b/d Baytown, Tex.; 503,000-b/d Baton Rouge, La.; and 305,000-b/d Antwerp, Belgium, refineries.

The modifications and expansions to produce diesel with 15 ppm or less of sulfur are expected to be completed by 2010.

"Our increase in diesel production at these three sites will be equal to the diesel produced from about four average-size refineries," said Sherman Glass, president, refining and supply.

Reliance Industries refinery starts operations

India's Reliance Industries Ltd. (RIL) started operations Dec. 25, 2008, at its 580,000 b/d refinery at Jamnagar in western India. Reliance said it is now synchronizing and commissioning secondary units.

The facility, along with Reliance's neighboring 660,000 b/d refinery, will form the world's largest refining complex, having a total capacity of 1.24 million b/d.

RIL said it expects the refinery to reach full capacity shortly, but the company will likely have a slow ramp-up because of a slump in the global demand for products and relatively weaker refining margins.

The refinery is owned by RIL's Reliance Petroleum Ltd. unit, in which Chevron Corp. holds a 5% stake.

RIL was expected to commission the refinery months ahead of its yearend schedule, but delayed its start as the global economic slowdown reduced demand for oil products, and refining margins crashed.

Axens secures petrochemical deal in Kazakhstan

JSC KazMunaiGaz will use Axens' ParamaX technology for its proposed petrochemical complex, which it will integrate into the 104,500 b/cd Kazakhoil refinery at Atyrau in Kazakhstan. The value of the deal was not disclosed.

The Atyrau refinery processes as much as 5 million tonnes/year of oil from various fields in western Kazakhstan.

When completed, the 629,000 tonnes/year grassroots petrochemical plant, during 2012-13, will produce 496,000 tonnes/year of paraxylene and 133,000 tonnes/year of benzene from naphtha.

JSC Omskneftekhimproekt of Russia is performing the front-end engineering design for the petrochemical complex.

Petrovietnam seeks Dung Quat refinery partner

Petrovietnam plans to sell a 49% stake in its Dung Quat refinery, which is scheduled to go online in February (OGJ Online, Dec. 11, 2008).

"Petrovietnam would appraise the refinery's value and negotiate with foreign partners before selling the stake," said Petrovietnam chairman Dinh La Thang.

The Vietnamese firm, which plans to give preference to international partners committed to supplying oil to the refinery, is expected to begin talks with BP PLC next week.

Dinh said the negotiations would focus on price and quality, and the possibility that BP would provide at least 50% of the total oil for the refinery.

Petrovietnam has decided to import oil for the refinery as Vietnam's own oil and gas reserves are limited and could earn the country more revenue as an export because they are of higher quality than that required by the new facility.

The Dung Quat refinery is about 98% complete, according to Dinh Van Ngoc, deputy general director of the Binh Son Petrochemical Co., which manages the refinery.

Dinh said the refinery's capacity would stand at 50% in February, but would increase to 100% by yearend, when it will process some 6.5 million tonnes of oil. ✦

Transportation — *Quick Takes*

Indonesia, China to revise Tangguh LNG price

Indonesia, building on earlier agreements, said it will move ahead with plans to renegotiate the price of LNG from the Tangguh field for export to China.

"We will refresh (the negotiation) in January 2009," said Vice-Pres. Jusuf Kalla on a visit to the Tangguh LNG project at Bintuni Bay in West Papua province.

Kalla, who said the negotiations would take up the pricing formula and not just the price of the LNG, gave no indication of what his government planned to offer the Chinese.

In the original 25-year contract between Indonesia and China, the price had been set at $2.40/MMbtu and was based on an oil price of $20/bbl.

In later negotiations, the Chinese government agreed to raise the price to $3.80/MMbtu but the Indonesian government refused the offer, saying it was still too low.

In October, Indonesia denied that it was planning to delay the first shipments of LNG—due to begin in first quarter 2009—from Tangguh as a means of pressuring China to agree to a better price.

"We must respect the contract," said Energy and Mineral Resources Minister Purnomo Yusgiantoro. "We are continuing negotiations, but as the negotiation has yet to reach an agreement, we must follow the contract," he said (OGJ Online, Oct. 30, 2008). ✦

CONSTRUCTION PROJECT *Data To Count On!*

Our worldwide construction surveys are updated regularly

The PennEnergy editors and the OGJ Online Research Center are regularly conducting intensive survey efforts tracking new energy construction projects worldwide, keying the details into a spreadsheet and making them ready for your use!

Worldwide Construction Surveys

Semi-annual construction updates are provided in the following areas:

- Petrochemical
- Refining
- Pipeline
- Gas Processing
- LNG
- Sulfur

The Excel format enables efficient and rapid analysis of planned construction projects. The data collected includes Company, Location, Capacity, Expected Completion Date and Current Status, Contractor, Cost, Engineering and Process Design (when available). Some of these surveys are also available in historical version going back to 1996.

Updates in April and November.

Offshore Drilling Rig Construction Survey

We also offer the annual **Offshore Drilling Rig Construction Survey**, in which four types of vessels are tracked.

Jack-Up Rigs Under Construction 2006-2009

Semi-Submersibles Under Construction 2007-2011

Drillships Under Construction 2007-2010

Tender Assist Vessells Under Construction 2007-2010

The rig construction surveys contain the following fields:

- Rig Name
- Owner
- Design
- Shipyard & Country
- Delivery Date
- Cost in $ million

Updates in October.

Production Projects Worldwide

Major upstream mega-projects throughout the world: location, project name, peak year, production volume, operator company, and development type.
Updates annually in June.

Oil Sands Projects

Planned Canadian Oil Sands development projects in four Excel worksheets. Includes: mining upgrading projects, in situ projects, reserves estimate of initial in-place bitumen, and historical table with wells drilled from 1985 through 2006 – commercial, experimental and exploration wells.
Updates annually in July.

For more information

Visit the web site:
www.ogjresearch.com
Look under the heading Energy Industry Surveys in Excel

E-mail: orcinfo@pennwell.com

Phone: 1.918.831.9488

To Order:

Phone: 1.800.752.9764 or 1.918.831.9421
Fax: 1.877.218.1348 or 1.918.831.9555
E-mail: sales@pennwell.com

OIL&GAS JOURNAL online research center.

PennWell®

www.ogjresearch.com

Letters

A better focus

It's sad that the oil industry is still approaching the new government with a focus on producing more barrels per day. That focus will fall on deaf ears.

If instead the oil industry approached the government with how many new jobs it is going to create (by producing more barrels), how many billions of dollars of gross domestic product it is going to generate by increasing domestic production while reducing the level of oil imports (a GDP multiplier effect), and how many more billions of dollars it is going to pay into desperate federal, state, and local tax coffers, our industry would be received at the front of the Obama line, rather than at the end of the line.

Tony Pavone
Menlo Park, Calif.

MEG injection rate

The article "New method yields MEG injection rate" by M. Moshfeghian and R. Taraf (OGJ, Sept. 1, 2008, p. 44), fails to consider two points:

1. In Fig. 2, the MEG rate is difficult to read at low concentrations of MEG in rich solution (x axis). This difficulty makes this graphical method useless for low concentrations of MEG of less than 40%. Injection of MEG for more than 40% needs serious economical evaluation because MEG is more expensive than methanol.

2. These days, software is commercially available; this graphical method is not efficient. Also, users cannot use this graphical method in their programming, optimization, and modeling.

Alireza Bahadori
Curtin University of Technology
Perth, Australia

Authors' response

1. We agree that with less than 40 wt % MEG in the rich solution, it is difficult to read the required circulation rate in Fig. 2. The question is who needs a reading at less than 40 wt % MEG in rich solution?

For safe operation in most hydrocarbon dewpointing plants (operating at about -10° C. or lower), the lean MEG is around 80 wt % and the rule of thumb is 5-10 % dilution. This means that the rich solution concentration is 70-75 wt %.

The plants normally operate so that the MEG concentration in rich solution stays in the range of 40-80 wt %. Otherwise, the glycols become mushy and difficult to circulate or may even freeze.

2. Our objective in developing these diagrams was not to have them programmed. There are already several computer programs available, as our article mentions. On other hand, the objective was to avoid using computer programs and be able quickly to determine the MEG circulation rate. In addition, graphical presentation aids visual understanding of physical phenomena.

Mahmood Moshfeghian
John M. Campbell & Co.
Norman, Okla.

Roohallah Taraf
Pars Oil & Gas Co.
Tehran

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

OIL&GAS JOURNAL online

Additional information on upcoming seminars and conferences is available through OGJ Online, Oil & Gas Journal's Internet-based electronic information source at http://www.ogjonline.com.

2009

JANUARY

Petrotech International Oil & Gas Conference & Exhibition, New Delhi, +91 11 2436 4055, +91 11 2436 0872 (fax), e-mail: convenor_petrotech@iocl.co.in, website: www.petrotech2009.org/registration.aspx. 11-15.

Expandable Technology Oil & Gas Conference, Abu Dhabi, +44 (0) 1 483 598000, e-mail: sally.marriage@otmnet.com, website: www.expandableforum.com. 14.

Oil & Gas Maintenance Technology Conference & Exhibition, Manama, (918) 831-9160, (918) 831-9161 (fax), e-mail: attendingOGMT@pennwell.com, website: www.oilandgas-maintenance.com. 19-21.

Pipeline Rehabilitation & Maintenance Conference, Manama, (918) 831-9160, (918) 831-9161 (fax), e-mail: attendingOGMT@pennwell.com, website: www.pipeline-rehab.com. 19-21.

SPE Hydraulic Fracturing Technology Conference, The Woodlands, Tex., (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 19-21.

World Future Energy Summit, Abu Dhabi, +971 2 444 6011, +971 2 444 3987 (fax), e-mail: sales@turretme.com, website: www.worldfutureenergysummit.com. 19-21.

API Exploration & Production Winter Standards Meeting, San Antonio, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 19-23.

API/AGA Oil and Gas Pipeline Welding Practices Conference, San Antonio, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 21-23.

International Process Analytical Technology Forum (IFPAC), Baltimore, (847) 543-6800, (847) 548-1811 (fax), e-mail: info@ifpacnet.org, website: www.ifpac.com. 25-28.

Global E&P Summit, Madrid, +44 (0)20 7202 7500, +44 (0)20 7202 7600 (fax), e-mail: info@wtgevents.com, website: www.epsummit.com. 26-28.

Offshore West Africa Conference, Abuja, (918) 831-9160, (918) 831-9161 (fax), e-mail: attendOWA@pennwell.com, website: www.offshorewestafrica.com. 27-29.

The European Gas Conference, Vienna, +44 (0) 1242 529 090, +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 27-29.

SIHGAZ International Hydrocarbon & Gas Fair, Hassi Messaoud, + 213 21 21 58 74, + 213 21 21 58 72/76 (fax),e-mail: contact@foirex.com, website: www.sihgaz2009.com. 28-31.

FEBRUARY

SPE Reservoir Simulation Symposium, The Woodlands, Tex., (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website; www.spe.org. 2-4.

IADC Health, Safety, Environment & Training Conference & Exhibition, Houston, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 3-4.

Deep Offshore Technology International Conference & Exhibition (DOT), New Orleans, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.dotinternational.net. 3-5.

Global Petrochemicals Conference & Annual Meeting, Cologne, +44 (0) 1242 529 090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 3-5.

Russia Offshore Annual Meeting, Moscow, +44 (0) 1242 529 090, +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 4-6.

NAPE Expo, Houston, (817) 847-7700, (817) 847-7704 (fax), e-mail: info@napeexpo.com, website: www.napeonline.com. 5-6.

Pipeline Pigging & Integrity Management Conference, Houston, (713) 521-5929, (713) 521-9255 (fax), e-mail: clarion@clarion.org, website: www.clarion.org. 9-12.

CERAWeek, Houston, (617) 966-5992, e-mail: info@cera.com, website: www.cera.com. 9-13.

SPE Unconventional Fields Conference, Margarita Island, Venezuela, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 10-12.

Pipe Line Contractors Association Annual Conference (PLCA), Carlsbad, Calif., (214) 969-2700, e-mail: plca@plca.org, website: www.plca.org. 11-15.

IADC/SPE Managed Pressure Drilling & Underbalanced Operations Conference & Exhibition, San Antonio, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 12-13.

International Petrochemicals Technology Conference & Exhibition, London, +44 (0) 20 7357 8394, +44 (0) 20 7357 8395 (fax), e-mail: enquiries@europetro.com, website: www.europetro.com. 16-17.

IP Week, London, +44 (0)20 8561 6030, +44 (0)20 8561-0131 (fax), e-mail: events@energyinst.org.uk, website: www.energyinst.org.uk. 16-19.

EnerCom's The Oil & Services Conference, San Francisco, (303) 296-8834, e-mail: kgrover@enercominc.com, website: www.theoilandservicesconference.com/index.html. 18-19.

International Downstream Technology & Catalyst Conference & Exhibition, London, +44 (0) 20 7357 8394, +44 (0) 20 7357 8395 (fax), e-mail: enquiries@europetro.com, website: www.europetro.com. 18-19.

ASEG/PESA International Geophysical Conference & Exhibition, Adelaide, +61 8 8352 7099, +61 8 8352 7088 (fax), e-mail: ASEG2009@sapro.com.au, website: www.sapro.com.au/aseg.htm. 22-25.

Laurance Reid Gas Conditioning Conference, Norman, Okla., (405) 325-2248, (405) 325-7164 (fax), e-mail: bettyk@ou.edu, website: www.engr.outreach.ou.edu. 22-25.

Nitrogen + Syngas International Conference and Exhibition, Rome, +44 20 7903 2167, +44 20 7903 2432 (fax), e-mail: conferences@crugroup.com, website: http://crugroup.com. 22-25.

CERI Natural Gas Conference, Calgary, (403) 282-1231, (403) 284-4181 (fax), e-mail: conference@ceri.ca, website: www.ceri.ca. 23-24.

International Pump Users Symposium, Houston, (979) 845-7417, (979) 847-9500 (fax), e-mail: inquiry@turbo-lab.tamu.edu, website: http://turbolab.tamu.edu. 23-26.

MARCH

EAGE North African/Mediterranean Petroleum and Geosciences Conference & Exhibition, Tunis, +31 88 995 5055, +31 30 6343524 (fax), e-mail: eage@eage.org, website: www.eage.org. 2-4.

SPE Research & Development Conference, Lisbon, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 3-4.

APPEX Prospect and Property Expo, London, (918) 560-2616, (918) 560-2684 (fax), e-mail: convene@aapg.org, website: www.aapg.org. 3-5.

Subsea Tieback Forum & Exhibition, San Antonio, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.subseatiebackforum.com. 3-5.

GPA Annual Convention, San Antonio, (918) 493-3872, (918) 493-3875 (fax), e-mail: pmirkin@gasprocessors.com, website: www.gasprocessors.com. 8-11.

Doha Natural Gas Conference & Exhibition, Doha, e-mail: gascon@qp.com.qa, website: www.dohagascon.com.qa. 9-12.

ARTC Annual Meeting, Kuala Lumpur, +44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 10-12.

European Fuels Conference, Paris, +44 (0) 1242 529 090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 10-12.

Turkish International Oil & Gas Conference & Showcase (TUROGE), Ankara, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 10-12.

Middle East Oil & Gas Show & Conference (MEOS), Manama, +973 17 550033, +973 17 553288 (fax), e-mail: aeminfo@batelco.com.bh, website: www.allworldexhibitions.com/oil. 15-18.

Purvin & Gertz Annual International LPG Seminar, The Woodlands, Tex., (281) 367-9797, website: www.purvingertz.com. 16-19.

Gas Asia, Kuala Lumpur, +44 (0) 1242 529 090, +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 17-18.

SPE/IADC Drilling Conference & Exhibition, Amsterdam, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website; www.spe.org. 17-19.

Latin American Meeting on Energy Economics, Santiago, 56 2 3541411, 56 2 5521608 (fax), e-mail: info@elaee.org, website: www.elaee.org. 22-24.

NPRA Annual Meeting, San Antonio, (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npra.org. 22-24.

ACS Spring National Meeting & Exposition, Salt Lake City, (202) 872-4600, e-mail: service@acs.org, website: www.acs.org. 22-26.

NACE Corrosion Conference & Expo, Atlanta, (281) 228-6200, (281) 228-6300 (fax), website: www.nace.org/c2009. 22-26.

SPE Americas E&P Environmental and Safety Conference, San Antonio, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website; www.spe.org. 23-25.

API Spring Petroleum Measurement Standards Meeting,

Dallas, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 23-26.

Asian Biofuels Roundtable, Kuala Lumpur, +44 (0) 207 067 1800, +44 207 430 0552 (fax), e-mail: a.ward@theenergyexchange.co.uk, website: www.wraconferences.com/FS1/AB1register.html. 24-25.

SPE Western Regional Meeting, San Jose, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website; www.spe.org. 24-26.

Offshore Mediterranean Conference & Exhibition (OMC), Ravenna, +39 0544 219418, +39 0544 39347 (fax), e-mail: conference@omc.it, website: www.omc2009.it. 25-27.

NPRA International Petrochemical Conference, San Antonio, (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npra.org. 29-31.

Petroleum Geology Conference, London, +44 (0)20 7434 9944, +44 (0)20 7494 0579 (fax), e-mail: georgina.worrall@geolsoc.org.uk, website: www.geolsoc.org.uk. Mar. 30-Apr. 2.

SPE/ICoTA Coiled Tubing & Well Intervention Conference & Exhibition, The Woodlands, Tex., (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. Mar. 31-Apr. 1.

Offshore Asia/Multiphase Pumping & Technologies Conference & Exhibition, Bangkok, 918) 831-9160, (918) 831-9161 (fax), e-mail: attendingOA@pennwell.com, website: www.offshoreasiaevent.com. Mar. 31-Apr. 2.

APRIL

Georgian International Oil, Gas, Energy and Infrastructure Conference & Showcase (GIOGIE), Tbilisi, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 2-3.

SPE Production and Operations Symposium, Oklahoma City, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 4-8.

SPE Digital Energy Conference, Houston, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 7-8.

ATYRAU Regional Oil & Gas Exhibition & OilTech Kazakhstan Petroleum Technology Conference, Atyrau, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 7-9.

Rocky Mountain Unconventional Resources Conference & Exhibition, Denver, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.RMURconference.com. 14-16.

GPA Mid-continent Annual Meeting, Oklahoma City, (918) 493-3872, (918) 493-3875 (fax), website: www.gasprocessors.com. 16.

Middle East Petroleum & Gas Conference, Dubai, 65 62220230, 65 62220121 (fax), e-mail: info@cconnection.org, website: www.cconnection.org. 19-21.

ERTC Coking & Gasification Conference, Budapest, 44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 20-22.

Hannover Messe Pipeline Technology Conference, Hannover, +49 511 89 31240, +49 511 89 32626 (fax), website: www.hannovermesse.de. 20-24.

IADC Drilling HSE Middle East Conference & Exhibition, Abu Dhabi, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 21-22.

API Pipeline Conference, Fort Worth, Tex., (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 21-22.

Pipeline Transport Conference & Exhibition, Moscow, +43 1 230 85 35 33, website: www.expopipeline.com. 21-23.

Times may be a-changin'

Sam Fletcher
Senior Writer

US President-elect Barrack Obama picked several environmentalists and climate-change advocates to form his administration, and that has prompted some heated comments, both pro and con.

When he chose Ken Salazar for Interior secretary, some industry analysts described the Colorado senator and rancher as "not energy-industry friendly," having legislated a 1-year ban on commercial oil shale leasing and calling for higher royalty rates and more onerous leasing regulation that would limit operations in the Piceance basin.

Yet some environmentalists claim Salazar is too soft on industry for their tastes, while the Denver-based Independent Petroleum Association of Mountain States said, "We are confident that he views natural gas development in the Intermountain West as an important long-term element in national and regional energy supply."

Climate change experts Steven Chu and John Holdren were chosen as, respectively, Secretary of Energy and director of the White House Office of Science and Technology Policy in a move that some said represents the new administration's emphasis on climate change policy. But the Energy Department is more about atomic energy than anything else, and Chu shared the 1997 Nobel Prize for physics for work in cooling and trapping atoms with laser light. Up to now, the only energy secretary with any related previous experience was a former dentist who at least knew something about drilling.

Hilda Solis of California, chosen for labor secretary, won awards for her environmental work. Carol Browner, former legislative director for Al Gore—now the "Mr. Green Jeans" of the Democratic party—and former administrator of the Environmental Protection Agency in the Clinton Administration, was tapped as energy "czar," a new office. Nancy Sutley, former deputy mayor of Los Angeles for Energy and Environment, will lead the White House Council on Environmental Quality, adding to the "green tint" of Obama's Administration.

On the other hand, some environmentalists oppose former Ohio Gov. Tom Vilsack, pending secretary of agriculture, as too friendly with industrial farms. And Bill Richardson, tagged to head Commerce, was former Energy Secretary under Clinton and served on the boards of several energy companies. [Richardson since has withdrawn his name from nomination pending an investigation into charges of campaign fund irregularities, which he denies].

World keeps on working

But before getting too enthusiastic or frightened by the new administration's prospective policies and actions, recall that no US president has ever been as effective as his supporters hoped nor as disastrous as his opponents feared. No matter what happens in Washington, DC, the rest of the country and the world keep working. Department heads come and go, but bureaucracy lasts forever. That makes the Ship of State tougher to turn around than a ULCC.

Even a massive group of young, organized, determined devotees of a political or social cause can't carry out a peaceful "revolution" that completely changes the world. To understand that, one needs only to watch old TV footage of the anti-war and civil rights movements back in the 1960s when every gathering of people under the age of 30 at a sit-in, a rock concert, or around a campfire soon had everyone singing along with the national anthem of that decade, Bob Dylan's "The Times They Are A-Changin'."

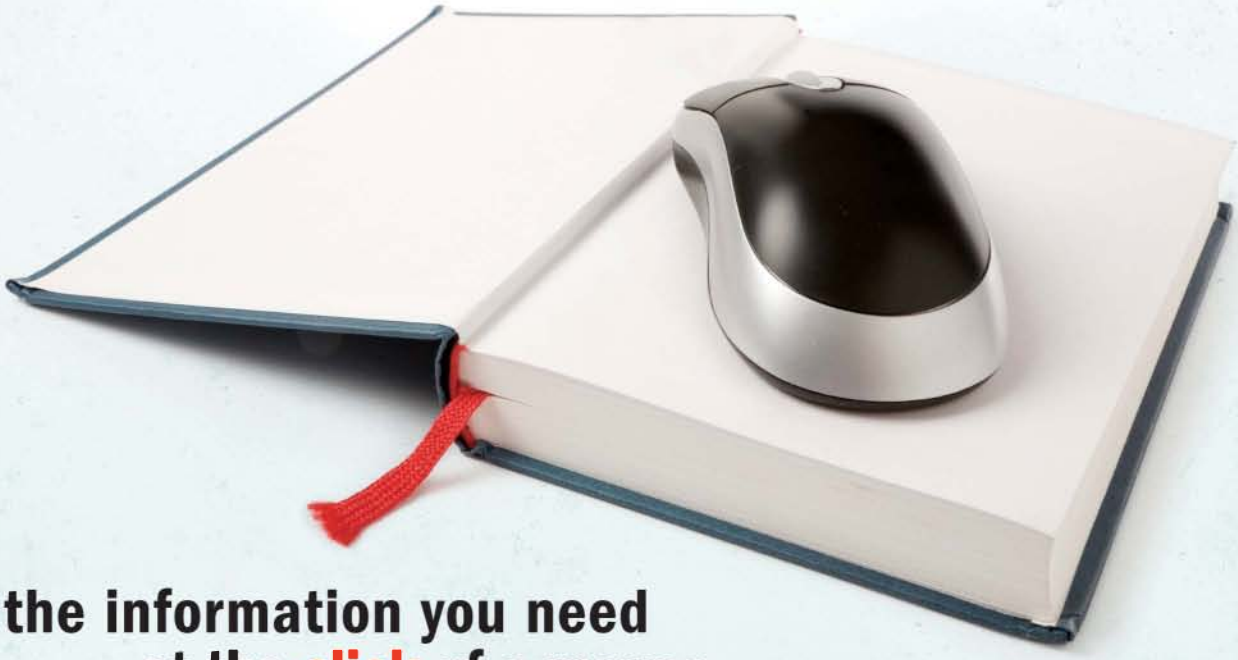
Many people believed the words and ideas they sang then. And there are some great changes—Obama's historic role as the first African-American president of the US is a direct result of social and political changes that began in the 1960s.

No dramatic revolution

But the idealists of that decade didn't end racism. Some who advocated opening election polls and schools back then now want to close US borders. People who once practiced free love now have families and worry about abortion. They may have played a part in getting US troops out of Vietnam, but they didn't end war. They just ended the Selective Service so US parents don't have to worry about their children being drafted to fight today's dirty little conflicts. The all-volunteer military has shouldered that duty.

Yes, there will be change in the energy business under the Obama administration. The most immediate will be from current economic problems that persist no matter who is in office. But there will be no dramatic revolution that will eliminate demand for oil and gas. Partly because the Green Movement has no song that can fire public passion as did "The Times They Are A-Changin'." ✦

PennWell eBooks

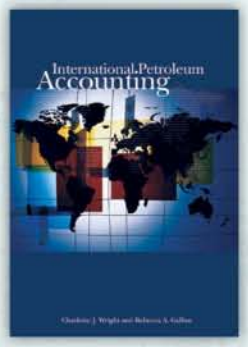


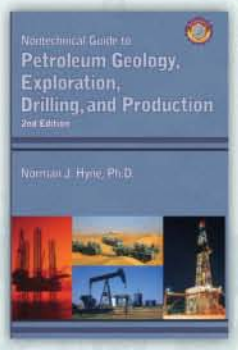
the information you need at the click of a mouse.

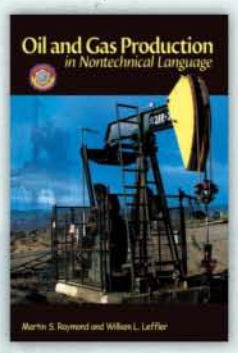
A new way to read and reference books.

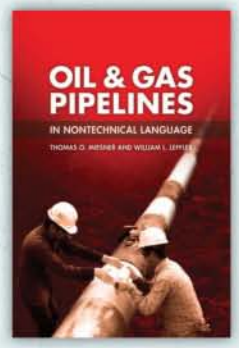
- Read your eBook online or download it to your computer
- Bookmark your most-referenced pages
- Make digital notes
- Easily search for key phrases

Now available in book form or in eBook.









PennWell eBooks are available individually or via site license for corporations, libraries, colleges and universities. Call 1.800.745.3911 for more information about site licenses.

Visit our website to see the complete selection of eBooks, powered by iMirus.

PennWell® www.PennWelleBooks.com

An expensive land grab

In a move with dire implications for exploration and production on federal land, the US Senate returned to business as usual as the 111th Congress began work. The phrase "business as usual" here means sneaking energy mistakes into law as parts of a wide-mouth sandwich of provincially irresistible spending adventures.

Majority Leader Harry Reid (D-Nev.) reintroduced an omnibus lands bill that opponents fear will tighten limits on access by producers to federal oil and gas resources. He had withdrawn the legislation, actually a package of more than 150 bills, in November in response to resistance led by Sen. Tom Coburn (R-Okla.).

'Worst habits'

In a statement on the Senate floor last week, Coburn said he had learned from the Democratic leadership that the lands package contained 12-13 new bills. "This is an omnibus lands bill that indulges the worst habits of a parochial Congress," he said.

When the lands bill was under consideration last year, the Western Business Roundtable of Lakewood, Colo., said its biggest concern was congressional establishment of the National Landscape Conservation System (NCLS), a Department of Interior program now covering 27 million acres in 850 parcels of federal land. Administered by the Bureau of Land Management, the NCLS includes national monuments, national conservation areas, wilderness and wilderness study areas, wild and scenic rivers, and national scenic and historic trails. "The bill would give federal land managers the ability to alter the longstanding multiple-use management philosophy of the BLM by elevating the conservation purposes above other purposes for NCLS units," the group said.

Claire Moseley, executive director of Public Lands Advocacy in Denver, called the NCLS move "a whole new land classification" that would block or delay exploration and development with new layers of regulation and legal hurdles. Another group, the American Land Rights Association, predicted that under the lands bill NCLS units would become national parks, with traditional uses restricted and roads cut off. It also warned of political pressure to add federal acreage to NCLS regulation. It called the legislation "one of the largest land grabs in history."

In his Senate remarks, Coburn put the acreage figures into perspective by noting that the US area off-limits to development as wilderness already exceeds that of developed land—107 million vs. 106 million acres. Beyond giving statutory authority to the NCLS, an initiative of former Interior Sec. Bruce Babbitt late in the administration of President Bill Clinton, the bill in various ways would withdraw a further 3 million acres from leasing and energy exploration, Coburn said. Some of that lock-up would occur through wilderness and other such designations imposed with the stipulation that the land become subject to NCLS management.

In a period of intense public concern over energy supply, federal deficits, and economic health, the mere consideration of new measures to restrict commercial use of federal land is distressing. A new ICF International study for the American Petroleum Institute shows how much the US already denies itself by limiting oil and gas leasing in Rocky Mountain states. If land now off limits for other than statutory reasons became accessible, the study estimates, the Rockies by 2030 would have new production of 35,000 b/d of oil from 321 million bbl of reserves and 677 MMcfd of gas from 8.4 tcf of reserves. The extra production would boost all-time government receipts by $22 billion and employment in 2030 by 12,318 jobs.

Local seductions

When the federal government proposes to undertake further sacrifice of this type, taxpayers, energy consumers, and job seekers deserve to know what's happening to them. But revelation is difficult when official refusal to pursue national potential hides in a swarm of local seductions. Coburn said 1,082-page lands bill last year contained 592 spending measures, including 15 new state and local water projects. The proposed spending totaled $10 billion—"money we don't have," he said.

The new version of the bill is 100 pages longer and no doubt more expensive. Legislation important to energy supply, to the economy, and to the federal budget deserves treatment more straightforward than this. ✦

OFFSHORE ASIA™

• Incorporating Subsea Technology Asia •

March 31 - 2 April 2009
IMPACT Exhibition Centre
Bangkok, Thailand
www.offshoreasiaevent.com

REGISTER ONLINE TODAY
WWW.OFFSHOREASIAEVENT.COM

WHY ATTEND OFFSHORE ASIA 2009

- Choose from various tracks offering inside expertise in the offshore industry, including E&P, Multiphase Pumping and Technologies and Subsea Technology Asia
- Match your information and learning needs, and help you tackle everyday challenges
- Gain global and regional perspective through keynote addresses on the state of the industry as well as emerging trends
- Extend your personal knowledge of offshore technology and trends
- Benefit from networking by sharing information
- Discover and evaluate products and services
- Examine the latest products, meet with the manufacturers to learn the benefits you will get from their use
- Take advantage of the knowledge transfer with the best and brightest in the offshore industry
- Become an integral part of the region's fastest growing Conference and Exhibition

FOR EVENT INFORMATION AND REGISTRATION VISIT:
WWW.OFFSHOREASIAEVENT.COM

Owned & Produced by: PennWell®

Flagship Media Sponsors: Offshore, Oil & Gas Journal

Incorporating: Multiphase Pumping and Technologies.

Change: the only certainty as industry prepares for 2009

Nick Snow
Washington Editor

Barack H. Obama ran for US president on a platform that emphasized change. Washington-based oil and gas trade associations are expecting exactly that as his inauguration approaches and a Congress with a bigger Democratic majority goes to work. Many also think that deteriorating economic conditions will temper energy and environmental policy changes, at least in the near term.

"Clearly, the changes for the worse in our economic situation should cause us all to reflect on how best to restore a strong economy, coupled with sound energy policy and a thoughtful effort to address environmental concerns," observed Jack N. Gerard, the American Petroleum Institute's new president. "The focus today on economic recovery should remind us all that the economy will be adversely affected if we don't balance energy and climate policy."

Barry Russell, president of the Independent Petroleum Association of America, commented that "2009 will be challenging. The Obama administration and the 111th Congress will confront critical issues, both economically and in energy terms. Falling prices present a challenge for producers, in the short term particularly. We've already met with the Obama team several times and tried to explain where we might fit not only in terms of energy security, but also economically. They've been very receptive," he said.

Brian T. Petty, senior vice-president for government affairs at the International Association of Drilling Contractors, said, "I think 2009 is fraught with disappointment and danger. It all depends on the tack the new administration takes in developing new hydrocarbons, and also the market, which is very much up in the air, for my association's members."

"I'm not a pessimist," said Charles T. Drevna, president of the National Petrochemical and Refiners Association. "Even with the advent of the new administration and a more Democratically controlled Congress, I believe sound judgment will always overcome pandering to special interests at the end of the day."

In a tight spot

"Make no mistake, though," Drevna added. "This industry is in a tight spot, as are all industries. It has to decide how it's going to look in the future, and it can't base business decisions on election cycles. What we need is certainty and cooperation. What we don't need are policies that are politically expedient but are detrimental to the consumer and the economy," he added.

Skip Horvath, president of the Natural Gas Supply Association, anticipates major philosophical changes, not only involving oil and gas, but in regulation overall. He likened regulation to a clock's pendulum, which growing economic uncertainty has caused to swing harder and further. Regulations won't be the same as before, he ventured.

"We expect much more scrutiny, much more transparency on markets, and much more suspicion of whether markets are appropriate, such as for carbon trading. All of these questions will be viewed differently under a Democratic administration. It won't be bad, just different," Horvath said.

They and other officials from seven oil and gas associations spoke to OGJ in early-to-mid-December, following Obama's election but before he made all of his energy and environmental appointments. While their observations reflect events only to that point, they also spotlight general trends that will have a major impact on industry-government relations in 2009.

For economic recovery, we need a sound, comprehensive energy policy. "Now is the time to…move away from the all-or-nothing extremes of the past."
—Jack N. Gerard, API president

Many of these resulted from dramatic occurrences in 2008. "Certainly, it was a monumental year in terms of moving the issue of access into the forefront of public thought and policymakers' concerns," said Tom Fry, president of the National Ocean Industries Association. "Not only did Congress not extend the congressional [US Outer Continental Shelf] appropriations moratoriums, but the president also lifted the presidential withdrawal.

"That doesn't mean there are not hurdles that we still have to jump over in the future," he cautioned. "There's the question of what's in the 5-year plan and lease sales there. Agencies in the government have to get their permits out in a timely matter. Litigation can slow down or stop various forms of energy activity. So just because moratoriums are gone doesn't mean other access questions don't need to be answered. But we've made some real progress," he continued.

Obama and natural gas

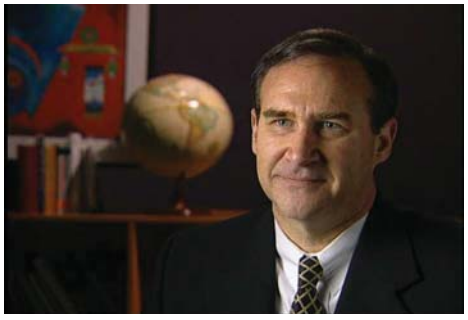
The energy plank of Obama's campaign platform emphasized promoting alternative and renewable energy sources, noted Donald F. Santa, president of the Interstate Natural Gas Association of America, "but there also were references to natural gas, including addressing infrastructure impediments to bringing more gas to market.

"While it is not a headline issue for the new administration, there is recognition that no matter how much you try to accelerate the transition to a new energy economy, gas will play a major role for a significant period because it's available in North America. But it will need a bigger infrastructure to produce the resource, get it to markets, and distribute it to end users," Santa added.

Horvath told OGJ that he had not seen evidence that most Democrats consider gas as anything more than a bridge fuel while alternative and renewable energy technologies are being developed. "They embrace it, but they still see it as a bridge. We're fine with that, because it's a thick and substantial bridge, which will need to carry a lot of traffic," he said.

But the NGSA president also said that many Democrats have not yet made the connection between relying more heavily on gas and providing greater access to domestic supplies. "I think we haven't got the message to Democrats that if they're going to embrace natural gas as a bridge fuel, you need to have access to supplies. We're making progress in helping them understand that they'll need to allow exploration to get natural gas out of the ground," he said.

IPAA's Russell added, "In a general sense, we know that the Obama administration and folks up on the Hill generally are interested in renewables and alternatives. We're trying to get across the important role of fossil fuels over the immediate future. Frankly, there are still some folks who think we can turn the light switch immediately from fossil fuels to renewables. They're the ones to whom we need to explain our role in energy security," he said.



We must explain our role in energy security to "folks who think we can turn the light switch immediately from fossil fuels to renewables."
—Barry Russell, IPAA president

A long bridge

Lee O. Fuller, IPAA vice-president of government relations, said several environmental organizations have identified gas as the key bridge fuel to future energy choices. "We think it's going to be a very long bridge before those future fuels will be able to replace natural gas," he said.

At the same time, groups such as the Natural Resources Defense Council have been difficult to deal with on access issues, he told OGJ. "NRDC has been active in lawsuits involving construction requirements and hydraulic fracturing. If you look at the natural gas supply structure, certainly the role of shale gas is essential to allow the growth of that supply going forward," Fuller said.

Convincing more state and federal lawmakers to see a connection between more access to supplies and

growing reliance on gas is a continuing challenge for the industry, according to Martin E. Edwards, INGAA vice-president for legislative affairs. "The growing opposition to shale gas development and the use of hydraulic fracturing is a growing problem. It will be an ongoing debate; no question about it. You have to balance local opposition with the importance of having domestic gas supplies that can partner with renewable and energy-efficient technology," he said.

The domestic gas market is in fairly good shape, INGAA's Santa said, because production from shale and other new sources has been fairly prolific, and prices have dropped precipitously from their $13 level in mid-2008. "I'm not so sure that the need to address the economic downturn will have an impact on natural gas production policies," he said. "What I do expect is that, as part of a stimulus package, there will be spending and incentives for energy efficiency to accelerate the energy economic transition. That could be the strongest step in addressing the economic downturn."

Congress and the new administration could try to put some new restrictions on OCS development in place, Edwards suggested. But he said he does not expect a push to reinstate all the moratoriums, which expired Sept. 30.

Inviting political peril

"Even we were surprised by the potency of the issue once it got some traction last year and how quickly there was an about-face on it. While it occurred when gasoline prices were $4/gal, it still struck a chord in Washington. To do a 180° turn on it would invite the kind of political peril and vulnerability that neither Congress nor the new administration wants," Santa said.

Daniel T. Naatz, vice-president of federal resources and political affairs at IPAA, told OGJ there was a sea change in the public's perception of the OCS oil and gas issue in 2008. "Some of it was driven by gasoline prices. Beyond that, the public was willing to discuss offshore policy for the first time in a long time and they questioned the wisdom of placing moratoriums everywhere but the Central and Western Gulf of Mexico," he said.

He still expects producers to face challenges as they seek more access to supplies. But he also expressed hope that Obama will stick to his pledge to look seriously at offshore energy potential and not simply reinstate moratoriums. "We want to continue to capitalize this. We've seen reports that people walking out of the voting booth rated energy as still one of the top issues. Even with the price of gasoline and other forms of energy going down, the American public is very much aware of this," Naatz said.

"It is clear that when the public's attention was overwhelmingly focused on needing energy, it came out overwhelmingly for developing more," said API's Gerard. "There may be some who want to hold onto the policies of the past. But in looking ahead, if we're serious about economic recovery, we're going to need a sound, comprehensive energy policy. Now is the time to find the middle ground and to move away from the all-or-nothing extremes of the past."

When retail gasoline prices broke the $4/gal barrier, it did more than simply get the public's attention, he suggested. "The American people reacted quickly to the failed energy policies of the past. When they heard that the United States was sitting on vast amounts of oil and gas that Congress had placed off-limits, they overwhelmingly called for reform. The public understands that we have the ability to better control our energy destiny. By two to one, people expect us to develop American resources to benefit all Americans," he said.

"The current state …of the global economy is much more than the 800-pound gorilla in the room: It's the whole primate portion of the zoo." It must be considered.
—Charles T. Drevna, NPRA president

Supply diversity

Voters were emphatic in the weeks leading up to the Nov. 4 election about energy, NPRA's Drevna said. More than 60% said that OCS areas, which had been closed by moratoriums, should be opened for leasing, he told OGJ. "We as a nation can't continue to say we want to limit our dependence on foreign crude and [at the same time] restrict our domestic development…. The bottom line is that as a nation, it's our responsibility to make our energy supplies as diverse as possible. The best way

to do this is to develop more of our own resources," he maintained.

IADC's Petty raised another point: "The Interior Department, as it administers offshore and onshore oil and gas leasing, has to take a longer view. It is the second largest source of federal revenue after the Internal Revenue Service. I think the Obama team could take a long look at expanding offshore access as a result."

NOIA's Fry was not so certain. "It's all about the economy," he said. "It's also about supply and demand from an oil and gas perspective, and I can't predict how that's going to look in the short term. Obviously, when prices fall, some of the harder-to-get resources won't be developed, because it's not economic to do so. Some companies already are talking about cutting back capital expenditures, which probably means we won't be producing as much oil and gas in 2-3 months onshore and 7-8 years offshore," Fry told OGJ.

"I think people want to look at the energy security question," said Naatz. "President-elect Obama and Congress are going to have to deal with this. We hope there won't be any steps backward on access onshore as well as offshore, because the public is looking at this in a whole new light."

The most recent election brought more new members to Congress from politically conservative districts that are friendly to business, Naatz continued. IPAA plans to reach out to them, as well as to members from districts with agriculture and other industries that consume large amounts of energy, he said.

"Over the last two elections, most of the Democrats who were elected replaced centrist Republicans," said Fuller. "But we also saw in the last Congress that there's a big difference between where they view an issue and how they're able to develop legislation."

Decision-making areas

Fuller explained that most House energy bills introduced during the 110th Congress were written outside of the committees and were presented as a final package. "So the challenge is not only finding more centrist Democrats who are willing to consider oil and gas's role, but also [those] who are willing to move the discussions into areas where decisions are made," he said. "The Blue Dog Democrats, who mostly concentrate on fiscal issues, put out a package of energy principles this last Congress, which we thought was very good. The next step will be to get this debate into the Democratic caucus," Fuller said.

That could be difficult, Petty observed, because more California Democrats chair key energy committees. "Anywhere you have a Californian chairing a committee, they're going to be very aggressive on the air quality issues, whether it's Barbara Boxer in the Senate or, now, Henry Waxman in the House," he said.

Waxman took aim at hydraulic fracturing this past session when he chaired the Oversight and Government Reform Committee before he successfully challenged John D. Dingell to lead the Energy and Natural Resources Committee in the 111th Congress, the IADC official noted. "The centrists may be too few and too junior to make much difference," he warned.

Oil and gas association officials were divided as they assessed prospects for federal clean air legislation in 2009, particularly when it came to cap-and-trade proposals.

"I expect it to be talked about," said NGSA's Horvath. "We'll certainly see some bills. I personally believe that setting up a market that's competitive and fair is more complicated than setting up a lemonade stand. There are so many difficult economic questions. I think that once Congress takes a close look and realizes what this means, it's going to step back and try to do it right, which could delay action until

Setting up a competitive, fair market is complicated. Congress will try to do it right, "which could delay action until 2010. The only thing that could change this would be pressure to move on the environment."
—R. Skip Horvath, NGSA president

"No matter how much you try to accelerate the transition to a new energy economy, gas will play a major role for a significant period. But it will need a bigger infrastructure."
—Donald F. Santa, INGAA president

2010. The only thing that could change this would be pressure to move on the environment."

Petty said he doesn't consider a cap-and-trade bill inevitable. "With the financial meltdown and auto imbroglio, other issues loom larger. I hope the economic team in the Obama administration seriously considers the economic consequences of cap-and-trade on energy development. They're going to have to throw themselves into the breach against the potentates on Capitol Hill who would have it otherwise," he maintained.

Carbon capture question

Fuller said pressure could mount for legislative action on global climate as an alternative to trying to reduce greenhouse gases through the Clean Air Act, which he believes would be disastrous.

"The principal factor in cap-and-trade is the availability of carbon capture and sequestration at some point. That may not be available immediately, so there probably will be some research and development," he said.

Drevna questioned predictions that a cap-and-trade bill is immediately inevitable. "Given the fact that there are very

divergent forces coming in and stating the economic dangers of a cap-and-trade system to the country, from John Dingell to Jim Hansen and even Ralph Nader and a number of environmental groups, I'm not yet ready to say that anything is inevitable," he said.

"Clearly, the current state not only of the US but the global economy is much more than the 800-pound gorilla in the room. It's the whole primate portion of the zoo. It has to be considered," the NPRA president said. "The last thing this country needs is something that creates winners and losers by putting a further drag on a very tenuous economy. Does this mean that policymakers will consider this? I would absolutely hope so," Drevna said.

"Ultimately, the economy could temper some proposals," said Fuller. "It will depend on the dynamics going forward. Certainly, we'll see a stimulus bill fairly early. That will start some movement with public works projects that can result in jobs in the construction and engineering trades. If the banks can bring up credit and the auto industry issue can be settled, that will be helpful. But I think we're in for a recession that will temper what Congress may want to do in global climate and other issues. It will have to look more closely at consequences," he added.

"Our view is that the public pushed and voted for change" said Gerard. "It's clearly significant in Washington. But those who voted for change have made it clear they want to move away from the extreme partisan politics of the past and toward an attitude of getting the people's work done. I believe many newly elected House and Senate members clearly understand that." So did the president-elect, when he said he planned to govern from the political center, API's president continued.

"We're all anxious to work with him and his administration and the new leadership in the Senate and the House to see if we can find balanced outcomes to some tough issues that have confronted our country for many years." ✦

BMI: Only small increase seen in 2009 oil consumption

Eric Watkins
Oil Diplomacy Editor

Global oil consumption will increase by just 0.6%, representing a decline of 1.3% in Organization for Economic Co-operation and Development countries and an increase of 2.3% in non-OECD countries, according to analyst Business Monitor International.

BMI estimates the overall increase in demand to reach 500,000 b/d, with North American demand contracting by at least 520,000 b/d and European demand also falling slightly.

It cites the International Energy Agency's December Oil Market Report (OMR), which predicts growth in 2009 oil demand of 0.5%, with an increase in global consumption of 440,000 b/d.

IEA expects a decline of 330,000 b/d in North America. OECD demand is forecast to fall by 1.4%, with the non-OECD countries consuming an additional 2.9%.

In the US, the Energy Information Administration is now forecasting 85.3 million b/d of 2009 global oil demand, down 450,000 b/d from the estimated 2008 level.

EIA predicts non-OECD demand to increase by 1.5%, with OECD demand down by just 10,000 b/d.

It expects consumption in the US and Canada to contract by just 270,000 b/d.

"The EIA is clearly overly optimistic regarding the outlook for OECD demand but [is] more cautious for the developing countries," said BMI.

OPEC's December report suggests a likely decrease in 2009 global oil consumption of 0.18%, making it the most bearish of the forecasters.

It puts demand contraction at 150,000 b/d for the year. Non-OECD consumption is expected to increase by almost 2.2%, which means OPEC predicts a fall of nearly 2.1% in OECD demand or around 980,000 b/d.

In North America, OPEC predicts the decline to be 580,000 b/d.

2009 oil supply

According to the BMI model, 2009 global oil production will increase by just 0.4%, representing an OPEC increase of 0.1%, and a non-OPEC production boost of 0.5%.

"We have assumed OPEC production cuts in the first half, but with some reversal in the second half," BMI said.

BMI also has assumed that some OPEC members, such as Nigeria and Iraq, will increase output despite the organization's target of reduced volumes from January 2009. The overall increase in supply is estimated at just 265,000 b/d.

IEA's December OMR predicts non-OPEC supply growth in 2009 of 480,000 b/d, or almost 1%, according to BMI.

"We believe this to be an optimistic assessment of potential non-OPEC production growth, even before the possible impact of price-induced spending cuts," BMI said, adding that, "The IEA does historically overestimate non-OPEC oil supply."

EIA forecast in December 2008 a 410,000 b/d rise in non-OPEC oil output, representing a gain of 0.8%. EIA expects world oil production to be 85.14 million b/d in 2009, down from 85.52 million b/d in 2008.

"The US organization clearly expects a sizeable downturn in OPEC oil output," BMI said.

OPEC itself sees 2009 non-OPEC supply rising by 640,000 b/d, which the analyst said "looks to be an ambitious level."

With a large step-up (up 610,000 b/d) in OPEC natural gas liquids, the implication is that OPEC crude production will need to fall substantially.

In fact, the December OPEC monthly report argues that first-quarter 2009 OPEC crude production will be down 2.3 million b/d from first-quarter 2008.

Long-term oil demand

The BMI model now predicts average oil demand growth of 1.17%/year during 2007-13, followed by 1.42%/year in 2013-18.

Following the forecast 0.5% demand contraction in 2009, BMI is assuming 0.58% growth in 2010, followed by 1.42% in 2011.

It said this growth reflects a bottoming out of the global economy over the next 18 months, before recovery gets underway in second-half 2010.

Growth will accelerate in 2011-13, BMI said, before slowing again as energy-saving initiatives take effect towards the end of the forecast period.

OECD oil demand growth is expected to remain weak to 2018, reflecting market maturity, the ongoing effects of recent demand destruction, and a greater commitment to energy efficiency.

Following the predicted 1.3% decline in 2009 OECD oil consumption, BMI expects to see a reduction of 0.05% in 2010.

The recovery forecast for 2011-12 delivers annual gains of 0.43% and 0.64% respectively.

"We expect growth trends to turn negative once again beyond 2014," the analyst said.

On average, OECD demand is forecast to fall by 0.64%/year during 2007-13, and by 0.18%/year in 2013-18.

For the non-OECD region, the demand trend to 2013 is for 2.84% average annual market expansion, followed by 2.65% in 2013-18 as economies mature and energy-efficiency begins to play a role.

"We do not expect the region to avoid the downturn completely, with 2009 growth of 2.29%—well down from 2.87% in 2008 and 3.49% in 2007," BMI said, adding that demand growth is forecast to recover to 2.71% in 2010, then rise to 2.83% in 2011.

Compared with the BMI forecasts, IEA's medium-term view is for global oil demand growth to average 0.97%/year during 2008-13, with consumption expanding by 1.2% in 2010 and 1.3% in 2011.

For the OECD countries, growth forecasts are negative throughout the period, with demand falling typically by 0.1%/year.

The non-OECD oil market is set to expand by an average 31.7%/year in 2008-13, with growth accelerating towards 3.4% by the end of the forecast period.

Long-term oil supply

BMI sees global oil supply increasing by an average 1.52% annually during 2007-13, with a yearly gain of 1.37% predicted in 2013-18.

It expects growth to be at its slowest in 2009, but averaging more than 2% in 2010-13. The analyst said this growth rate is "particularly vulnerable to spending cutbacks from 2009 resulting from lower oil prices."

Non-OPEC oil production is expected to rise by 0.63% in 2007-13, then 0.38% in 2013-18. OPEC volumes are forecast to increase by an annual average of 2.61% during 2007-13, easing to 2.46%/year in 2013-18.

IEA is assuming an average annual 0.52% increase in non-OPEC oil supply in 2008-13.

BMI said supply projections beyond 2010 are at risk from reduced international oil company and national oil company spending.

It explained that OPEC in particular will be reluctant to add extra spare capacity if the demand is not there to use it, while IOCs may delay spending on major oil sands and deepwater projects if there is scope for price weakness that will undermine returns and project economics.

Oil-price assumptions

An early and sustained recovery in oil prices during the latter part of 2009 should mean that most investment programs are secure.

The OPEC basket price, having averaged an estimated $94.08/bbl in 2008, is now forecast to be $52/bbl in 2009.

This represents $40 during the first quarter, which BMI expects to be the weakest period, recovering to $52 in the second quarter as OPEC supply cuts impact the price.

During the second half, BMI expects the price to move back into a $55-60/bbl range if OPEC continues to manage production effectively.

Brent, WTI, and Urals prices for 2009 are put at $55.65, $56.63, and $52.48/bbl respectively. BMI said EIA is now using $51/bbl as its central assumption for WTI in 2009.

"With oil demand growth still relatively subdued in 2010, and a likely pick-up in non-OPEC supply expansion, there is limited scope for OPEC to boost output during the year," the analyst said.

However, if it can exercise reasonable restraint, BMI sees scope for a continuing oil price recovery and is now forecasting an average OPEC basket price of $58/bbl for the year.

"By 2011, there should be greater growth in oil consumption and more room for OPEC to regain market share and reduce surplus capacity through higher production quotas," BMI said.

The analyst is assuming a further increase in the OPEC basket price to an average $65/bbl, implying Brent at $68.70/bbl, WTI at $69.60/bbl, and Urals at $65.50/bbl.

"For 2012 and beyond, we are now using a central case forecast of $70/bbl for the OPEC basket, down from our earlier long-run forecast of $90," BMI said in its report. ✦

Pemex lets Chicontepec work; delays drill bids

Eric Watkins
Oil Diplomacy Editor

Mexico's Petroleos Mexicanos has awarded four contracts worth a total $154 million for the construction of 344 drilling pads and access roads in the Chicontepec region.

At the same time, the state firm—at the request of bidders—has delayed bidding on 500 drilling contracts announced in December, with bidding to close in February instead of January.

All four winning construction firms are Mexican companies that will assist in developing 29 new oil fields in Chicontepec—part of a project Pemex hopes will eventually raise the country's oil output to 550,000-600,000 b/d by 2021. A consortium headed by Impulsora de Desarrollo Integral SA was awarded a $38.4 million contract to build 87 well pads, while another led by Constructora Luna Rodriguez SA won a $37.3 million contract to build 86 well pads and access roads.

Terrecerias y Cimentaciones del Sur SA won a $50.6 million contract to construct access roads and 85 well pads, while Capi Constructora SA was awarded a $39 million contract to build access roads and 86 well pads.

Drilling tenders delayed

Meanwhile, Pemex's exploration and production subsidiary PEP has delayed calling tenders for drilling 500 development wells in Chicontepec field. At the request of potential bidders, bids have been rescheduled to Feb 19 from Jan 20.

Drilling work, which is expected to be completed within 1,187 days, will focus on the 11-A Agua Fria-Coapechaca Tajin, 11-D Amatitlan-Profeta-Tzapotempa-Vinazco, 11-H Coyula-Japeto, and the 11-I Humapa-Bornita and 11-G Área 5 projects in Chicontepec. Sixteen firms purchased bid packages for the work, including Andrews Technologies de Mexico; D&S Petroleum; Industrial Perforadora de Campeche; JPT Consulting & Services; Nabors Perforaciones de Mexico; Servicios Integrales GSM; and BJ Services Co. Mexicana.

Also purchasing bidding rules were: Dowell Schlumberger de Mexico; Halliburton de Mexico; Baker Hughes de Mexico; Grupo Administrador de Recursos Organizacionales; Constructora y Perforadora Latina; Servicios Petrotec; MI Drilling Fluids de Mexico; Perforaciones Maritimas Mexicanas; and GL del Centro de Panama.

Pemex began inviting the bids in December for drilling 500 new wells in the eastern area of Chicontepec field, saying the decision was "unprecedented" because of the number of wells to be drilled.

However, Pemex said the move was necessary in order to "increase the production of hydrocarbons" in a region that contains "17.7 billion bbl of crude oil equivalent," or 39% of Mexico's total petroleum reserves.

Cantarell's decline

Pemex said its goal is to convert Chicontepec into a basin that can produce 550,000-600,000 b/d (of oil) through 2021, "which in addition to posing an extraordinary challenge in terms of logistics and execution, will also require the development and administration of specialized technologies."

Chicontepec field, which spans a 3,815-sq km area in the states of Veracruz, Puebla, and Hidalgo, east of Mexico City, contains deposits that Pemex says "are characterized by (small pockets of) hydrocarbons (with) low permeability and pressure" resulting in reduced levels of productivity.

Still, Pemex said the project to contract out drilling in Chicontepec "is of great relevance to the country," because it will be "essential" to drill about 15,000 wells in that area over the next 15 years.

The relevance of the drilling program was underscored in December when Pemex said Mexico had produced an average of 2.81 million b/d of crude oil during the first 10 months of 2008, down 9.6% compared with the same period of 2007.

That fall was primarily due to a decline in production at Cantarell field in the southern Gulf of Mexico. Between January and October, Cantarell produced just 1.04 million b/d, down 31% from the same period in 2007. ✦

Pertamina says Natuna D-Alpha project delays persist; access blocked

Eric Watkins
Oil Diplomacy Editor

Indonesia's state-owned PT Pertamina may delay its decision to seek partners for developing the Natuna D-Alpha gas block in the Riau Islands. It is facing obstacles regarding the status of former operator ExxonMobil Corp.

"Yes, it [the decision] may be delayed," said Pertamina upstream director Karen Agustiawan, adding that the company might not be able to announce its partners for the block in January as scheduled.

"We will once again write to the government asking for confirmation (of the status of ExxonMobil)," the director said, adding, "We want to know whether [the ExxonMobil contract] has expired or not."

ExxonMobil operated the Natuna block until the government, claiming the firm had failed to make adequate development progress, withdrew its contract.

ExxonMobil denied the claim, saying its rights remain after investing some $400 million.

Data access blocked

Karen also said Pertamina is facing difficulties accessing data about the block. "The data is supposed to be available at the directorate general of oil and gas. I have requested the data, but it is not available."

"If the government exposes the technical data, the managements of the eight potential partner companies can immediately make an evaluation and submit proposals to us," Karen said.

Earlier this month, Pertamina Vice-pres. Director Iin Arifin Takhyan said ExxonMobil still had far more complete technical data than Pertamina's.

"If the government permitted the

Japan floats new ideas

The Japanese are floating ideas that may create waves in the oil and gas industry. No, we are not talking about seaweed again. This time, it's facilities to produce LNG at sea.

Does that sound odd? Well, for starters, the idea could ease a host of problems, including rising resource nationalism in countries such as Indonesia which is threatening Japan's supply stability.

According to Akira Ishikawa, chief economist of Japan Oil, Gas, & Metals National Corp., interest in the concept of floating production, storage, and offloading facilities for LNG is likely to increase amid "supply-demand shifts for natural gas and the rising cost of land facilities due to environmental concerns."

Underlining the practicality of the LNG FPSO concept, Ishikawa notes that floating platforms will lead to more stable procurement by visiting smaller fields—usually ignored due to low profitability.

According to reports, industry players have identified more than 130 undeveloped gas fields in the Asia-Pacific region alone. Altogether, those fields contain estimated reserves of 80 tcf, enough gas to satisfy Japan's LNG import needs for 20 years.

And many Japanese think that floating LNG facilities are the best way to tap those fields.

Japanese 'scrambling'

In fact, Japanese firms are now said to be "scrambling" to win orders for mobile facilities to produce LNG at sea.

In July, Chiyoda Corp. set up a unit of 15 senior engineers to design the world's first FPSO facilities for LNG.

Chiyoda hopes to shop the concept to Royal Dutch Shell, which is looking to tap fields off Australia and is thought likely to purchase FPSO blueprints from either Chiyoda, JGC Corp., or a French firm.

IHI Corp. which has been applying proprietary technology for stabilizing LNG carriers for the development of LNG FPSOs, has signed a licensing agreement with Samsung Heavy Industries Co. IHI expects to work on five midsize platforms and two large ones annually in 2010-15.

Meanwhile, Inpex Corp. plans to develop FPSO platforms for the Masela Block in Indonesia's Timor Sea. The goal is to start producing 4.5 million tonnes/year of LNG beginning in 2015—all to be shipped to Japan.

Inpex also is considering the idea, for cost reasons, at Australia's Ichthys gas field, which is likely to cost more than 2 trillion yen to develop—three times more than earlier projections.

This increase is due mainly to a government ruling that the LNG plant must be located far from the ecologically sensitive field area.

Gas hydrates, GTL

But don't think the FPSO concept is restricted to LNG. Mitsui Engineering & Shipbuilding Co. is developing a mobile platform for producing natural gas hydrates.

Then, too, Toyo Engineering Corp., Modec Inc., and others are cooperating to develop an FPSO facility to produce gas-to-liquid fuel by late 2010.

In Japan, when they talk of floating new ideas, they mean business. ✦

opening of technical data at the moment," he told the Bisnis Indonesia newspaper, "Exxon with its technical data would have bigger chance to get interest and work together again with Pertamina to operate the Natuna D-Alpha block."

According to government sources, however, neither Pertamina nor ExxonMobil has returned the data.

Pertamina seeks partners

After revoking ExxonMobil's contract, the government ordered Pertamina to develop the block and to seek partners, as investment costs for the project would come to at least $52 billion.

As the block operator, Pertamina has a 40% interest in Natuna, with the remaining 60% to be allocated to partners. At the time of the government's decision, ExxonMobil held a 74% stake in the block, while Pertamina held the remaining 26%.

Last July, Karen said that Pertamina would appoint consultancy Wood Mackenzie to advise it on selecting a partner to develop the Natuna D-Alpha gas block.

"We will appoint Mackenzie to look at 10 potential bidders to develop Natuna," Karen said. "Mackenzie will see the strength of each bidder, as it has good data on them."

Pertamina has since shortlisted 8 prospective companies for potential partnership, including Royal Dutch Shell PLC, Chevron Corp., Eni SPA, Total SA, StatoilHydro ASA, China National Petroleum Corp., Petronas, and ExxonMobil. ✦

Gas exporting countries form charter, base in Doha

Uchenna Izundu
International Editor

The Gas Exporters Countries Forum (GECF), a group of the world's largest natural gas suppliers, has established a charter and chosen Doha as the home for its permanent secretariat, signaling Qatar's growing importance in the natural gas market.

The actions formalize the group, which was loosely established in 2001, and strengthen its determination to shape the global gas market, actions of concern to Western nations troubled about future gas prices and energy security.

Doha was selected over Algeria, Iran, and Russia as the headquarters for GECF.

"This is a significant event for the market," Russian President Dmitry Medvedev told reporters. "Global stability, energy security, and the balance of interests between exporters, transit states, and consumers depend on the agreed position of the exporting countries."

'Not a cartel'

However, GECF, which met in Moscow on Dec. 22, has stressed that there are no plans to form a cartel along the lines of OPEC. Gas producers want to improve their relationship during this period of uncertainty and its members account for roughly two-thirds of the world's gas reserves.

Venezuelan Energy Minister Rafael Ramirez said: "It's not a cartel. We are defending the interests of our countries, that's all."

Russian Energy Minister Sergei Shmatko said, "I believe exporters can find the balance between competition and the harmonization of their energy policies."

Russia's Prime Minister, Vladimir Putin, told energy ministers at the GECF meeting that the era of cheap gas was coming to an end because operational costs were soaring.

The Moscow meeting was held amid growing concerns that Europe could suffer a shortfall in gas supplies from Gazprom due an ongoing dispute with Ukraine. Gas supplies to Europe via the Ukraine pipelines have since been cut off (see p. 29). ✦

Indonesia sees 2% decline in 2009 LNG output

Eric Watkins
Oil Diplomacy Editor

Indonesia's LNG production is projected to decrease by more than 2% in 2009, largely due to a decline in the supply of natural gas to the country's Bontang LNG facility.

Indonesian officials said LNG output will fall to 349 cargoes of 125,000 cu m each in 2009 from 359 cargoes in 2008. The officials did not state which of the country's gas fields are facing output declines.

An official at the Bontang LNG liquefaction plant said production will drop to 307 cargoes in 2009 from 317 in 2008 due to decreased supplies, while an official at the Arun LNG plant said its production would remain unchanged from last year at 42 cargoes.

Gas production has been declining

INDONESIAN LNG PRODUCTION

	Total	Bontang	Arun
		Number of cargoes	
2009*	349	307	42
2008	359	317	42
2007	372	320	52
2006	394	335	59

*Estimated.

in Indonesia due to a lack of major investment. At the same time, the government has been promoting domestic gas use to offset the higher cost of importing oil.

However, other problems have arisen, with the country now struggling to meet its commitment to deliver LNG to offshore buyers—especially Asian buyers such as Japan and South Korea.

Last week, Indonesia said it was seeking nine cargoes of LNG in 2009 from the spot market to meet its contractual commitments to South Korea and Japan in 2009.

In early December, a government official said that Indonesia would buy five cargoes of LNG on the spot market in 2009, which it will ship to South Korean buyers.

Underlining the issue of increased domestic consumption, Raden Priyono, chairman of upstream oil and gas regulator BP Migas, said Indonesia would divert the gas it had previously intended for the South Korean buyers to PT Pupuk Iskandar Muda, a state-owned fertilizer company. ✦

Gazprom head comments on Ukraine gas issue

Uchenna Izundu
International Editor

Europe has stopped receiving gas supplies from Russia via Ukraine amid the bitter dispute that Russia's OAO Gazprom is embroiled with Ukraine over unpaid bills and prices for deliveries in 2009.

Alexander Medvedev, Gazprom's deputy chief executive, told journalists that Naftogaz, the Ukrainian company, had shut in the fourth export pipeline, stopping all transit supplies to Europe.

On Jan. 6, Gazprom accused Ukraine of closing three pipelines.

"We continue to do our utmost to use alternative routes," he added, with gas being delivered via the 4,100-km Yamal-Europe pipeline and underground storage. Gazprom has delivered more than 170 million cu m under contract to its European customers, he said. It is also looking at buying gas on the spot market to meet its obligations.

Naftogaz blamed Gazprom for the disruption, saying that Gazprom stopped transporting supplies to Ukraine on Jan. 7. Over the first 6 days of January, it insisted it had delivered 74 million cu m of gas to Europe from its own reserves despite Gazprom's stoppage.

Gazprom has alleged that Ukraine has stolen Russian gas intended for European consumers after it stopped exports for Ukraine's domestic needs on Jan. 1.

Different European countries have reported significant drops in their Russian imports with the Balkan countries severely impacted. Bulgaria, which relies solely on Russian gas, could run out

Russian gas supplies through Ukraine shut down

Doris Leblond
OGJ Correspondent

All Russian gas supplies through Ukraine were shut down early Jan. 7 in a further escalation of the OAO Gazprom-Naftogaz pricing dispute, leaving some European Union and Balkan countries, now facing bitter cold temperatures, with no gas supplies from Russia.

The EU has access to other sources, including Russian gas from other pipelines, as well as gas from the UK, Norway, and the Netherlands. But some countries are more dependent on gas transiting through the Ukraine than others.

Hardest hit by the supply cuts was the western Balkan route to Romania, Bulgaria, Macedonia, Greece, and Turkey, however Slovakia, Italy, and Austria could also suffer from shortfalls if cuts are prolonged.

For Turkey, gas from Russia is still available via a line that extends beneath the Black Sea. Romania, Bulgaria and Hungary, meanwhile, have sufficient stocks for some days. Other countries have large gas reserves or other supply sources.

The European Commission is actively organizing meetings to find a solution for the crisis. The Gas Coordination Group meeting planned for Jan. 9 in Brussels should be the one to take action with emergency measures for countries with few energy alternatives. The GCG includes gas experts from each EU member state and representatives from national gas companies and transmission operators.

The EC still insists that it is a commercial dispute between Gazprom and Naftogaz in which it cannot interfere, while urging with increasing force the two sides to resume gas supplies immediately.

At presstime last week, the EU was planning a Jan. 8 meeting of its foreign affairs ministers in Prague under the Czech presidency to determine how a more-active role can be played to bring the dispute to a permanent and satisfactory close. This could bring in the political dimension of the crisis but also disagreement among the 27 as Eastern countries are willing to exercise some clout on Russia while most Western countries do not want to harm their relations with Moscow.

in days and Slovakia has declared a state of emergency. France, Germany, and Italy are also suffering reductions. The shortage coincides with an Arctic cold snap that will leave millions of eastern Europeans in a humanitarian crisis if the crisis is not resolved quickly.

Both companies have blamed each other throughout the dispute and they have now pledged to the European Commission to have international monitors check the supply of Russian gas through Ukraine for Europe.

Medvedev told OGJ that it previously wanted to use international observers to monitor the metering stations in Russia and Ukraine, but Ukraine has resisted it. "We sent them to Russia and western Europe and the Ukrainians fought against it," he said.

Gazprom is now demanding from Ukraine $450/1,000 cu m for its exports in 2009, which is the same rate for the eastern European countries bordering Ukraine minus costs of gas transit across Ukraine. Ukraine's last price offer was $235/1,000 cu m and it has announced it will resume negotiations with Gazprom on Jan. 8. But it is demanding an increased transit fee of $2/1,000 cu m.

Medvedev told OGJ that the initial offer of $250/1,000 cu m for gas exports that expired on Dec. 31, 2008, was "very expensive for us in the present financial situation," adding that, "Ukraine said then it wanted to pay $100/1,000 cu m."

Medvedev urged Ukraine to resume talks, but complained that Jan. 8 was unfeasible as Gazprom was holding talks with officials in Europe on this date. "They [Ukraine] want to create the illusion that they want to negotiate."

"We hope that this situation will be fixed quickly and so we wouldn't want to do a force majeure clause in our contracts," he added.

Gazprom has sought to establish medium term supply contracts rather than renewing yearly agreements at different prices to avoid disruption to exports. Ukraine, Medvedev said, has rejected this proposal.

The company has not shut down any production wells amid the dispute as this could impact "very negatively" on its operations. "We have a very comprehensive upstream and midstream situation and are currently using all our underground reserves." ✦

World oil demand to reach 310 million b/d in 2030

Paula Dittrick
Senior Staff Writer

ExxonMobil Corp. expects global energy demand to increase by an average 1.2%/year during 2005-30, even assuming major energy efficiency gains.

Driven by growing populations and expanding economies, global demand is expected to increase to 310 million b/d of oil in 2030 from the equivalent of 229 million b/d in 2005.

ExxonMobil's latest annual "Outlook for Energy: A View to 2030" was expanded to include an examination of improved energy efficiency, development of all viable forms of energy, climate risk technology, and public policy.

"The world needs to meet the ever-growing need for reliable and affordable energy while minimizing the effects on the environment," said Rex W. Tillerson, ExxonMobil chairman and chief executive officer.

The outlook is developed through a detailed analysis of about 100 countries. Results are underpinned by economic and population projections.

Among this year's outlook findings:

- Oil, natural gas, and coal will continue to provide about 80% of the world's energy needs through 2030 because of their abundance, affordability, and availability.
- Nuclear energy production is expected to increase, riding an anticipated emphasis on low-carbon fuels.
- Production and use of renewable fuels, such as wind, solar, and biofuels also will escalate rapidly.
- Transportation, currently responsible for more than half of total oil demand, is expected to expand substantially globally. From 2005-30, demand in developed countries is expected to be relatively stable because efficiency improvements will offset demand from an increasing number of vehicles. In contrast, demand for transportation fuels in developing countries will likely more than double.

Global carbon dioxide emissions are projected to rise by close to 30% during 2005-30 even with improved energy efficiency and growth in nuclear and renewable energy sources. ExxonMobil expects CO_2 emissions will begin declining in the US and Europe by 2030. But those declines will be offset by larger increases in developing countries. ✦

ExxonMobil fined for 2006 Massachusetts spill

Nick Snow
Washington Editor

ExxonMobil Pipeline Co. agreed to pay more than $6 million in fines for a 2006 oil products spill near its Everett, Mass., terminal, the US Department of Justice said on Dec. 23, 2008.

The ExxonMobil Corp. subsidiary was charged with violating the federal Clean Water Act in connection with the Jan. 9, 2006 spill of about 15,000 gallons of diesel and kerosine from the terminal into the Mystic River, DOJ said in a joint announcement with the Environmental Protection Agency and

US Coast Guard.

They said the spill occurred during the unloading of low-sulfur diesel from a tanker when a 10-in. valve did not close completely. An outside contractor had pressure-tested the valve previously and told ExxonMobil Pipeline it should be replaced, according to DOJ.

The diesel leaked into a product receipt line containing some 2,500 gal of low-sulfur kerosine. The line contained a pressure relief valve capped by a badly corroded 3/4 in. coupling that had not been replaced in more than 30 years, they indicated.

The coupling burst, sending diesel and kerosine into a containment pan and then into the river. The spill continued until about 5 a.m. Jan. 10 when pumping from the tanker ended.

DOJ said the release of some 2,500 gal of kerosine and 12,700 gal of kerosine into the river eventually reached Boston Harbor, prompting several reports to the Coast Guard. Terminal employees did not discover the ruptured coupling and overflowing containment pan until Coast Guard personnel arrived to ask questions about the sheen's origin.

As part of its plea agreement, which is subject to federal court approval, ExxonMobil agreed to pay the maximum possible fine of $359,018, which included $179,634 in cleanup costs, and more than $5.6 million to the North American Wetlands Conservation Act fund to restore Massachusetts wetlands, DOJ said. The company also agreed to the monitoring of the Everett terminal by a court-appointed official for the next 3 years, they said. The terminal also will be subject to a rigorous environmental compliance program. ✦

New SEC rules: too late for '08

Publicly traded producers were elated when the US Securities and Exchange Commission (SEC) adopted new oil and gas reserves disclosure regulations Dec. 29, 2008. They also wish it had happened sooner.

"It's unfortunate that the rules weren't modified before now. It's good news they're changing, but not soon enough to help producers in 2008," explained Frederick Lawrence, the Independent Petroleum Association of America's vice-president of economics and international affairs. "Generally speaking, we think they're still a huge improvement over the very archaic rules which previously were in place."

The new rules take effect Jan. 1, 2010, so producers still have to limit 2008 estimates to proved reserves. They also must use a Dec. 31, 2008, price to determine the reserves' estimated value.

"We have a lot of concerns remaining, and I expect to hear during our investors' conferences about how these rules affect companies from 2008 to 2009. Access to capital wasn't a big issue for our members in the 1990s. It is now," Lawrence told me Jan. 5.

Three big improvements

The new regulations contain three major improvements, he said. The first is the 12-month average price. Lawrence said the old system could be a blessing or a curse depending on markets during the year. Prices fell during 2008's second half, so most producers will show a decline in yearend estimates from 2007.

"There also [will be] the ability to use 3D seismic, hydraulic fracturing, and other modern technologies to show reserves. It will be important to be able to show more clearly what resources are in the ground without having to drill for them," Lawrence said.

"Considering the possible and probable reserves also will be a factor," he said. "Just being able to include nonconventional formations in reserves will help our members, who are focusing more on shales and coalbed methane."

Impact of estimates

Reserve estimates matter: They affect a producer's balance sheet and market capitalization. Investors pay close attention to both indicators.

"The whole issue of financial leverage and credit is high on everyone's list this year. The balance sheet certainly will be affected by these changes from one year to the next," Lawrence said. "There could be a one-time jump in reserve estimates in 2009 for a lot of these companies. [But] 2008 will still be a tough year as they go into the new year with their balance sheets hammered down by the yearend pricing rule."

Having to use numbers prepared under the old rules could affect ceiling tests, amortizations, and how producers' debt is rated at a time when credit markets have grown tighter, he added.

Adoption of the new rules is significant and most welcome, Lawrence emphasized. "[SEC] has been understaffed in several key areas. . . .To learn oil and gas production intricacies, they worked hard to process the information and move quickly." ✦

LNG firms struggle with investments in volatile market

Uchenna Izundu
International Editor

Gas companies are uncertain whether to make LNG investments as gas demand falls due to high prices and the economic downturn, speakers said at the CWC LNG summit in Barcelona.

The financial crisis will affect the pace of future projects, cautioned Elizabeth Spomer, BG North America's senior vice-president of regional business.

Despite shaky demand, Spomer expects to see 50% growth in global LNG production capacity over the next 3 years resulting in choice for buyers, but she also warned of a supply crunch in 2012-15 as developers scale down plans for new production facilities. "We are about to see a supply surge…It is really unprecedented," she said.

Spomer estimated that 14 million tonnes of LNG would be delivered from the Atlantic basin to Asia in 2008—double what was sent in 2007.

But Asian demand is falling and operators are unsure of which projects to pursue, as it is unclear what global LNG demand will be. "Markets don't know how much gas they need," Spomer said. "With that kind of uncertainty it's very difficult to do business."

Return to fundamentals

However, Octavio Simoes, vice-president of commercial development at Sempra LNG, was more upbeat about the outlook for LNG. "We don't think there will be significant demand destruction" or that over the next couple of years prices will be greatly affected. "Natural gas is being driven because of environmental reasons," Simoes said.

Simon Bonini, director of LNG at Centrica Energy, said that as the UK becomes a major LNG importer, producers will have to take a long-term view on gas prices. By 2010, the UK will import 50% of its gas needs, and this will rise to 75% by 2015 as the decline of gas production on the UK continental shelf is steeper than anticipated.

"The effects of the new changes in the [global] LNG market have not yet been understood, and we have seen very extreme changes," he said. "We need to make sure that we diversify and have a quality portfolio."

With the steep increase in oil prices, LNG sellers increasingly have diverted cargoes upon arbitrage to higher priced markets, particularly the Asia-Pacific basin, leaving other buyers scrabbling for supplies. LNG buyers said good relationships with suppliers are essential, and they called for suppliers to charge reasonable prices in establishing contracts.

For emerging economies, the key issue will be: when will they realize their potential? "It's important to have long-term contracts between sellers and buyers even with the growth of spot LNG," said Kentaro Morikawa, senior vice-president of LNG Europe at Tokyo Gas Co. Ltd. "LNG can be sold at a reasonable price so that sustainable growth can happen."

His comments were echoed by Jose Simon, gas supply vice-president at Iberdrola, who stressed that the nature of the LNG business is long-term, and cooperation between producers and consumers is critical. Where to secure supplies has been a growing quandary, and a trend has emerged: Downstream companies have moved further up in the chain, and producers have moved downstream to offtake their gas.

Changing business models

The changing market means players have become more flexible in their commercial agreements, and they have changed their business models. Speakers agreed new technologies and operational concepts must be developed to address the new dynamics.

Steven Sparling, partner at US law firm Sutherland, called for operators to determine early in their LNG project whether their ships can access the planned terminals when desired. He stressed the importance of vetting information as many companies had failed to do so, assuming that someone else in the process had. "You need to assess the state of play, commercial perspectives, operational flexibility, legal rights, and obligations—both regulatory and contractual. People need to find out who's at the terminal, what is their arrangement, and how will that affect yours."

LNG contractors have been hit by soaring costs of commodities, labor, and materials as demand has increased over 4 years. Gerald Humphrey, vice-president of business development for global LNG, Chicago Bridge & Iron Co. NV, said structural steel had gone up by 300-350% over the last 4 years, while copper had risen 350%. Currency fluctuations of 15% variance have added to project development costs. "Project complexity has also increased costs; we were doing trains of 3-4 million tonnes/year in size, but now, for example, in Qatar they are 8 million tonnes/year. Big projects put a strain on the chain." Contractors' net profits have been 1-5% on projects.

Operators are hopeful project costs will fall as have commodity prices. The question is: How long will prices drop, and at what level will they stabilize? These factors are influencing investment decisions, delegates told OGJ.

Humphrey estimated commodity prices would be stable until second-quarter 2009. With varying factors, his company is promoting to clients a "hybrid model"—not quite a lump sum contract or a reimbursable one—to help spread the risk. He told OGJ that a third of the firm's contracts with clients fall under this new model.

"The IOCs are accepting it very quickly, and some national oil companies are being hesitant. People now ask for bid validity, which was unheard of before," he said. ✦

Analyst notes changing global, Chinese LPG trade patterns

Demand patterns for global LPG trade will change in the near term, according to New York-based Poten & Partners, a global broker and commercial advisor for energy and ocean transportation industries, in its December issue of LPG in World Trade.

In the same study, the consultancy explained recent unexpected patterns in Chinese LPG supply and demand in terms of one dynamic: price.

Poten & Partners noted the reversal in West-to-East LPG trade patterns that had dominated global trade for the last 5 years; trade is now East-to-West. This contrasts with LNG trade patterns in which tight supplies have been and will continue to move to the East.

Until 2008, targeted LPG retail growth markets in the East have been the large populations of China, India, and Indonesia. But China's LPG demand "has stalled," said the consultant. India's LPG markets are hampered by continuing domestic price subsidies. And in Indonesia, the "problem is infrastructure."

Markets in these countries will not "be able to absorb the increasing LPG volumes on the international market," according to the study.

Poten & Partners noted that rising LPG imports to China 2002-04 had once underpinned demand growth in the Far East. Investors looking in the future, however, failed to see the extensive new refinery capacity developing in China's hinterland and to anticipate fully the added LPG production that would result. Import infrastructure for LPG that developed at the time was underutilized, as a result.

Rather than growing, Chinese LPG imports have fallen since their 2004 peak. For 2008, says the consultancy's analysis, LPG imports were 2.4-2.6 million tons, compared with 8 million tons for 2004.

This unexpected trend—China's disappearance from the international market—can be explained by price: "High and rising international prices since 2004 forced China out of the market."

The downward trend of Chinese LPG imports appeared to have reversed in November 2008, when Chinese buyers bought 130,000 tons of spot November LPG deliveries. "The impetus [was] again price—international prices [had] fallen below domestic prices which although deregulated are based on government-controlled crude prices," said Poten & Partners.

The recent supply and demand dynamics in China's LPG market since 2004, before which China was the Far East's second-largest LPG importer, are unlikely to end soon. Major changes have occurred to the amount of LPG produced in Chinese refineries and to those consuming the LPG, says the Poten study.

To compensate for the effects of government control of markets for refined products in China, refiners often "maximize their LPG production to capitalize on comparatively lucrative free-market LPG sales." A surge in Chinese refining capacity since 2000 has effectively backed LPG imports out of China.

Barring changes to the regulatory structure, says Poten & Partners, China's refiners will "continue to maximize LPG production over that of other products until refinery gate prices reach a floor set by the international LPG market."

On the consumption side, many "light industrial units have closed since the start of [2008], taking with them valuable outlets for LPG."

In summary, says the consultancy, "domestic LPG production capacity is high and growing while LPG will lose some of its demand base for the short term at least." ✦

Moody's downgrades independent E&P industry

Moody's Investors Service has changed its outlook of the independent exploration and production industry to negative, citing the "precipitous decline" in oil and natural gas prices to levels that are likely to result in abnormally low cash margins and fundamental credit deterioration.

"This increased likelihood of fundamental credit deterioration beyond our normal cyclical expectations is a key driver for our negative outlook," said Peter Speer, Moody's vice-president and senior analyst.

"In addition, the potential reduction in credit availability to the speculative grade companies also weighed heavily in our forward view," Speer said.

According to Moody's, there is significant risk that E&Ps have entered a prolonged period of abnormally low cash margins and returns due to persistent demand-driven price declines' outpacing cost reductions and supply response.

"Many E&Ps had fully ramped up capital spending and were increasing leverage just as the market turned," said Speer, "as a result, some companies are ill-prepared for a downturn."

Moody's noted the roller coaster ride oil and gas prices were on in 2008. "Our long-term fundamental ratings for these E&P companies are driven by their scale, cost competitiveness, capital productivity, and leverage profiles—not by commodity prices," said Speer.

However, the extreme reversal in prices over the past 6 months followed an enormous ramp up in E&P capital spending that could not be throttled back as fast as prices declined.

Speer noted that, overall, most investment-grade E&Ps have sufficient cash resources, committed credit availability, and flexibility in their capital expenditures to manage through current low commodity prices.

However speculative-grade E&Ps are at great risk of bank borrowing base reductions.

According to Moody's, key issues in the coming year include the cost of oil field services, the impact that global macroeconomic fundamentals have on oil demand and prices, and the expected adjustment in response to lower E&P activity. ✦

Algorithm helps define final 3D seismic survey polygon

Khalid Amin Khan
Muneer Ahmad Khan
Ghulam Abbas
Oil & Gas Development Co. Ltd.
Islamabad

Gulraiz Akhter
Zulfiqar Ahmad
Quaid-i-Azam University
Islamabad

The design of a 3D seismic survey depends on a number of field parameters that control the patch geometry and layout of source and receiver lines.

A 3D seismic survey is planned over a subsurface geologic target area, usually picked from interpreted 2D migrated seismic data. Due to the presence of dips, this migrated subsurface area is expanded into unmigrated surface area, which in turn is further expanded into the final survey area, in order to get full fold coverage over the target area.

In most cases, except star and radial layouts, the initial design starts with source and receiver lines in the form of a rectangular grid, which is interactively clipped at the edges according to the shape of the expanded geologic target area.

Several software applications are available with a whole range of 3D survey design and analysis capabilities, but they do not provide an automated procedure for geologic target area expansion and clipping of source and receiver lines within the final survey boundary.

This article presents an algorithm for expanding the subsurface geologic target area polygon into the final survey area polygon, on the basis of migration aperture and fold taper zone and finally, clipping the source and receiver lines within this expanded survey area polygon. The working of the algorithm is demonstrated through a practical example.

Introduction

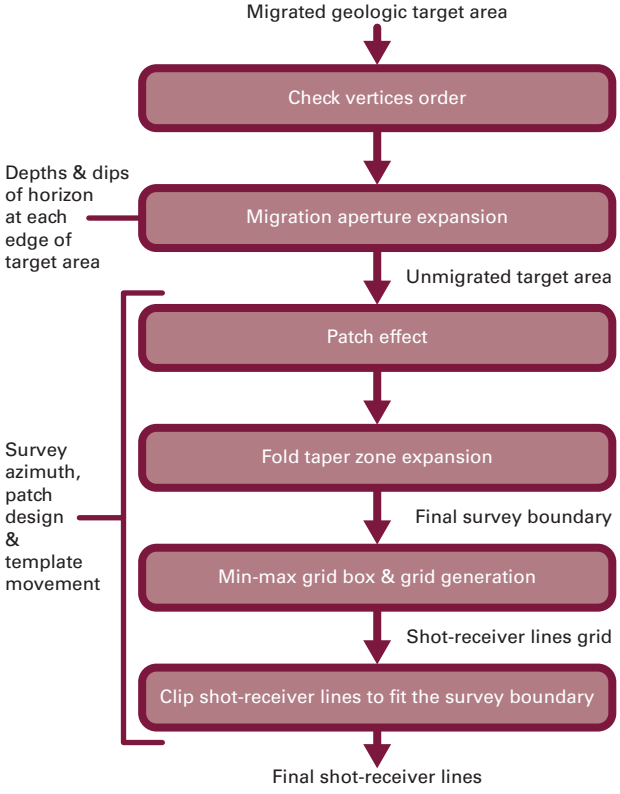
In a 3D seismic survey, exploration objectives of delineating the geologic target are achieved through optimization of seismic acquisition parameters, which in turn govern the bin size, patch geometry, template movement, and subsequent field layout design. Cordsen et al.[1] discussed in detail these parameters, their relationship with patch geometry, and selection of appropriate field layout design that fulfills these objectives.

Several software applications are available for planning and design of 3D surveys. In most of these applications the field layout is initially designed with respect to an arbitrary origin and bounded by a rectangular box oriented along zero azimuth.

After analysis of parameters, the final layout is georeferenced by assigning real geodetic coordinates to its origin and rotated to align along the survey azimuth, which usually approxi-

Processing algorithm

Fig. 1



Equations

$$\phi_i = \tan^{-1}\left(\frac{y_{i+1} - y_i}{x_{i+1} - x_i}\right) \quad (1)$$

$$d = \sum_{i=1}^{n-1} m \quad (2)$$

$$MA = Z \tan \theta \quad (3)$$

$$R_f \cong \frac{1}{2} V_{ave} \sqrt{\frac{t}{f_{dom}}} \quad (4)$$

$$S1: \quad x_1 = x_i + \cos(\phi_{i-1} + 90\ S)\ MA_{i-1}$$
$$y_1 = y_i + \sin(\phi_{i-1} + 90\ S)\ MA_{i-1} \quad (5)$$

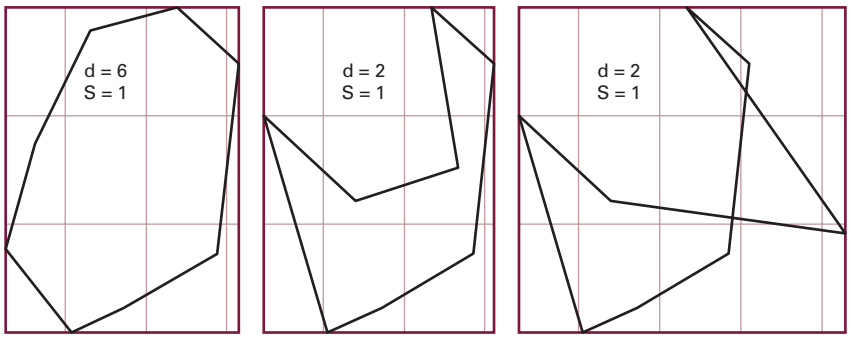
$$S2: \quad x_2 = x_1 + \cos(\phi_i + 90\ S)\ MA_i$$
$$y_2 = y_1 + \sin(\phi_i + 90S)\ MA_i$$

$$FTi = \left(\frac{Fi}{2} - 0.5\right)SLI \quad (6)$$

$$FTx = \left(\frac{Fx}{2} - 0.5\right)RLI$$

Polygon vertices order

Fig. 2



Determination of vertices order of convex (left), concave (mid), and complex (right) polygons. S = 1 indicates a clockwise order.

mates the dip direction of the subsurface target structure.

To make the survey cost-effective, the edges of the rectangular layout boundary are interactively edited, according to the shape of the target area, by deleting all source and receiver points that lie outside the survey boundary.

This survey boundary is usually computed, through a spreadsheet, by adding the widths of migration aperture and fold taper to all the edges of the geologic target area. The values of these widths vary for each direction therefore they are computed separately for each edge.

In this article an algorithm is presented that automatically expands the geologic target area polygon according to the widths of migration aperture and fold taper computed for each edge, aligns the edges along or perpendicular to the survey azimuth, and finally computes the survey area boundary. It also provides the exact georeferenced coordinates for the origin of the source-receiver lines grid layout and automatically clips all source and receiver points lying outside the survey boundary.

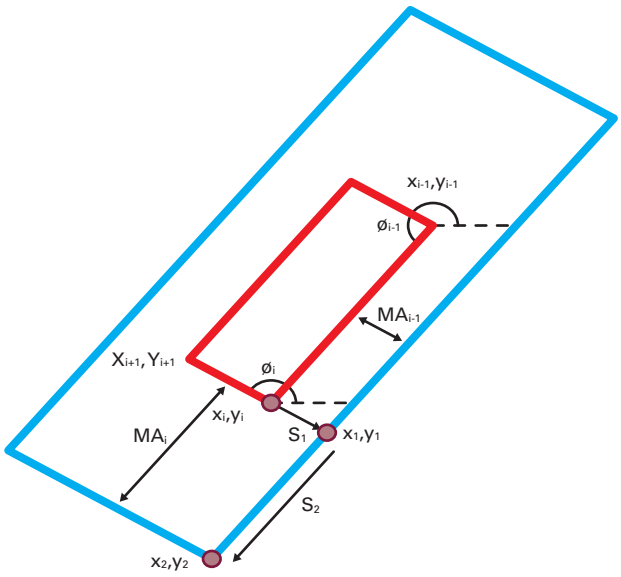
Polygon processing algorithm

All steps in the algorithm are summarized in Fig. 1. A practical example is used to discuss and show the results of these steps.

A geologic target area polygon is represented by n vertices; (x_1, y_1), (x_2, y_2), ...(x_n, y_n) with last vertex repeated

Application of shifts

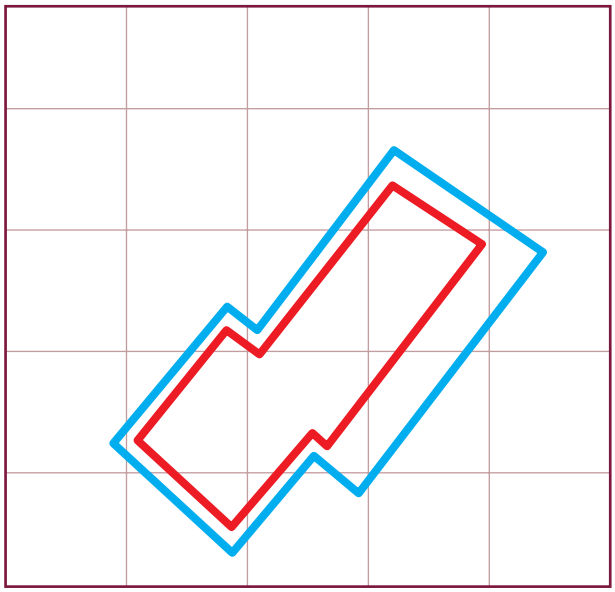
Fig. 3



Shifts S1 and S2 are applied to a vertex of a target area polygon (red) on the basis of migration apertures MA and geometric angles Ø of its adjacent edges. Such shifts are applied to each vertex to get the expanded migration aperture polygon (blue).

Polygon expansion

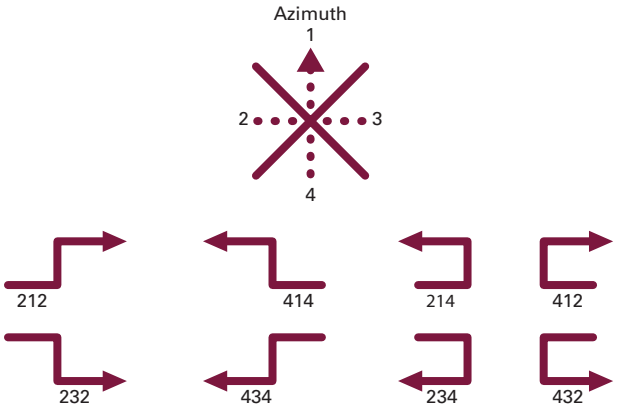
Fig. 4



Expansion of the target area polygon (red), on the basis of migration aperture, to get the migration aperture polygon (blue).

PATTERN CODES FOR EDGES

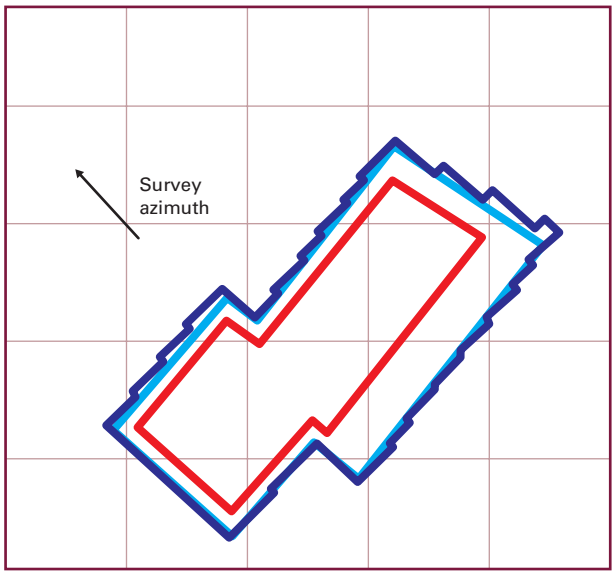
Fig. 5



Four quadrants (top), with pattern numbers, rotated 45° with respect to the survey azimuth. Pattern codes (bottom) for a combination of three consecutive edges, used to adjust the length and azimuth of these edges.

PATCH EFFECT—BREAKING OF EDGES

Fig. 6



Patch effect (dark blue), applied to the migration aperture polygon (blue), to adjust the azimuths of its edges along or perpendicular to the survey azimuth and adjust the lengths of its edges according to the patch size and its template movement increment.

as (x_0, y_0) to close the polygon. To expand the polygon in the outwards direction, the polygon vertices must be in clockwise order.

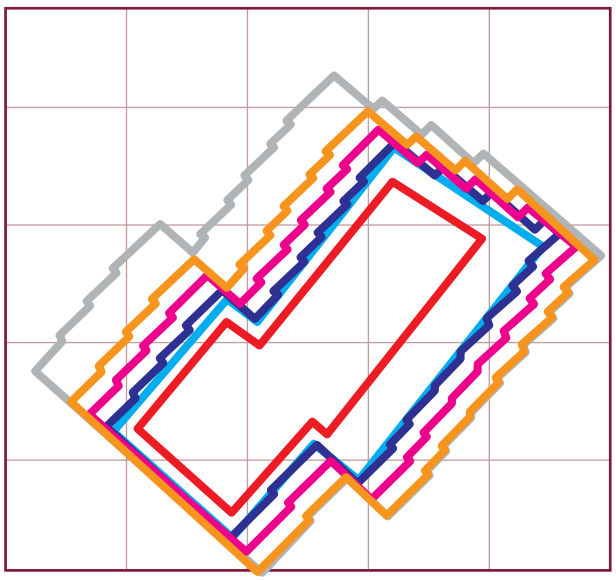
The algorithm must check the order of vertices and reorder them into clockwise, if found counterclockwise. Bourke[2] has suggested separate methods for determining the vertices order of convex and concave polygons. We have implemented a much simpler approach as discussed below. The geometric angle for a polygon edge is given by Equation 1 where i ranges from 0 to n-1, to get the angle for each polygon edge. Now to find the order of polygon vertices we have Equation 2 where m = 1 when $\varnothing_{i-1} - \varnothing_i > 0$ and m = −1 when $\varnothing_{i-1} - \varnothing_i < 0$. Thus for a clockwise order the value of d is positive, while for a counterclockwise order its value is negative.

This approach has been found successful in determining the vertices order of convex, concave, as well as complex polygons as shown in Fig. 2.

The geologic target area is usually based on migrated data. To allow proper migration of any dipping events, this target area must be increased for full-

FINAL SURVEY BOUNDARY POLYGON

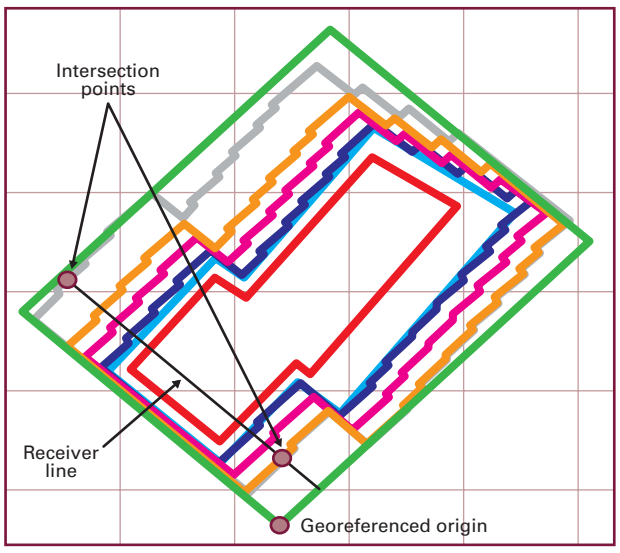
Fig. 7



Fold taper applied to migration aperture polygon with patch effect (dark blue), to get the half fold coverage polygon (pink), 1 fold coverage polygon (orange), and the final survey boundary polygon (gray).

SURVEY GRID BOX

Fig. 8



Minimum-maximum grid box (green) computed around the survey boundary polygon (gray). The lower corner of the grid box provides georeferenced coordinates for the layout origin. A receiver line and its intersections with the survey boundary polygon edges are also shown. These intersection points are used to clip all receiver points lying outside the survey boundary.

fold coverage by adding the migration aperture width to each side.

The migration aperture in a constant velocity medium is given by Equation 3 where Z is depth and θ is dip of the subsurface structure. The migration aperture must be greater than the radius of Fresnel zone which for zero offset is given by Sheriff[3] in Equation 4 where V_{ave} is average velocity, t is arrival time, and f_{dom} is the dominant frequency.

The migration aperture must be optimized for quality results as very small aperture causes suppression of steeply dipping events, while a very large aperture significantly increases acquisition costs without improving the quality.[4 5]

The value of migration aperture simply gives the widths to be added to the respective edges of the target polygon or the shifts to be applied to polygon vertices for expansion. It does not give any idea about the direction of shift. Practically each vertex is applied two shifts S1 and S2 perpendicular to its two adjacent edges in the outwards direction as illustrated in Fig. 3. The geometric angle Ø (Equation 1) and migration aperture MA (Equation 3) are computed for each edge of the polygon, which in turn are used for calculating the two shifts as given in Equation 5 where S = 1 when d 0: clockwise order. S = −1 when d <0: counterclockwise order.

Such shifts are computed and applied to each vertex of the target polygon to get the migration aperture polygon as shown, through an example, in Fig. 4.

The edges of this migration aperture polygon must be along or perpendicular to the survey azimuth and their respective lengths must be according to the size of the patch and its template movement increments. This adjustment is done through pattern analysis of the shape of the polygon.

In this analysis four quadrants are created with respect to ±45° of the survey azimuth and its opposite and perpendicular directions. Each quadrant is assigned a pattern number as shown in Fig. 5. Each edge of the migration aperture polygon is assigned a code on the basis of its azimuth lying in any one of the four quadrants.

In this way pattern codes are created for three consecutive edges (Fig. 5). These pattern codes are used to analyze the shape of the polygon with respect to patch orientation, size, and movement and accordingly adjust the length and azimuth of its edges.

If the edges of the migration aperture polygon are not along or perpendicular to the survey azimuth, then this adjustment breaks an edge into smaller edges that are aligned with respect to the survey azimuth, and their lengths are in accordance with the patch size and its template movement increment.

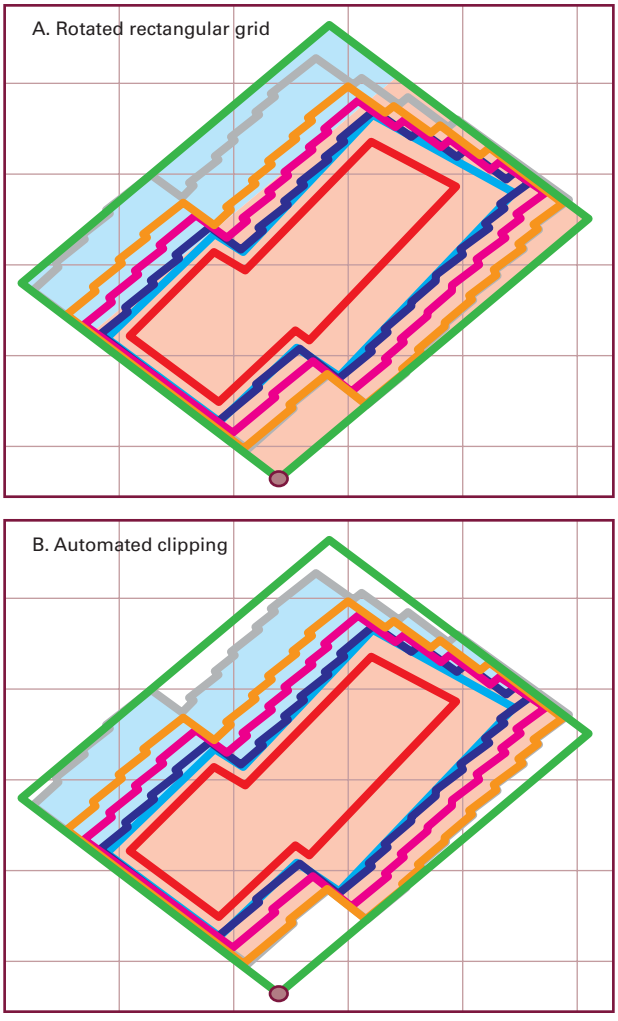
This breaking of edges is called patch effect, which is illustrated for the given example in Fig. 6. It must be noted that if the edges of the migration aperture polygon are already along or perpendicular to survey azimuth then the patch effect is not generated. In the given example (Fig. 6), we intentionally created a small difference in the survey azimuth and polygon edges to create the patch effect.

This adjusted migration aperture polygon is the area where full fold is required. Thus the fold taper zone must be computed along the in-line and cross-line directions and added to this polygon, similar to migration aperture, to get the final survey area polygon. Fig. 7 shows half fold coverage, one fold, and final survey boundary polygons for the given example. The in-line fold taper FTi and cross-line fold taper FTx are given by Cordsen et al.[1] in Equation 6 where Fx and Fi are cross-line and in-line folds, respectively, RLI is receiver-line interval, and SLI is source-line interval.

To find the georeferenced origin and size of the field layout, the minimum and maximum limits of the survey boundary polygon are computed in rotated axis. This can be done by apply-

Source and receiver points grid

Fig. 9



A. Source (pink) and receiver (blue) points grid georeferenced with respect to the lower corner of the minimum-maximum grid box. B. Source and receiver points grid clipped along the survey boundary polygon edges.

ing a rotation, equal but opposite to the survey azimuth, to all the vertices of the polygon and finding the minimum and maximum limits to get a min-max grid box.

The four vertices of the min-max grid box are rotated back to the survey azimuth (Fig. 8). One of its corners represents the georeferenced origin. Fig. 8 also shows a receiver line and its two intersection points with the edges of survey area polygon. All points lying between these intersection points are taken into account while the rest are deleted. In this way all source and receiver lines are clipped within the survey boundary.

Clipping example

Finally for the above discussed example, an orthogonal source and receiver lines grid is generated, with respect to the georeferenced origin and having a receiver interval of 50 m, source interval of 100 m, and source and receiver lines interval of 200 m.

The patch consists of 6 receiver lines each with 80 receiver stations and an end-on shooting template. As shown in Fig. 9a, the source and receiver lines are in the form of a rotated rectangular grid.

Due to the high costs of a 3D seismic survey, this rectangular grid needs to be clipped within the survey boundary in order to provide full fold coverage only at the desired unmigrated target area. Fig. 9b shows automated clipping of source and receiver lines grid according to the final survey boundary.

The result

The presented algorithm expands the initial unmigrated target area polygon to get the final survey boundary polygon, on the basis of migration aperture and fold taper zone.

It automatically determines the shift directions to be applied to each vertex for polygon expansion and aligns the edges along or perpendicular to the survey azimuth.

The algorithm also provides the exact geodetic coordinates of the origin with respect to which the field layout is georeferenced and clips all source and receiver points lying outside the survey boundary. It can be successfully applied to all field layouts, except star and radial designs. ✦

References

1. Cordsen, A., Galbraith, M., and Pierce, J., "Planning Land 3-D Seismic Surveys," Geophysical Developments No. 9, SEG, 2000, pp. 13-16.
2. Bourke, P., "Determining whether or not a polygon (2D) has its vertices ordered clockwise or counterclockwise," 1998 (http://local.wasp.uwa.edu.au/~pbourke/geometry/clockwise/index.html#clockwise).
3. Sheriff, R.E., "Nomogram for Fresnel-zone calculation," Geophysics, Vol. 45, 1980, pp. 968-972.
4. Schleicher, J., Hubral, P., Tygel, M., and Jaya, M.S., "Minimum apertures and Fresnel zones in migration and demigration," Geophysics, Vol. 62, 1997, pp. 183-194.
5. Sun, J., "On the limited aperture migration in two dimensions, Geophysics, Vol. 63, 1998, pp. 984-994.

The authors

Khalid Amin Khan (aminkhan@k-tron.net) is a research geophysicist and instructor at the Oil & Gas Training Institute of Oil & Gas Development Co. Ltd. He has 18 years of experience in geophysical software development, seismic data processing, and systems management. He has also worked for some time with CGG as a geophysical systems engineer. In 1998, he founded K-tron Research, a geophysical software company, where he has been involved in the development of various geoscientific applications. He holds an MSc from Quaid-i-Azam University, where he is a visiting faculty member.

Muneer Ahmad Khan joined OGDCL as field geophysicist and later worked as geophysical analyst at the company's seismic data processing center. He received training in seismic data processing from Digicon USA using DISCO software, and transferred to the Oil & Gas Training Institute in 1998. He presently works as chief geophysicist-instructor exploration and is engaged to develop and deliver new courses in seismic exploration. He has an MSc (geophysics) from Quaid-i-Azam University.

Ghulam Abbas is a quality control geophysicist on a seismic crew of OGDCL. He has 17 years of experience involving field operations, quality control, and 3D seismic survey design. He holds an MSc in geophysics from Quaid-i-Azam University.

M. Gulraiz Akhter (agulraiz@qau.edu.pk) is an assistant professor in the Department of Earth Sciences at Quaid-i-Azam University. His areas of interest are exploration geophysics and numerical groundwater modeling. During his 20 years of experience, he has taught mathematics, geophysics techniques, and hydrogeology. He has a masters in geophysics and a PhD in hydrogeology from Quaid-i-Azam University.

Zulfiqar Ahmad is professor and chairman, Department of Earth Sciences, Quaid-i-Azam University. He worked as geophysicist/hydrogeologist with Saindak Metal for 7 years and developed the potential groundwater aquifers in the Tahlab Valley in northwestern Baluchistan near the Iran border. He carried out geophysical studies on electrical resistivity, gravity surveys, and geophysical well logging of boreholes in Tahlab. His work experience includes teaching, research, and administration. He has a PhD with specialization in numerical groundwater flow and solute transport computer modeling from the University of Kentucky, an MSc in hydrogeology from University College, and an MSc in geophysics with specialization in gravity prospecting from Quaid-i-Azam University.

DRILLING MARKET FOCUS

Canadian companies reduce activities with price swings

Nina M. Rach
Drilling Editor

The high season for Canadian drilling should begin now, but many Canadian operators plan to scale back operations. Depressed commodity prices, increased operations costs, and the new Alberta royalty program all hurt drilling activity north of the US border.

Due to commodity price (and industry) pressure, the Alberta government recently announced a transitional, lower royalty for new wells drilled after Nov. 18, 2008, but this will probably have little effect on operators' plans to drill (OGJ Online, Dec. 17, 2008).

In response to a Nickle's Energy Group poll, 51% of respondents said their companies would still "decrease its capital budget for drilling in Alberta in 2009 because of low commodity prices, weak capital markets and higher Alberta royalties."

In November and December, Canadian Natural Resources, EnCana Corp., Imperial Oil, Petro-Canada, Royal Dutch Shell PLC, and Suncor Energy announced delays of various projects in Canada. Some processing projects were canceled outright.

Top Canadian drilling rig operators in December were EnCana (43 rigs), Husky Energy Inc. (30), ConocoPhillips Canada Ltd. (27), Talisman Energy Inc. (23), and Shell (18), according to Nickle's Rig Locator.

CAPP forecast

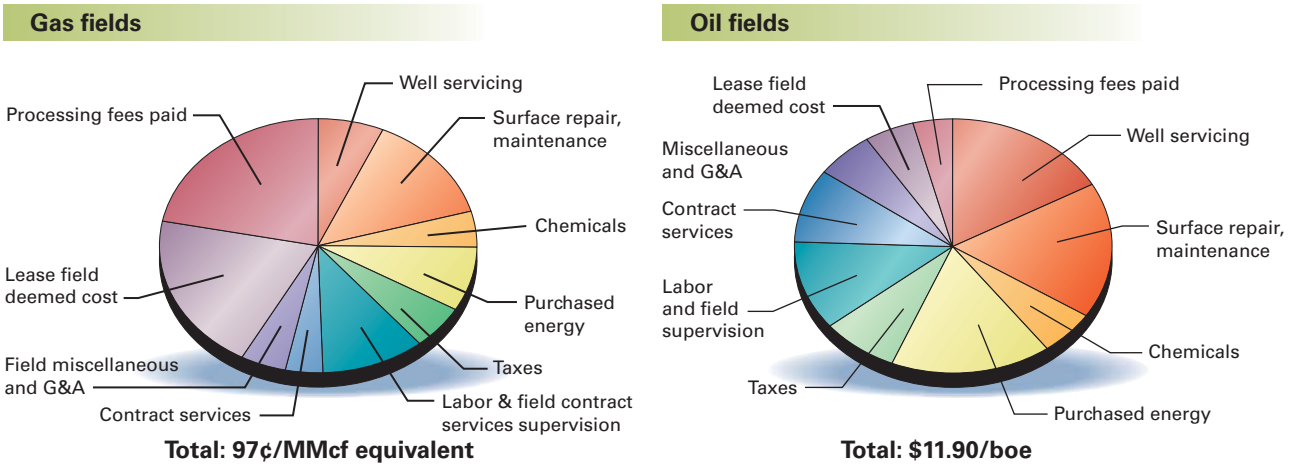
The Canadian Association of Petroleum Producers represents more than 95% of Canada's upstream oil and gas industry. In November, Greg Stringham, vice-president of markets and fiscal policy, presented CAPP's 2009 outlook and drilling and investment forecast. He said Canada is the world's third largest natural gas producer and seventh largest crude oil producer, but production has been affected by the downturn in global oil prices, new supply discoveries (North American shale gas; Bakken oil), financial market instability, and royalty changes in Alberta.

Stringham noted a regional shift in focus in Western Canadian Sedimentary Basin (WCSB) provincial Crown land sales from 2007 to 2008. Investment in British Columbia and Saskatchewan surged 400-500%, while Alberta investment dropped or remained flat.

Western Canada natural gas production continues to decrease. This averaged 15.8 bcfd in 2008, down from 16.4

AVERAGE 2007 OPERATING COSTS, WCSB*

Fig. 1



Source: *Western Canadian Sedimentary Basin study, 15th ed. By Ziff Energy Group; based on 300 fields and 32,500 producing wells

This Chicago Pneumatic CP50 rig was working through winter in the US (Fig. 2; photo by Dennis McLeod, provided by Major Drilling Group International Inc.).

bcfd in 2007 and 16.8 bcfd in 2006.

CAPP is forecasting $43 billion (Can.) in Canadian oil and gas investment spending in 2009, down from about $50 billion/year in 2006-07. In particular, spending on oil sands is expected to drop about 20% to $16 billion in 2009, and spending in the WCSB will drop to $25 billion from about $29 billion spent in 2008.

About 16,000 wells were drilled in western Canada in 2008; CAPP expects only 14,700 wells in 2009, an 8% decrease.

CAODC forecast

The Canadian Association of Oilwell Drilling Contractors estimates 14,325 wells will be drilled in western Canada in 2009, based on 9 drilling days/well and rather high commodity prices: $99/bbl (Can.) for WTI crude and $7.30/Mcf (Can.) for AECO gas, about double the prices in mid-December 2008.

CAODC sees an active fleet of 880 rigs and 55% utilization in first-quarter 2009, dropping to 17% in second quarter, rising to 40% in third quarter, and 45% in fourth quarter, for a average 39% utilization in 2009. CAODC puts 2008 utilization at 42%.

Trends

Operators and drilling contractors reported significant cost inflation in materials, fees, and labor rates.

Calgary-based Ziff Energy Group announced two major studies at the end of 2008. The 15th edition of its Western Canadian Sedimentary Basin study assessed upstream operating costs and production reliability, based on 32,500 producing wells in 300 fields. The study base produced 4.9 bcfd natural gas and 340 million b/d of conventional oil.[1]

Ziff found that weighted average unit costs increased 6% to $0.97/MMcf-equivalent in gas fields and increased 11% to more than $11.70/boe in oil fields. The main drivers were increased service and energy costs. Fig. 1 shows the relative significance of various factors affecting average operating costs.

Ziff announced the launch of a new SAGD drilling and cost benchmarking study in September 2008.[2] The study will analyze and benchmark the cost of 160 SAGD horizontal well pairs and more than 2,000 core wells.

Scott Jones, SAGD study project manager, told OGJ that Ziff is currently gathering data and working on study design and expects to complete the work in spring 2009. Study participants include ConocoPhillips Canada, Nexen Inc., Chevron Canada Ltd., Shell Canada Energy, Connacher Oil & Gas Ltd., StatoilHydro Canada Ltd., and Total E&P Canada Ltd.

Ziff noted that Alberta oil sands production has grown 160%, to 0.6 million boe/d over the 6-year period 2003-09, and Ziff analysts expect it to increase 120% to 1.3 million boe/d from 2009 to2015. Conventional oil production in western Canada will drop to 1 million bo/d in 2015 from an estimated 1.3 million bo/d in 2009.

Canadian oil sand producers launched a new website in June 2008 to cover environmental and social impacts of development through media stories, opinion pieces, and a public discussion forum (www.canadasoilsands.ca/en/).

Reorganizations

Various Canadian companies are reconsidering plans to split or spin off IPOs.

During a 2009 budget conference call on Dec. 11, Randy Eresman, EnCana Corp.'s president and chief executive officer, said, "Depending on market conditions, the company may divest between $500 million and $1 billion of noncore assets. If prices are weak in 2009, we expect to invest less and sell fewer noncore assets. If prices strengthen, we expect to invest more and sell more noncore properties."[3]

Marathon Oil Corp. Pres. and Chief Executive Officer Clarence P. Cazalot Jr. said on Dec. 11 that the company continues to evaluate a split of its assets and operations into two independent companies. Marathon's oil sands mining headquarters is in Calgary.

Market volatility

A common problem in this industry is that short-term price volatility threatens long-term strategic planning. Increasing production generally involves large capital expenditures and is hampered by a long time lag.

When operators succeed in their initial exploration programs, it generally

LONGFORZA CORPORATION

You need rigs. Not risks.

In a tight rig market, you don't have time to second-guess your supplier. That's a good reason to work with LongForza Corporation.

Straight-talking and no-nonsense, LongForza is a direct distributor of oilfield equipment from premium global manufacturers. And now, you have access to LongForza-supplied onshore drilling rigs in 1000-, 1500- and 2000-HP configurations.

With competitive pricing, aggressive timelines and turnkey services from crew leasing to financing, LongForza has what you need in today's market, including the most important thing – integrity.

Want to know more?

Contact Randy Hall
Blackberry/Email: ranhall@hotmail.com | P: 713-499-6330

Standards
Our manufacturers adhere to API, ASTM, ANSI, ISO and MilSpec and others.

Services
On-site rig-up training and testing are included in our competitive pricing.

Transparency
Who we represent and the warranties we offer – it's all on the table for our customers.

LONGFORZA CORPORATION

www.longforza.com

leads them to increase the number of rigs in order to drill and define reserves more quickly. Drilling results become critical to determine or refine land and lease strategy and to enhance shareholder communications. Continued drilling, however, depends on oil and gas prices remaining above proprietary economic thresholds under which exploration would stop or significantly slow.

In some areas, natural gas prices are beginning to fall below threshold prices for operators to proceed with project development. Oil prices falling to $40/bbl (US) has certainly affected the pace of heavy oil and bitumen projects in northern Alberta.

Price corrections do not necessarily have a significant impact on exploration programs, but they do affect development drilling and production infrastructure. The oil price surge in 2007-08 spurred new projects and investments in upgraded rig fleets and infrastructure. The current downturn suggests that some projects will be delayed and rigs sidelined as long-term, high-cost investments are sidelined.

Canadian scale-backs

On Dec. 15, CAPP announced that it scaled back its oil sands forecast. Oil sands now account for nearly 45% of Canada's total oil production (www.capp.ca). The organization expects Canadian oil sands production to reach 2.37 million bo/d in 2015, down nearly 400,000 bo/d from its annual forecast made in June. Greg Stringham, CAPP's vice-president of markets and fiscal policy, said, "There's relatively little change from our summer report through 2012, but there's a significant drop in 2012-15."

On Dec. 11, EnCana Corp. announced a $6.1 billion (US) capex budget for 2009 with the flexibility to "adjust investment by $500 million, up or down, depending upon how economic circumstances unfold during the year."[3]

Eresman said the company would apply a higher level of scrutiny to investment decisions through 2009, wary of current market uncertainty. The company will spend about $4.5 billion (60% of 2009 forecast cash flow) to maintain natural gas and oil production at 2008 levels, directing the money to "key resource plays."

Major Drilling uses 760-hp Schramm T130XD Rotadrill carrier-mounted drilling rigs with telescoping masts to drill for CBM in the US (Fig. 3; photo from Major Drilling).

EnCana will cut spending about 13% in Canada overall, to $2.3 billion in 2009 from $2.6 billion in 2008. It will increase spending in the Maritimes, however, staying on plan for Deep Panuke development.

Company managers said EnCana is running about 20 rigs in the Canadian foothills, including 15 deep rigs and 5 shallow rigs, all fit-for-purpose, and will continue with these through 2009. It also has 15 rigs on the Canadian plains but will average 5 rigs there through 2009, with a max of 10-15 in the winter drilling season. There are 10 rigs drilling multileg, horizontal wells at Weyburn, a sour crude oil play in southeastern Saskatchewan. In Alberta, EnCana will continue to use one or two rigs to drill SAGD wells at Christina Lake and at Foster Creek.

Petro-Canada also announced reduced budgets for 2009 on. Dec. 11, citing low commodity prices and financing uncertainty.

It will spend about $4 billion (Can.) in 2009, down from $6.1 billion in 2008. Pres. and Chief Executive Officer Ron Brenneman said Petro-Canada plans to drill about 12 wells internationally in 2009, including 3 wells in Alaska, 3-4 wells in Libya, 3-4 wells in the North Sea, and 1 on the east coast. This is down from 17 wells in 2008. It will not be drilling in Trinidad in 2009.

Major Drilling

In early December 2008, Major Drilling Group International Inc., based in Moncton, NB, reported results for its second-quarter of fiscal year 2009.[4]

Major Drilling has field operations and offices in Canada, the US, South and Central America, Asia, Africa, and Australia, with about 4,500 employees worldwide. The company says it provides "all types of drilling services including rotary, directional, reverse circulation, surface and underground coring, directional, reverse circulation, geotechnical, and environmental drilling, primarily to the mining industry." It focuses on specialized drilling services due to "intense competition in conventional drilling, particularly in Canada." The company says it can move rigs from oil and gas back to mining work when petroleum prices are low.

Rob Newburn is vice-president of operations for Major Drilling America Inc., based in Salt Lake City. The company's rigs and staff have evolved from Tonto Drilling Services, sold to Dynatec Mining in 1988 and then sold by Dynatec to Major Drilling in 2005. It now has about 200 employees in the US.

The company had five "energy-capable" rigs operating in the US by yearend 2006, focused on shallow gas drilling. It also does preset work, drilling and

casing tophole sections to 4,000 ft, and provides coring services out of its Utah office (Fig. 2).

Major Drilling America increased the size of its US fleet and had eight rigs drilling coalbed methane last winter, 2007-08.[5] The drilling fleet includes 760-hp Schramm T130XD Rotadrill rigs: carrier-mounted drill rigs with telescoping masts that handle Range III casing and can pull 130,000 lb (Fig. 3).

Major Drilling International added 61 new rigs to its fleet and acquired two South American assets during fiscal 2008:

- Exploration drilling company Harris y Cia Ltda., a specialized drilling firm active in northern Chile; 11 rigs; $23.9 million.
- Assets of exploration drilling company Paragon del Ecuador SA; 7 rigs; $6 million.

Adding new staff and rigs requires changes in training. Major Drilling employees in Mexico produced an orientation video that illustrated the correct way to work around drills and covered important safety practices, according to Newburn. It was augmented by 12 other training videos to establish a common skill level for all employees. This video library is now the planned standard for all Latin American operations.[6]

Expectations

Although the economic downturn continued to deepen at press time, the outlook for the oil industry remains unclear. The International Energy Agency offers a positive outlook, predicting that demand will be up in 2009.

Price fluctuations are nothing new in this industry, however, and oil companies will continue to explore and develop oil and gas resources, although at a more measured pace. They will continue to search out and employ new technologies to work more quickly and efficiently.

Innovative companies will devise intelligent approaches to optimizing data acquisition and processing. Economies of scale will encourage collaboration with partners and suppliers. Management will have to work hard to set appropriate analyst and stockholder expectations and manage projects and processes to defer avoidable costs.

We can probably expect to see further delays or cancellations of newbuild rig programs.

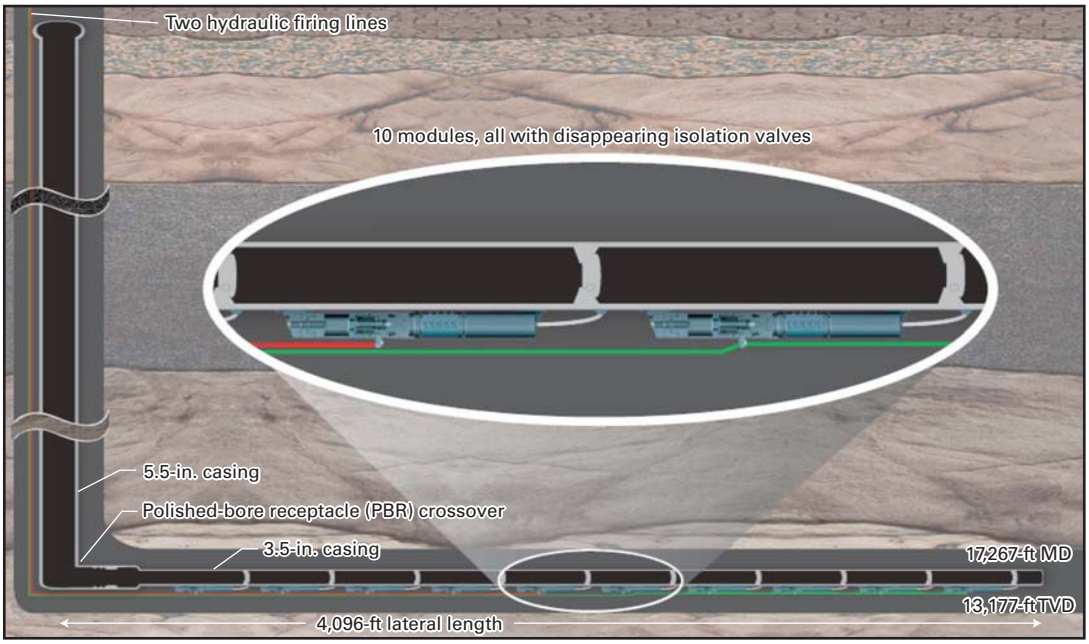
EnCana's Eresman summed up the company's outlook on Dec. 11, "With respect to cost inflation, we expect consistent downward pressure throughout 2009 with greater effect later in the year. Short-term impacts are expected to be offset by a number of factors including existing commitments and supplier inventory as well as moderate increases in labor rates. We do not expect our more measured pace in 2009 to have a significant impact on the long-term development of our key resource plays." ✦

References

1. "Canadian Operating Costs Continue to Soar," annual operations analysis, Ziff Energy Group, Nov. 25, 2008, www.ziffenergy.com.
2. "New SAGD Drilling Benchmarking Study Launched," Ziff Energy Group, Sept. 23, 2008, www.ziffenergy.com.
3. EnCana Corp. 2009 budget conference call, Dec. 11, 2008, www.encana.com.
4. "Major Drilling Reports Second Quarter Results," press release, Dec. 8, 2008, www.majordrilling.com.
5. Ettling, Greg, "The Major Evolution Continues—Part 1," National Driller, Jan. 2, 2008, www.nationaldriller.com.
6. 2008 Annual Report, Major Drilling Group International, www.majordrilling.com.

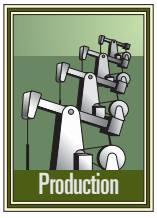
CANA 1-15H COMPLETION

Fig. 1



Woodford well perforated, stimulated without wellbore intervention

Guntis Moritis
Production Editor



Modules placed in the production casing string eliminated the need for wellbore intervention for completing a Woodford shale horizontal well.

Philip M. Snider, senior technical consultant for Marathon Oil Co., told OGJ that he believed this was the first time that perforating and fracturing jobs during a well completion had not required through-tubular intervention with jointed pipe, coiled tubing, pump-down techniques, or slick-line tools.

The well with the interventionless completion is the Cana 1-15H, in Canadian County, Okla. The gas well has a 17,267-ft measured depth with a lateral length of 4,100 ft. True vertical depth of the well is 13,177 ft. Marathon spudded the well during July 2008.

The completion of the 8¾-in. borehole includes a tapered cemented casing string consisting of 5½-in. casing to 62° and 3½-in. casing in the horizontal lateral with 10 modules for perforating and isolating intervals (Fig. 1).

Completion modules

The modules for the interventionless completion are new versions of the Excape casing-conveyed perforating and isolation modules developed by Marathon and marketed by BJ Services Co. and Expro Group (OGJ, Oct. 25, 1999, p. 69, and Sept. 2, 2002, p. 39). The modules consist of perforating guns outside the casing and an integral isolation valve within the casing.

A new feature in the modules allows one to break remotely the glass or ceramic isolation valve or flapper. Breaking the flapper in previous module versions required coiled tubing, jointed pipe, or slick-line intervention.

Fig. 2 shows the module assembly before and after perforating, after closing of the flapper before the stimulation treatment, and when the hydraulically actuated sleeve destroys the isolation valve.

Two or three hydraulic lines outside the casing provide the fluid for actuating the guns and operating the sleeve. The hydraulic lines will remain intact after firing the guns because the design

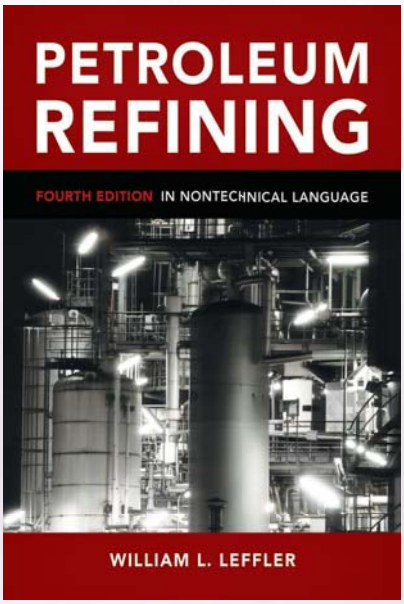
You don't need a stack of books to understand petroleum refining...

Just This One!

William Leffler – industry veteran, author and lecturer – has updated the third edition of his best-selling book, *Petroleum Refining in Nontechnical Language*. One of the petroleum industry's top nontechnical writers, Dr. Leffler makes the reader's journey through the difficult subject of the refining process informative and engaging!

Features and benefits:

- Basic understanding of the refining industry.
- Overview of key refining topics, using relevant analogies, easy-to-understand graphs, formulas, and illustrations.
- Exercises at the end of each chapter complete with answers.
- Excellent resource for self-study, as a classroom textbook, or as a quick reference.



New Fourth Edition

Approx. 270 Pages/Hardcover/6x9/Oct. 2008
ISBN 978-1-59370-158-1
Price $69.00 US

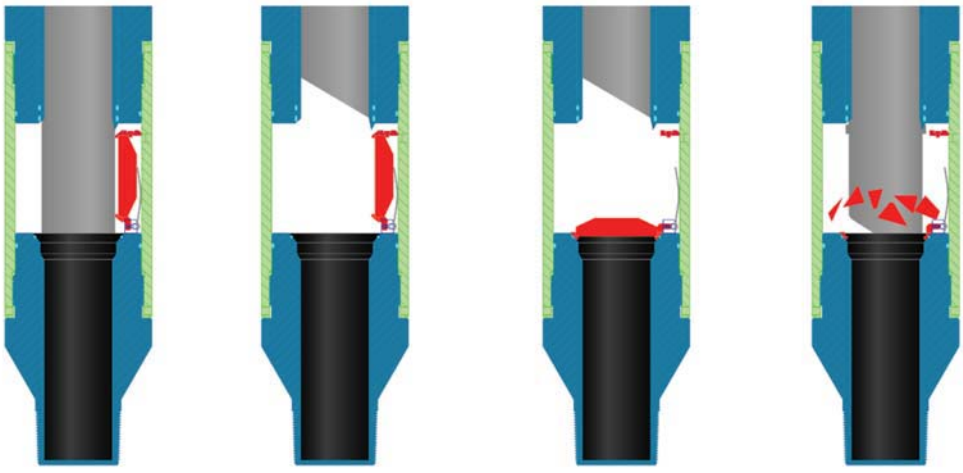
Order your copy today!

www.PennWellBooks.com | 800.752.9764

PennWell®

DISAPPEARING ISOLATION VALVES

Fig. 2



The module has a perforating gun external to the 3½-in. casing and an isolation device within the casing (Fig. 3). Photo from Marathon.

allows shot direction to be phased.

The lower most gun fires with the least hydraulic pressure and incremental increases in hydraulic pressure fire each successive gun. For instance, the lowermost gun would fire with 2,000 psi at surface and 3,000 psi would fire the next gun.

The modules are typically 10-20 ft long, although Snider said they could be as long as desired, and 63 ft is the longest run to date.

The Cana 1-15H well had 10 casing-conveyed perforating modules run in the well (Fig. 4). Photo from Marathon.

The Cana 1-15H well had 10-ft modules spaced closer at the toe and wider at the heel because of rock-stress and fluid-flow friction considerations, Snider said.

In the well, the guns fired 10 shots/ft with 5 shots into the formation and 5 into the casing. The guns had Geodynamic Ltd.'s big-hole charges fired into the casing and deep penetrating charges fired into the formation.

Future wells will progress to the company's reactive metal charges.

After each module fired, the flapper closed and a water frac containing a low proppant concentration stimulated the zone. After each frac treatment, the sleeve in the module destroyed the flapper when the next module up hole fired and closed its flapper to isolate the zone below. Snider explained that the displacing fluid for the lower treatment formed the pad for the next treatment.

The modules also have X-profiles and polished bores in case there is a need to isolate the interval in the future.

Even though Fig. 1 shows all modules at the bottom of the 3½-in. casing, Snider said the Cana 1-15H may have

had modules oriented in various directions.

He said, for the well, no attempt was made to orient the modules, and perforation breakdown was not a problem.

Module performance

Snider said that the interventionless completion in Cana 1-15H saved about 2,784 man-hr compared with a conventional completion. He also emphasized that the time saved included 1,000 man-hr during which personnel would have been exposed to higher risk during conventional completion operations, an 84% reduction.

Marathon's statistics as of October 2008 indicate that it has installed 501 modules in 44 wells with a 100% success. It has attempted to fire 493 modules with only two not firing. Snider attributed one failure to a crushed hydraulic line at the surface and the other one to a Barnett well in which 2-3 years lapsed before attempts to fire the guns were made. In that Barnett well, only one of eight guns did not fire, Snider said.

Marathon believes its 99.6% firing success is slightly better than industry's overall success due to its more intimate knowledge of the system's capabilities.

Industry-wide, Marathon's statistics show that various companies have attempted to install 1,001 modules with 984 successfully installed in 96 wells. In firing attempts, only 23 modules of 946 did not fire (97.6% firing success).

For horizontal wells, the statistics show that companies attempted to install 329 modules and successfully installed 312 in 32 wells. In firing attempts, 13 of 303 modules did not fire (95.7% firing success). ✦

Italian refiner lowers turnaround maintenance complexity, costs

Bernardo Casa
Antonio Simonetti
Eni SPA
Sannazzaro, Italy

Giuseppe Falco
Marco Tonegutti
Boston Consulting Group
Milan

As part of a large operational improvement program for its refining and marketing division, Eni SPA, with the support of the Boston Consulting Group (BCG), developed a new strategy for turnaround maintenance of its refineries. The strategy was implemented in Eni's Sannazzaro de' Burgondi refinery in northern Italy, one of Europe's most complex refineries (see box below).

The new methodology for turnaround maintenance is part of a broader approach to operational excellence called "lean refining," aimed at eliminating waste in refining operations. Lean refining can help refiners maintain profitability, streamline costs, and enhance flexibility.

Reducing the complexity of maintenance turnarounds was key to improving the turnaround strategy because it is the main method for coping with recent trends in the engineering, procurement, and construction (EPC) industry of higher costs and less available manpower. Lowering the complexity of turnarounds also helps in larger refineries that have many sophisticated conversion units.

The new turnaround strategy consists of four major factors:

- Declustering process units.
- Using distributed maintenance for process-related shutdowns.
- Increasing the intervals between turnarounds.
- Optimizing the critical maintenance path.

Sannazaro refinery

Eni SPA built its Sannazzaro, Italy, refinery in 1963. It currently has a primary capacity of more than 170,000 b/d and a conversion capacity of 46.2%, which makes it one of the most complex and efficient refineries in Europe.

This refinery supplies northwest Italy and Switzerland with gasoline, gas oil, kerosine, LPG, and asphalt. Due to its flexibility, the Sannazzaro refinery can feed a wide variety of feedstocks, such as Russian, African, Asiatic, Caspian, and local crudes.

Maintenance trends

Recent refining margins have tended to fluctuate, in turn threatening refining profitability. Many companies, therefore, are implementing efficiency projects to reduce fixed costs to remain profitable in low-margin environments.

Maintenance costs, including routine maintenance and turnarounds, account for 35-45% of fixed costs for a typical refinery. Three factors influence maintenance operations and costs for refiners.

First, the EPC industry is experiencing record-level backlogs and skyrocketing costs. Second, the average refinery size is increasing to enhance scale economies. Third, a greater need for high conversion rates requires the use of sophisticated, difficult-to-maintain units.

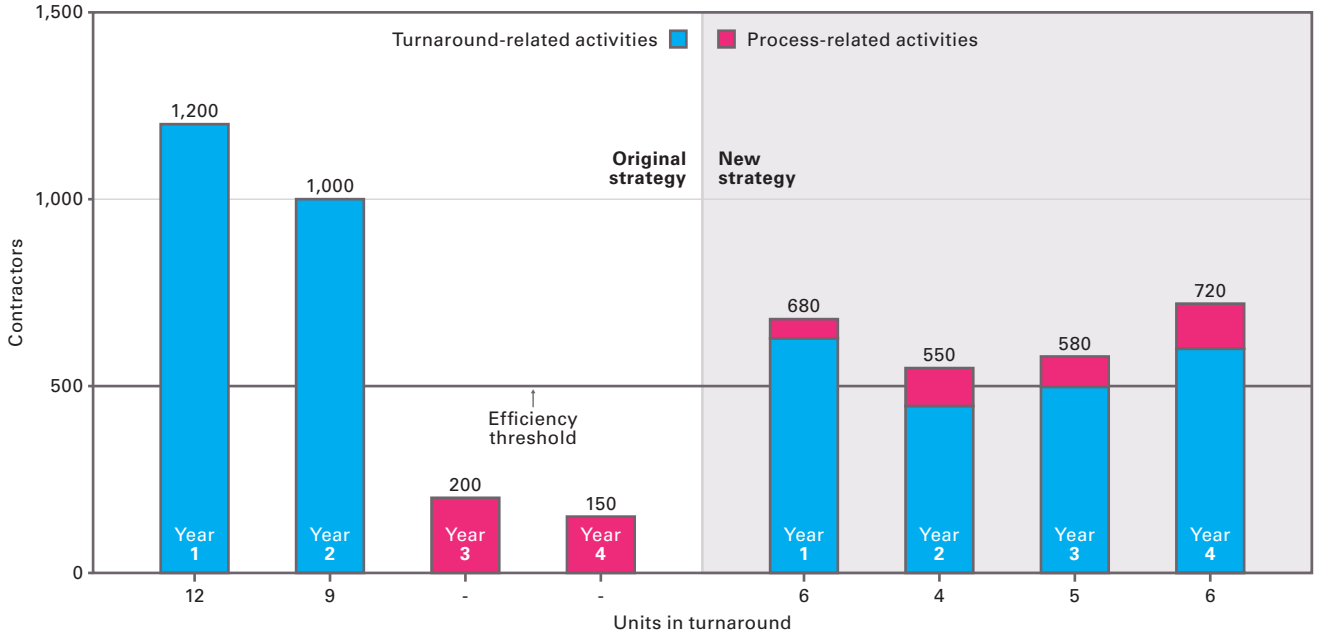
Unit declustering

Due to the characteristics of the Sannazzaro refinery, our original strategy was based on a turnaround cycle with two major, complex shutdown clusters involving more than 1,000 full-time employees each and an average of 10 units. The new turnaround strategy aimed to minimize the number of units down at the same time, which defined four smaller unit clusters with an average of five units each with an average of 600 full-time contractors (Fig. 1).

This reduced the number of external contractors involved in a given turn-

New turnaround strategy

Fig. 1



around, while increasing their efficiency allowing us to:

- Overcome the limited availability of skilled workers.
- Limit interference among maintenance workers by limiting concurrent work on adjacent units. This also decreased idle time due to lack of physical space, safety requirements, and the use of such shared resources as cranes.
- Increase the internal maintenance team's supervision level of maintenance operations, allowing better control especially for unexpected work such as unplanned work discovered during the turnaround.

Distributed maintenance

Another important innovation to reduce turnaround complexity is to take advantage of process-related shutdowns to perform turnaround maintenance work.

Eni, for example, performs turnaround maintenance for all the catalytic units that need to shut down to change or regenerate catalyst. These units include hydrocrackers, desulfurization units, and catalytic reformers.

This approach has two major advantages.

First, these catalytic units do not need a complete turnaround shutdown anymore but are maintained by a number of small and frequent "maintenance pit stops," resulting in both a relevant reduction in downtime and a decrease in complexity of a given shutdown.

Second, the higher frequency of these pit stops (catalyst regeneration normally occurs with a shutdown interval of 12-18 months) gives the refiner much flexibility in planning for specific maintenance work for a given pit stop or for the next one. Previously, our original strategy had more rigidity because specific work could only have been performed during a given shutdown or during the following turnaround at least 48 months later.

Turnaround interval increase

Shutdowns for maintenance occur for three main reasons:

- *Efficiency recovery.* Heat exchangers, air-coolers, and other equipment progressively lose efficiency and must be cleaned to recover their functionality.
- *Reliability.* Corrosion due to chemical elements such as sulfur or mechanical-creep cracking can disrupt unit equipment operations.
- *Regulatory.* All inspections required by law.

The project team segmented the "need" for maintenance on each piece of equipment in all the major process units based on the three factors. They used advanced engineering techniques such as risk-based inspections.

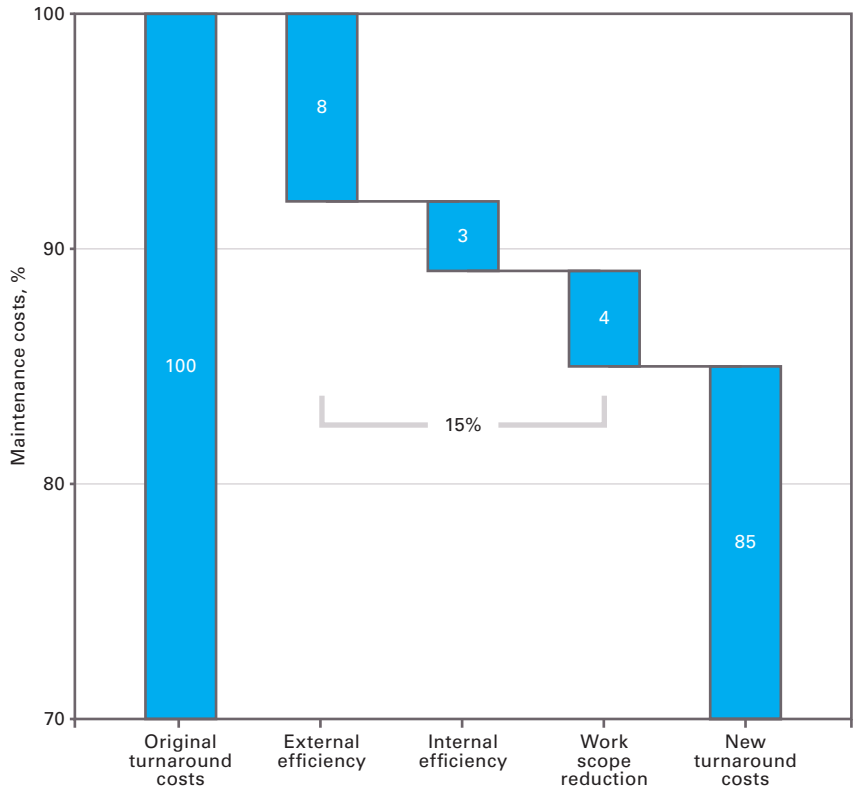
The key outcome of the analysis is defining a turnaround interval, not for the whole unit, but for each type of equipment in a given unit. With the original approach, the turnaround interval was set using the unit's equip-

Desulfurization unit equipment

Table 1

	Maintenance interval, years			
Equipment	Current	Efficiency	Reliability	Regulatory requirement
Furnaces	4	4	4	8
Reactors	4	4	4	8
Reactor exchangers	4	6	4	8
Vessels	4	6	6	8
Columns	4	8	8	8
Other exchangers	4	6	6	8

REDUCED MAINTENANCE COSTS Fig. 2



ment with a minimum interval, whereas now every type of equipment can have its own turnaround interval, determined by its own maintenance needs.

Our analysis produced an increase in turnaround intervals for 25% of the equipment, to 6-8 years from an initial 4 years (Table 1). In particular, for a unit using distributed maintenance, it is easier to increase the equipment interval because pit stops are performed more frequently. An increase in interval can be done in relatively small steps—increasing the interval 1-2 years and not necessarily 4 years as a minimum.

Critical-path optimization

Reduction in turnaround downtime reduction was accomplished with two main optimization techniques: operation improvements and a new catalyst strategy.

Operational improvements included optimizing the allocation of workers to units based on actual workload and shift adjustments. This reduced shutdown critical paths.

REDUCED DOWNTIME Table 2

Unit	Reduction in downtime, days/year
Topping 1	1.7
Topping 2	2.0
FCC	1.2
Alkylation	0.5
Vacuum 1	1.5
Vacuum 2	1.5
Resid extractor	2.3
Hydrocracker 1	6.0
Hydrocracker 2	6.0
Desulfurization	5.5

The new catalyst strategy included keeping spare catalyst available. In most cases, the availability of spare catalyst allowed us to save off-site regeneration time during a shutdown for catalyst replacement.

Economic results

Increased turnaround efficiency allowed us to reduce maintenance direct costs and to lessen unit downtime (recovery of lost production margin).

The new strategy was implemented as a pilot project in the Sannazzaro refinery, which is Eni's top performing refinery in terms of maintenance costs. It is in the top end of the first quartile in Solomon benchmarking.

Turnaround maintenance costs decreased about 15% (Fig. 2), and a significant reduction in downtime occurred in many units. Hydrocracking downtime, for example, decreased 6 days/year (Table 2).

The new strategy, given the small size of the turnaround, enhances the flexibility to easily anticipate or defer shutdowns to exploit opportunities due to market fluctuations—shutting down when margins are low and keeping the refinery running when margins are high.

Method applicability

The described approach is especially useful in refineries characterized by:

The authors

Bernardo Casa is vice-president of technical services at Eni SPA's refining & marketing headquarters, responsible for maintenance and material management for a six refinery system. He is also the senior project manager in charge of the operational excellence program in refining and primary logistics that Eni R&M is currently undertaking. During his 20 years in refining, Casa has served in several managerial positions including refinery director, covering a broad range of issues such as refinery operations, maintenance and oil reclamation. He holds an MD in mechanical engineering from the University of Catania, Italy.

Antonio Simonetti is head of technical services and investment manager at Eni SPA's Sannazzaro Refinery. Previously he was responsible for maintenance and engineering of maintenance. His main areas of expertise during his 14-year tenure with Eni include maintenance, reliability, and technical services. Simonetti holds an MD in mechanical engineering from University of Genoa, Italy.

• Big size in terms of capacity or conversion, resulting in a compelling need to limit shutdown complexity through a turnaround strategy based on having relatively small clusters of units down at the same time.

• A significant number of units that have process-related shutdowns, such as hydrocrackers, desulfurization units, or catalytic reformers, in which the distributed maintenance approach can be beneficial.

• A shortage of skilled external workers; this encourages smaller shutdowns to achieve a workforce with an adequate level of technical skills.

Given the current trends of the refining industry, in which almost all the grassroots projects have a planned capacity of at least 250,000-400,000 b/d and demand is continuously shifting towards middle distillates, many refineries around the world can apply this concept. ✦

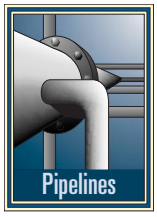
Giuseppe Falco is a partner and managing director at the Boston Consulting Group, Milan, and is BCG worldwide topic leader for downstream operations. He has experience in turnaround projects, operational improvement, and lean transformation programs in refining and energy, with more than 10 years of experience in the oil and gas industry in Western Europe, Russia, Central and Eastern Europe, the Middle East, and the US. Falco holds an MD in mechanical engineering from the University of Pisa and an MBA from the University of Milan.

Marco Tonegutti is a principal at BCG, Milan, and is a core member of BCG's energy practice group. He has several years of consulting experience in the oil and gas industry, leading many projects in operational improvement and lean transformation for a number of European energy companies. Tonegutti holds an MD in management engineering from the University of Turin and an MBA from SDA Bocconi, London Business School.

CASPIAN NATURAL GAS—Conclusion

Trans-Caspian pipeline remains contentious

Shamil Midkhatovich Yenikeyeff
Oxford Institute for Energy Studies
Oxford, UK



The routes Kazakhstan could use to export its natural gas resources are of interest to both potential customers and the region's other producers.

Kazakhstan's large natural gas reserves and limited domestic demand make the country an increasingly important potential supplier to consuming countries in both Europe and Asia. Its geographic position, meanwhile, makes it a potential transit nation for natural gas supplies moving from Uzbekistan and Turkmenistan to Europe.

The first part of this article examined the various land pipeline projects designed to export Kazakh natural gas. This concluding article will focus on the Trans-Caspian Gas Pipeline and the legal status of the Caspian Sea.

Trans-Caspian gas

Recent doubts about the reliability of Russian and Middle Eastern gas supplies have renewed European and American interest in the Trans-Caspian gas pipeline (TCGP) system. The project, actively lobbied for by the US in the 1990s, initially aimed to promote gas exports (up to 30 billion cu m/year; about 1 tcf/year) from eastern Turkmenistan via a subsea pipeline to the coast of Azerbaijan and on to Turkey.

The 1,020-mile pipeline was to cost $2-3 billion. The project was to ship 16 billion cu m/year of gas to Turkey and 14 billion cu m/year to other European consumers. Conflict between Turkmenistan and Azerbaijan over both gas share in the proposed pipeline and the division of Caspian hydrocarbon fields crippled the project.

Subsequent attempts by the littoral states to resolve the legal status of the Caspian Sea have failed, apart from a 2002 bilateral agreement between Russia and Kazakhstan on the division of Caspian hydrocarbon fields. Turkmenistan and Iran initially denounced the Russian-Kazakh agreement as contravening their legal rights, while Azerbaijan welcomed the deal.

Advancement of the Nabucco pipeline project has also helped reinvigorate European and US interest in the Trans-Caspian pipeline. The proposed 3,300-km Nabucco pipeline would run from Erzurum, Turkey, to the Austrian gas hub at Baumgarten. At Erzurum Nabucco would link with the Tabriz-Erzurum gas pipeline and the South Caucasus gas pipeline (Baku-Tbilisi-Erzurum), which in turn could be connected to a Trans-Caspian gas pipeline.

Nabucco would initially carry 8-13 billion cu m/year of gas, to be expanded by 2020 to 31 billion cu m/year. Estimated construction cost of the Nabucco pipeline totaled €7.9 billion in May 2008 ($12.3 billion).[1]

Nabucco Gas Pipeline International GmbH, formed in 2004, consists of OMV (Austria), MOL (Hungary), Transgaz (Romania), Bulgargaz (Bulgaria),

CASPIAN EXPORT PIPELINE PROJECTS

Pipeline	Capacity, billion cu m/year	Length, km	Construction	Export price, $/thousand cu m (2008)	Suppliers	Transit countries
CAC expansion	80-100.2	1,968	2012-15	150-190	Turkmenistan, Uzbekistan, Kazakhstan	Uzbekistan, Kazakhstan
Caspian Littoral	20-30	1,390-1,700	2009-15	150-190	Turkmenistan, Kazakhstan	Kazakhstan
Western Kazakhstan-Western China	10	1,480	2009-12	195	Kazakhstan	None
Turkmenistan-China	30-40	2,051	2008-10	195	Turkmenistan	Uzbekistan, Kazakhstan
Trans-Caspian	28-32	1,592 (to Turkey)	None set	120-130	Turkmenistan, Kazakhstan, Azerbaijan	Kazakhstan, Caspian Sea, Azerbaijan

Source: Gazprom, Kazmunaigaz

RWE (Germany), and Botas (Turkey), with each company holding a 16.67% stake. OMV leads the consortium. Gaz de France, the national oil company of Azerbaijan, and Kazmunaigaz (Kazakhstan) have all since expressed interest in joining the project.

Potential gas volumes for Nabucco could come from a variety of countries, including Azerbaijan, Turkmenistan, and Kazakhstan as well as Iran, Iraq, and other Persian Gulf producers. Political instability in the Middle East increases the likelihood gas volumes for Nabucco would come only from Central Asian suppliers.

Kazakhstan could become the entry point for Central Asian gas supplies shipped by the Trans-Caspian gas pipeline (TCGP) from Aktau on Kazakhstan's Caspian coast (near Tengiz field) to Baku, Azerbaijan. The TCGP could connect there to the South Caucasus gas pipeline. The Kazakhstan section of the TCGP would also connect via Turkmenbashi to Turkmenistan's Caspian fields.

TCGP would cover 1,592 km (about 989 miles), including onshore sections in Kazakhstan (600 km), Azerbaijan and Turkey (Baku to Erzurum, 692 km), and the 300-km offshore section crossing the Caspian Sea. Nominal capacity of 20 billion cu m/year could expand to 30 billion cu m/year.

Alternative methods of delivering gas from Kazakhstan and Turkmenistan include:[2]

- LNG.
- Compressed natural gas.
- Gas-to-liquids.

Several issues mitigate against construction of the Trans-Caspian and Nabucco pipelines; competition from other projects, Russia's well-known opposition to these projects and Central Asia's participation in them, and the still unclear legal status of the Caspian Sea.

Gazprom and Italian ENI signed a memorandum of understanding to build the 900-km South Stream pipeline in June 2007. The companies say construction will take 3 years following EU approval. The pipeline will run from the Russian Black Sea coast to Varna, Bulgaria, and then in two directions: to Greece and southern Italy (southwestern route), and through Serbia and Hungary to Austria (northwestern route). The pipeline's planned capacity is 30 billion cu m/year. The successful pursuit of South Stream, to be fed by the Caspian Littoral pipeline discussed in Part 1 of this article (OGJ, Jan. 5, 2009, p. 56) could work against completion of both TCGP and Nabucco.

The accompanying table summarizes currently discussed Central Asian natural gas pipeline projects.

Legal status

Apart from any questions regarding its economic viability, the proposed pipeline faces difficulties stemming from the uncertain territorial status of the Caspian Sea.

Only two Caspian littoral sates—Iran and the Soviet Union—existed before the 1991 collapse of the latter. The two signed bilateral treaties regarding the Caspian Sea in 1921 and 1940 but never established seabed boundaries or held consultations regarding oil and natural gas exploration in the area.

The primary current problem centers on whether to define the Caspian as an inland lake or a sea. If defined as a sea, the Law of the Sea Convention would apply and both full maritime boundaries and mineral rights of the five states would be established accordingly.

The Law of the Sea, however, does not apply to inland lakes, requiring that the Caspian either be developed jointly or that surrounding states reach agreements regarding its development.

An agreement on the legal status of the Caspian Sea will require not only Russian but also Iranian participation. The latter is highly unlikely given current tensions between Iran and the US. Russia has already voiced its concerns about the possible environmental effects of a Trans-Caspian gas pipeline and demands all Caspian countries be consulted before such a project commences.

Azerbaijan and Kazakhstan must also reach a consensus with Turkmenistan regarding the division of hydrocarbon resources in the area, contested since the collapse of the Soviet Union. Kazakhstan signed a hydrocarbon agreement with Russia in 1998 and Azerbaijan in 2001 but has so far been unsuccessful in reaching an accord with Turkmenistan.

Political circumstances also hinder other potential pipeline routes through Afghanistan to India and Pakistan or via Iran into Turkey and Europe (favored by Kazakhstan). ✦

References

1. "Nabucco pipeline cost rises to 7.9 bln euros," Reuters, May 28, 2008.
2. "Gas Exports to Europe: Transportation Alternatives," S.H. Lucas & Associates Inc., 2007.

Siemens AG,

Munich, Germany, has appointed Thomas Blades CEO of its energy sector's oil and gas division. He succeeds Frank Stieler, who successfully developed Siemens' oil and gas business since 2001 and is taking a new post as a board member at Hochtief AG. Blades has previously held managerial posts in various companies in the oil and gas industry. An electrical engineer, he started his career at Schlumberger, a leading global supplier to the oil and gas industry. During his time with Schlumberger, he spent several years in the Middle East. Following this, he successfully restructured and expanded several medium-sized companies in the US and Germany, respectively. Blades is a British citizen and speaks fluent German.


Blades

The oil and gas division of Siemens Energy is a leading supplier to the oil and gas industry. The portfolio includes solutions for power generation and distribution, compressors with electrical and mechanical drives, process and automation technology, water management, and integrated IT solutions. With a workforce of more than 16,200, the division achieved revenues of 4 billion euros in fiscal 2008.

Siemens' energy sector is a leading supplier of a complete spectrum of products, services, and solutions for the generation, transmission, and distribution of power and for the extraction, conversion, and transport of oil and gas.

Subsea 7 Inc.,

Westhill, UK, has successfully launched and installed its sixtieth pipeline bundle—a 1.3-km pipeline bundle for BP PLC's Machar field in the UK North Sea. Subsea 7 was awarded the $22 million fast-track contract in early 2008. The pipeline bundle incorporates a 12-in. sleeve system containing an 8-in., dry-insulated, lined production pipeline; 6-in., plastic-lined, water injection flowline; 3-in. gas lift line, electrical power and signal cables; and hydraulic and chemical controls tubing. The bundle was launched from Wick in northern Scotland on Dec. 8, and offshore operations were completed on Dec. 16. The project was managed and engineered from Subsea 7's offices in Aberdeen. Subsea 7 provided project management, detailed design, fabrication, onshore testing, subsea tow, and installation of the pipeline bundle. Bundle fabrication was undertaken at Subsea 7's Wester bundle fabrication base in northern Scotland. Subsea 7 has been using bundle technology now for over 30 years, and such technology remains important in subsea developments worldwide.

Subsea 7 is one of the world's leading subsea engineering and construction companies, offering all the expertise and assets that make subsea, umbilical, riser, and flowline field development possible. The company's global offshore operations are supported out of the North Sea, Africa, Brazil, North America, and Asia-Pacific regions. Subsea 7 has a fleet of industry leading, dynamically positioned ships capable of reeled and flexible pipelay, subsea construction, and saturation diving and a portfolio of pipeline construction yards worldwide.

Noble Denton Group,

London, has announced its acquisition of Standard Engineering and Brevik Engineering from Oslo-based Strata Marine & Offshore for 273 million kroner (Nor.). The purchase is subject to the to the approval of the Norwegian Competition Authority. The acquisition strengthens Noble Denton's market position in Norway, especially with regard to conversion and construction engineering skills, and expands the company's employee base by 20%. Anne Murer, CEO of Strata Marine & Offshore, will head up Noble Denton's new Norwegian region effective in 2009.


Murer

Noble Denton provides life-cycle marine and offshore engineering services to the oil and gas and renewable industries, combining practical seafaring skills and high-end analytical engineering expertise.

GeoEngineers,

Seattle, has added four new staffers to its Springfield, Mo., office. GeoEngineers has appointed Justin Brown as a staff geologist, Jennie Hart as a marketing specialist, Robert Hotz as a geotechnical engineer, and Thomas Talley as a staff horizontal directional drilling design (HDD) engineer.


Brown

Brown is a registered geologist in Missouri and joins GeoEngineers after working for a local environmental services company as an associate scientist for 3 years. He also has a Missouri Monitoring Well Drillers Permit and has experience in conducting environmental emergency response operations, producing risk assessment reports, and implementing soil and groundwater remediation systems. He has a BS in geology from Missouri State University.

Hart has more than 17 years of experience in the marketing and communications field. She most recently worked as a freelance writer and marketing director for a local accounting firm. She earned her bachelor's in advertising with honors at the University of Missouri.


Hart

Prior to joining GeoEngineers full time, Hotz worked as an intern with the company in 2007. He has also worked with the Madison County Highway Department in Edwardsville, Ill., and Midwest Testing in Bridgeton, Mo. Hotz has a BS in civil engineering from the University of Missouri at Rolla, Mo., and an MS in civil engineering with a geotechnical emphasis from the Missouri University of Science and Technology. He is also an engineer-in-training (EIT).


Hotz

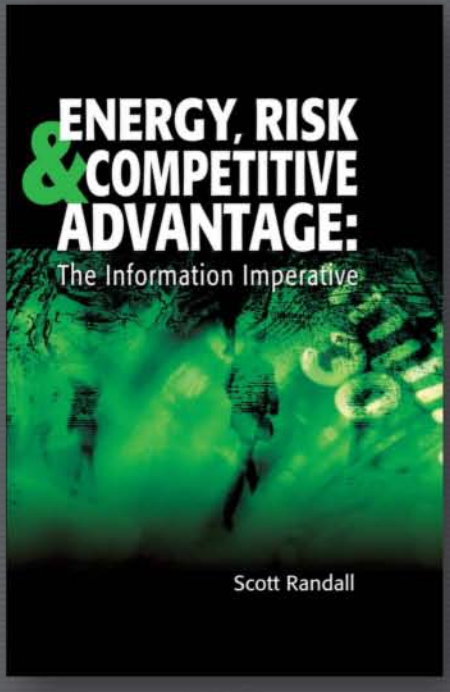
IT'S REALLY What You Know

Corporate risk identification and assessment are only as good as the data in the system. This is what many companies find as they try to integrate their corporate risk strategy and finance decisions. However, minimizing negative consequences and increasing competitive advantage opportunities won't happen without excellent market intelligence.

Author Scott W. Randall shows executives and corporate risk managers how techniques from industrial market researchers are essential to gaining adequate assurance, better corporate governance, and increased value for shareholders.

FEATURES AND BENEFITS

* A plan to limit the amount of garbage coming in to eliminate garbage going out.
* Learn to implement safeguards over the external processes that affect the accuracy of financial projections.
* Know how to properly assess a public energy company's ability to survive and grow through the energy commodities price cycles.



ENERGY, RISK & COMPETITIVE ADVANTAGE:
The Information Imperative
By Scott Randall

ISBN: 978-1-59370-134-5
Price: $85.00 US

NEW RELEASE!

PennWell

ORDER YOURS TODAY: WWW.PENNWELLBOOKS.COM


Talley

Talley is a recent graduate of the University of Arkansas at Fayetteville, Ark., with a BS in civil engineering. His work experience includes civil engineering internships with a Houston engineering firm and the Arkansas State Highway and Transportation Department. Talley is also a certified EIT.

GeoEngineers is an integrated earth science and technology firm with 15 offices in Missouri, Idaho, Washington, Oregon, California, Utah, and Louisiana. GeoEngineers is currently ranked as one of the top 20 HDD firms in the US.

Frost & Sullivan,

Mountain View, Calif., has recognized Honeywell Enraf with its 2008 Global Product Value Leadership of the Year award. Each year, Frost & Sullivan presents this award to the solution that has provided customers with the highest ratio for value-to-cost. Honeywell Enraf's comprehensive suite of blending products facilitates not only an accurate mixture of fuels, chemicals, and other materials but also minimizes the end-products' rejection rate. Honeywell Enraf has expanded its solutions from conventional fuels blending to include biofuels, and the company has established a leadership position for ethanol and biodiesel blending at truck loading racks.

Honeywell Enraf, part of Honeywell Process Solutions, supplies a broad range of solutions to include precision instrumentation and software systems for bulk storage operations.

Honeywell Process Solutions is part of Honeywell International's Automation and Control Solutions group, a global leader in providing product and service solutions that improve efficiency and profitability, support regulatory compliance, and maintain safe, comfortable environments in homes, buildings, and industry. Honeywell International is a diversified technology and manufacturing leader, serving customers worldwide with aerospace products and services; control technologies for buildings, homes and industry; automotive products; turbochargers; and specialty materials.

Frost & Sullivan's Best Practices Awards recognize companies in a variety of regional and global industries for demonstrating outstanding achievement and superior performance in areas such as leadership, technological innovation, customer service, and strategic product development. Frost & Sullivan partners with clients to accelerate their growth.

New protective eyewear offers 10 temple choices

Here is new StarLite GUMBALLS protective eyewear. Each box features 10 temple colors.

Glasses are only available with a clear lens and are lightweight, durable, and provide all-around impact protection, the firm says. GUMBALLS comply with ANSI Z87.1 and CSA Z94.3 and block 99.9% of UV-A and UV-B rays. Glasses are available in the standard StarLite size or as StarLite SM, which is 10% smaller for workers with narrow faces.

Source: **Gateway Safety Inc.,** 11111 Memphis Ave., Cleveland, OH 44144.

Parts for natural gas, methane engines

A new 61 page catalog features a full line of repair parts for Caterpillar Inc. G3300 to G3500 series natural gas and methane engines. Cylinder kits, bearings, seals, and valve train components are a few of the main items offered. Also gaskets sets are packaged in the trademarked IPD 1-2-3 system to make the repair job easier for the technician.

Source: **IPD LLC,** 23231 S. Normandie Ave., Torrance, CA 90501.

New tool detects sulfur species, VOCs in gas

The new Voyager (shown at right) gas chromatograph detects sulfur species and volatile organic compounds in natural gas production.

This portable gas chromatograph offers on-site capability for measuring critical sulfur species to establish the sulfur and VOC content in natural gas, thereby allowing production companies to quickly determine corrective measures for the scrubbing and removal of contamination.

Further, Voyager provides data logging capability so readings can be stored in the instrument and downloaded to a computer for subsequent analysis and record keeping purposes.

Source: **Photovac Inc.,** 300 Second Ave., Waltham, MA 02451.

Imports of crude and products

	Districts 1–4		District 5		Total US		
	12-26 2008	12-19 2008	12-26 2008	12-19 2008	12-26 2008	12-19 2008	*12-28 2007
	1,000 b/d						
Total motor gasoline	1,079	1,254	66	—	1,145	1,254	1,151
Mo. gas. blending comp.	905	1,064	66	—	971	1,064	687
Distillate	121	240	29	—	150	240	326
Residual	308	386	119	236	427	622	259
Jet fuel-kerosine	54	111	—	—	54	111	135
Propane-propylene	149	229	10	11	159	240	199
Other	210	134	23	–3	233	131	535
Total products	**2,826**	**3,418**	**313**	**244**	**3,139**	**3,662**	**3,292**
Total crude	**8,121**	**8,046**	**1,128**	**1,072**	**9,249**	**9,118**	**10,009**
Total imports	**10,947**	**11,464**	**1,441**	**1,316**	**12,388**	**12,780**	**13,301**

*Revised.
Source: US Energy Information Administration
Data available in OGJ Online Research Center.

Purvin & Gertz LNG netbacks—Jan. 2, 2009

Receiving terminal	Liquefaction plant					
	Algeria	Malaysia	Nigeria	Austr. NW Shelf	Qatar	Trinidad
	$/MMbtu					
Barcelona	12.08	9.48	11.30	9.38	10.62	11.23
Everett	7.29	5.41	6.97	5.52	5.89	7.55
Isle of Grain	7.57	5.67	7.02	5.58	6.15	7.04
Lake Charles	3.69	2.12	3.50	2.26	2.40	4.19
Sodegaura	7.11	11.20	7.38	10.92	8.21	6.56
Zeebrugge	10.93	7.57	9.49	7.47	8.08	9.59

Definitions, see OGJ Apr. 9, 2007, p. 57.
Source: Purvin & Gertz Inc.
Data available in OGJ Online Research Center.

Crude and product stocks

District	Crude oil	Motor gasoline		Jet fuel, kerosine	Fuel oils		Propane-propylene
		Total	Blending comp.[1]		Distillate	Residual	
	1,000 bbl						
PADD 1	13,357	60,488	36,542	8,879	53,311	13,031	3,140
PADD 2	78,298	46,810	18,070	6,946	28,827	1,105	18,419
PADD 3	158,502	66,910	34,141	10,891	37,190	16,684	31,805
PADD 4	13,822	6,983	2,302	586	2,749	277	[1]2,515
PADD 5	54,758	26,912	22,413	10,087	13,954	4,711	—
Dec. 26, 2008	**318,737**	**208,103**	**113,468**	**37,389**	**136,031**	**35,808**	**55,879**
Dec. 19, 2008	**318,188**	**207,295**	**111,738**	**37,347**	**135,337**	**35,993**	**58,199**
Dec. 28, 2007[2]	**289,577**	**207,842**	**101,315**	**39,026**	**127,177**	**39,595**	**54,367**

[1]Includes PADD 5. [2]Revised.
Source: US Energy Information Administration
Data available in OGJ Online Research Center.

Refinery report—Dec. 26, 2008

District	REFINERY OPERATIONS		REFINERY OUTPUT				
	Gross inputs	Crude oil inputs	Total motor gasoline	Jet fuel, kerosine	Fuel oils: Distillate	Fuel oils: Residual	Propane-propylene
	1,000 b/d						
PADD 1	1,213	1,205	2,247	78	429	112	63
PADD 2	3,033	3,005	2,113	154	1,030	50	168
PADD 3	7,113	7,006	2,796	588	2,339	262	620
PADD 4	519	515	343	27	190	12	[1]126
PADD 5	2,643	2,459	1,440	427	554	113	—
Dec. 26, 2008	**14,521**	**14,190**	**8,939**	**1,274**	**4,542**	**549**	**977**
Dec. 19, 2008	**14,912**	**14,511**	**9,090**	**1,390**	**4,404**	**628**	**993**
Dec. 28, 2007[2]	**15,584**	**15,382**	**9,070**	**1,463**	**4,275**	**670**	**1,171**
	17,610 Operable capacity		**82.5% utilization rate**				

[1]Includes PADD 5. [2]Revised.
Source: US Energy Information Administration
Data available in OGJ Online Research Center.

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

OIL&GAS JOURNAL online research center

OGJ crack spread

	*1-2-09	*1-4-08	Change	Change, %
	$/bbl			
SPOT PRICES				
Product value	46.80	108.59	–61.79	–56.9
Brent crude	35.71	99.09	–63.38	–64.0
Crack spread	11.09	9.50	1.59	16.7
FUTURES MARKET PRICES				
One month				
Product value	47.36	108.92	–61.56	–56.5
Light sweet crude	42.50	98.17	–55.67	–56.7
Crack spread	4.87	10.75	–5.88	–54.7
Six month				
Product value	56.67	110.43	–53.76	–48.7
Light sweet crude	51.92	95.78	–43.86	–45.8
Crack spread	4.75	14.65	–9.90	–67.6

*Average for week ending.
Source: Oil & Gas Journal
Data available in OGJ Online Research Center.

OGJ GASOLINE PRICES

	Price ex tax 12-31-08	Pump price* 12-31-08	Pump price 1-2-08
	¢/gal		
(Approx. prices for self-service unleaded gasoline)			
Atlanta	120.4	166.9	305.4
Baltimore	120.6	162.5	302.6
Boston	125.0	166.9	304.0
Buffalo	108.6	169.5	315.1
Miami	120.6	172.2	313.4
Newark	128.6	161.2	298.0
New York	115.3	176.2	303.0
Norfolk	122.1	160.5	304.3
Philadelphia	125.1	175.8	302.4
Pittsburgh	128.5	179.2	304.4
Wash., DC	143.8	182.2	302.0
PAD I avg	123.5	170.3	305.0
Chicago	114.7	179.1	332.9
Cleveland	114.4	160.8	303.5
Des Moines	121.0	161.4	299.1
Detroit	108.7	168.1	302.2
Indianapolis	107.7	167.1	303.6
Kansas City	120.0	156.0	291.0
Louisville	121.2	162.1	299.4
Memphis	115.0	154.8	300.4
Milwaukee	111.8	163.1	301.2
Minn.-St. Paul	116.1	160.1	298.1
Oklahoma City	113.1	148.5	287.2
Omaha	107.5	152.8	301.9
St. Louis	126.7	162.7	299.4
Tulsa	120.4	155.8	283.8
Wichita	111.1	154.5	288.8
PAD II avg	115.3	160.5	299.5
Albuquerque	130.1	166.5	300.1
Birmingham	123.8	163.1	292.8
Dallas-Fort Worth	123.0	161.4	287.5
Houston	113.7	152.1	288.4
Little Rock	119.3	159.5	293.8
New Orleans	125.4	163.8	300.3
San Antonio	120.7	159.1	288.1
PAD III avg	122.3	160.8	293.0
Cheyenne	108.1	140.5	286.1
Denver	107.5	147.9	298.0
Salt Lake City	107.6	150.5	299.9
PAD IV avg	107.7	146.3	294.7
Los Angeles	112.9	180.0	327.0
Phoenix	121.3	158.7	290.9
Portland	142.6	186.0	312.0
San Diego	123.6	190.7	335.0
San Francisco	118.9	186.0	350.0
Seattle	125.8	181.7	318.0
PAD V avg	124.2	180.5	322.2
Week's avg.	**119.3**	**164.9**	**302.7**
Dec. avg.	**125.5**	**171.1**	**300.6**
Nov. avg.	**169.9**	**215.5**	**307.6**
2008 to date	**278.8**	**323.1**	—
2007 to date	**235.0**	**278.6**	—

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

REFINED PRODUCT PRICES

	12-26-08 ¢/gal		12-26-08 ¢/gal
Spot market product prices			
Motor gasoline (Conventional-regular)		Heating oil No. 2	
New York Harbor	84.10	New York Harbor	124.63
Gulf Coast	84.84	Gulf Coast	120.24
Los Angeles	123.34	Gas oil	
Amsterdam-Rotterdam-Antwerp (ARA)	80.73	ARA	126.01
Singapore	91.00	Singapore	120.24
Motor gasoline (Reformulated-regular)		Residual fuel oil	
New York Harbor	80.35	New York Harbor	67.31
Gulf Coast	88.22	Gulf Coast	73.26
Los Angeles	129.84	Los Angeles	103.65
		ARA	68.52
		Singapore	78.62

Source: DOE Weekly Petroleum Status Report.
Data available in OGJ Online Research Center.

BAKER HUGHES RIG COUNT

	1-2-09	1-4-08
Alabama	3	4
Alaska	13	6
Arkansas	50	42
California	36	43
Land	35	41
Offshore	1	2
Colorado	93	99
Florida	1	0
Illinois	0	0
Indiana	2	1
Kansas	20	15
Kentucky	2	8
Louisiana	177	161
N. Land	91	57
S. Inland waters	8	27
S. Land	25	28
Offshore	53	49
Maryland	0	1
Michigan	0	1
Mississippi	18	11
Montana	9	10
Nebraska	0	0
New Mexico	60	70
New York	4	5
North Dakota	73	48
Ohio	12	11
Oklahoma	159	197
Pennsylvania	20	20
South Dakota	0	0
Texas	747	869
Offshore	7	12
Inland waters	0	2
Dist. 1	15	17
Dist. 2	28	36
Dist. 3	53	71
Dist. 4	80	92
Dist. 5	149	180
Dist. 6	119	110
Dist. 7B	25	37
Dist. 7C	51	56
Dist. 8	95	113
Dist. 8A	28	22
Dist. 9	43	52
Dist. 10	54	69
Utah	32	35
West Virginia	20	30
Wyoming	67	73
Others—NV-4; WA-1	5	14
Total US	**1,623**	**1,774**
Total Canada	**230**	**319**
Grand total	**1,853**	**2,093**
Oil rigs	346	316
Gas rigs	1,267	1,450
Total offshore	68	63
Total cum. avg. YTD	**1,623**	**1,774**

Rotary rigs from spudding in to total depth.
Definitions, see OGJ Sept. 18, 2006, p. 42.

Source: Baker Hughes Inc.
Data available in OGJ Online Research Center.

SMITH RIG COUNT

Proposed depth, ft	1-2-09 Rig count	1-2-09 Percent footage*	1-4-08 Rig count	1-4-08 Percent footage*
0-2,500	91	4.3	54	1.8
2,501-5,000	101	55.4	104	50.0
5,001-7,500	241	17.8	216	24.0
7,501-10,000	395	2.7	423	1.8
10,001-12,500	342	2.3	422	3.7
12,501-15,000	353	0.2	275	—
15,001-17,500	149	—	117	—
17,501-20,000	73	—	67	—
20,001-over	37	—	32	—
Total	**1,782**	**6.9**	**1,710**	**7.5**
INLAND	23		35	
LAND	1,711		1,621	
OFFSHORE	48		54	

*Rigs employed under footage contracts.
Definitions, see OGJ Sept. 18, 2006, p. 42.

Source: Smith International Inc.
Data available in OGJ Online Research Center.

OGJ PRODUCTION REPORT

	[1]1-2-09 1,000 b/d	[2]1-4-08 1,000 b/d
(Crude oil and lease condensate)		
Alabama	20	21
Alaska	690	731
California	650	653
Colorado	62	61
Florida	6	7
Illinois	27	25
Kansas	100	95
Louisiana	1,145	1,237
Michigan	15	14
Mississippi	60	60
Montana	95	91
New Mexico	165	161
North Dakota	177	135
Oklahoma	175	166
Texas	1,304	1,333
Utah	55	53
Wyoming	150	146
All others	66	71
Total	**4,962**	**5,060**

[1]OGJ estimate. [2]Revised.

Source: Oil & Gas Journal.
Data available in OGJ Online Research Center.

US CRUDE PRICES

	1-2-09 $/bbl*
Alaska-North Slope 27°	49.32
South Louisiana Sweet	44.25
California-Kern River 13°	32.15
Lost Hills 30°	41.00
Wyoming Sweet	31.34
East Texas Sweet	42.25
West Texas Sour 34°	35.00
West Texas Intermediate	42.75
Oklahoma Sweet	42.75
Texas Upper Gulf Coast	38.25
Michigan Sour	35.75
Kansas Common	41.75
North Dakota Sweet	29.50

*Current major refiner's posted prices except North Slope lags 2 months. 40° gravity crude unless differing gravity is shown.

Source: Oil & Gas Journal.
Data available in OGJ Online Research Center.

WORLD CRUDE PRICES

$/bbl[1]	12-26-08
United Kingdom-Brent 38°	36.31
Russia-Urals 32°	34.81
Saudi Light 34°	38.35
Dubai Fateh 32°	39.47
Algeria Saharan 44°	39.72
Nigeria-Bonny Light 37°	42.28
Indonesia-Minas 34°	39.89
Venezuela-Tia Juana Light 31°	32.06
Mexico-Isthmus 33°	31.95
OPEC basket	37.67
Total OPEC[2]	37.72
Total non-OPEC[2]	33.85
Total world[2]	35.99
US imports[3]	31.84

[1]Estimated contract prices. [2]Average price (FOB) weighted by estimated export volume. [3]Average price (FOB) weighted by estimated import volume.

Source: DOE Weekly Petroleum Status Report.
Data available in OGJ Online Research Center.

US NATURAL GAS STORAGE[1]

	12-26-08	12-19-08 bcf	12-26-07	Change, %
Producing region	888	909	927	–4.2
Consuming region east	1,589	1,689	1,619	–1.9
Consuming region west	400	422	400	0.0
Total US	**2,877**	**3,020**	**2,946**	**–2.3**
	Oct. 08	**Oct. 07**	**Change, %**	
Total US[2]	**3,399**	**3,567**	**–4.7**	

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

WORLDWIDE CRUDE OIL AND GAS PRODUCTION

	Oct. 2008	Sept. 2008	10 month average — production — 2008	2007	Change vs. — previous year — Volume	%	Oct. 2008	Sept. 2008	Cum. 2008
	Crude, 1,000 b/d						Gas, bcf		
Argentina	625	628	606	629	–23	–3.6	130.0	126.8	1,263.61
Bolivia	40	40	40	44	–4	–8.3	43.0	41.0	420.60
Brazil	1,832	1,857	1,809	1,746	64	3.6	39.0	37.0	371.00
Canada	2,600	2,581	2,569	2,628	–58	–2.2	445.0	430.6	4,639.56
Colombia	590	590	577	526	51	9.7	23.0	22.0	226.00
Ecuador	500	500	500	500	—	—	1.0	1.0	10.00
Mexico	2,757	2,722	2,816	3,114	–298	–9.6	222.7	210.6	2,087.07
Peru	103	85	76	75	1	1.1	11.0	11.2	97.10
Trinidad	115	115	113	121	–8	–6.7	117.0	113.0	1,151.72
United States	4,655	4,025	4,947	5,070	–123	–2.4	1,787.0	1,601.0	17,773.00
Venezuela[1]	2,350	2,370	2,358	2,391	–33	–1.4	75.0	75.0	744.00
Other Latin America	83	83	83	83	—	0.1	5.5	5.5	54.70
Western Hemisphere	**16,250**	**15,596**	**16,494**	**16,926**	**–432**	**–2.6**	**2,899.2**	**2,674.7**	**28,838.35**
Austria	18	18	17	17	—	–1.1	5.0	5.2	44.15
Denmark	264	280	286	312	–26	–8.4	22.5	22.0	271.32
France	19	19	20	19	—	2.3	1.6	1.8	27.04
Germany	60	60	61	68	–7	–10.8	44.0	42.9	449.69
Italy	109	94	102	108	–7	–6.1	26.0	25.0	253.00
Netherlands	36	35	35	40	–5	–12.4	280.0	250.0	2,410.00
Norway	2,241	2,057	2,160	2,273	–114	–5.0	310.0	224.7	2,817.75
Turkey	42	42	41	41	—	0.5	—	—	—
United Kingdom	1,385	1,416	1,407	1,525	–119	–7.8	216.3	197.7	2,132.01
Other Western Europe	3	4	4	4	–1	–12.7	0.5	0.4	15.06
Western Europe	**4,177**	**4,025**	**4,132**	**4,409**	**–277**	**–6.3**	**905.8**	**769.7**	**8,420.02**
Azerbaijan	590	900	899	821	78	9.5	31.0	35.0	322.00
Croatia	14	14	15	16	–1	–6.2	5.5	5.2	55.72
Hungary	14	14	15	16	–1	–9.0	8.2	7.7	74.43
Kazakhstan	1,400	1,380	1,382	1,080	302	28.0	100.0	90.0	818.00
Romania	90	90	93	99	–6	–5.7	19.0	18.0	178.00
Russia	9,830	9,810	9,755	9,887	–132	–1.3	1,850.0	1,750.0	18,850.00
Other FSU	450	400	405	458	–53	–11.6	500.0	450.0	4,640.00
Other Eastern Europe	46	46	48	48	—	0.5	18.9	17.9	169.57
Eastern Europe and FSU	**12,434**	**12,655**	**12,611**	**12,424**	**187**	**1.5**	**2,532.6**	**2,373.8**	**25,107.73**
Algeria[1]	1,370	1,370	1,378	1,351	27	2.0	280.0	270.0	2,755.00
Angola[1]	1,860	1,788	1,901	1,676	225	13.4	5.0	4.5	49.10
Cameroon	81	82	85	84	1	0.7	—	—	—
Congo (former Zaire)	25	25	25	25	—	—	—	—	—
Congo (Brazzaville)	240	240	240	240	—	—	—	—	—
Egypt	700	690	675	644	31	4.8	135.0	130.0	1,345.00
Equatorial Guinea	320	320	320	320	—	—	0.1	0.1	0.60
Gabon	240	240	234	230	4	1.7	0.3	0.3	3.06
Libya[1]	1,730	1,700	1,726	1,700	26	1.5	37.0	35.0	342.00
Nigeria[1]	1,940	1,980	1,952	2,165	–213	–9.8	82.0	82.0	797.00
Sudan	500	500	488	471	17	3.6	—	—	—
Tunisia	88	91	85	97	–12	–12.2	8.3	8.4	62.57
Other Africa	221	221	221	222	—	–0.2	9.1	8.7	89.10
Africa	**9,315**	**9,248**	**9,330**	**9,225**	**105**	**1.1**	**556.8**	**538.9**	**5,443.43**
Bahrain	170	167	170	172	–3	–1.5	35.0	33.4	267.26
Iran[1]	3,850	3,900	3,924	3,924	—	—	295.0	290.0	2,935.00
Iraq[1]	2,260	2,160	2,376	2,037	339	16.6	22.0	20.0	197.20
Kuwait[1,2]	2,640	2,610	2,612	2,425	188	7.7	45.0	44.0	417.00
Oman	720	700	720	712	8	1.1	60.0	58.0	584.00
Qatar[1]	850	860	856	799	57	7.1	185.0	180.0	1,810.00
Saudi Arabia[1,2]	9,260	9,310	9,163	8,562	601	7.0	215.0	210.0	2,170.00
Syria	390	390	387	391	–4	–1.0	18.0	17.0	176.00
United Arab Emirates[1]	2,540	2,650	2,628	2,569	59	2.3	130.0	130.0	1,315.00
Yemen	300	300	308	341	–33	–9.7	—	—	—
Other Middle East	—	—	—	—	—	10.5	10.7	10.7	106.48
Middle East	**22,980**	**23,048**	**23,143**	**21,932**	**1,211**	**5.5**	**1,015.7**	**993.0**	**9,977.94**
Australia	504	475	450	453	–3	–0.7	110.5	101.5	1,106.30
Brunei	165	150	160	180	–20	–11.1	34.1	37.1	337.65
China	3,861	3,798	3,805	3,752	53	1.4	221.1	217.3	2,352.60
India	700	654	675	685	–10	–1.5	89.2	84.7	856.21
Indonesia[1]	850	860	860	840	20	2.4	225.0	220.0	2,295.00
Japan	15	15	17	16	—	2.3	9.8	9.5	106.11
Malaysia	730	750	750	753	–3	–0.4	140.0	140.0	1,445.00
New Zealand	47	47	57	32	25	78.1	11.0	11.0	124.90
Pakistan	64	66	66	68	–2	–3.1	115.4	119.8	1,218.62
Papua New Guinea	40	40	42	48	–6	–13.4	1.0	0.9	9.60
Thailand	234	235	228	211	17	8.1	43.0	39.0	439.00
Vietnam	250	250	278	312	–34	–10.9	15.0	14.5	149.50
Other Asia-Pacific	35	40	39	34	5	15.3	97.5	95.5	977.06
Asia-Pacific	**7,494**	**7,381**	**7,428**	**7,386**	**42**	**0.6**	**1,112.7**	**1,090.8**	**11,417.56**
TOTAL WORLD	**72,651**	**71,952**	**73,138**	**72,302**	**837**	**1.2**	**9,022.8**	**8,441.0**	**89,205.03**
OPEC	32,000	32,058	32,233	30,439	1,795	5.9	1,597.0	1,561.5	15,836.30
North Sea	3,909	3,771	3,871	4,130	–259	–6.3	632.6	519.2	5,940.96

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

Your marketplace for the oil and gas industry

DEADLINE for CLASSIFIED ADVERTISING is 10 A.M. Tuesday preceding date of publication. Address advertising inquiries to CLASSIFIED SALES, 1-800-331-4463 ext. 6301, 918-832-9301, fax 918-831-9776, email: glendah@pennwell.com.

- *DISPLAY CLASSIFIED: $390 per column inch, one issue. 10% discount three or more CONSECUTIVE issues. No extra charge for blind box in care. Subject to agency commission. No 2% cash discount.*
- *UNDISPLAYED CLASSIFIED: $4.00 per word per issue. 10% discount for three or more CONSECUTIVE issues. $80.00 minimum charge per insertion. Charge for blind box service is $56.00 No agency commission, no 2% cash discount. Centered/Bold heading, $9.00 extra.*
- *COMPANY LOGO: Available with undisplayed ad for $83.00. Logo will be centered above copy with a maximum height of 3/8 inch.*
- *NO SPECIAL POSITION AVAILABLE IN CLASSIFIED SECTION.*
- *PAYMENT MUST ACCOMPANY ORDER FOR CLASSIFIED AD.*

EMPLOYMENT

PETROLEUM ENGINEER

Phillips Production Company, a Pennsylvania Independent Natural Gas Company, seeking Petroleum Engineer with 3-10 years experience for Production Engineering Position. Candidate should be proficient in Aries software, Production Enhancement Operations and possess good communication and computer skills. Salary commensurate with experience. Competitive benefits. Please mail resume including contact information, references and salary expectations to petroleumclassifieds@pennwell.com with "A0105" as the Subject.

PathFinder Energy Services, Inc. in Houston has openings for the following positions: **Mechanical Design Engineer I** using CAD, develop, test, and manufacture components for downhole tools. **Mechanical Design Engineer II** to perform engineering duties including Finite Element Analysis: Linear and Nonlinear Static Analysis. Send resume to Ms. Lisa Vassallo at PathFinder Energy Services, Inc., 13100 Northwest Freeway, Suite 400, Houston, TX 77040. No phone calls or recruiters.

ConocoPhillips Company in Bartlesville, OK seeks Server Analyst. Qualified applicants will possess a high school diploma/GED and three years IT experience. To submit resume, please visit www.conocophillips.com/careers. Put Job code 006HG on resume.

Dallas independent seeks petroleum engineer for in-house and field responsibilities. Must have drilling, frac design, completion, operations, production, reservoir engineering and economic analysis background. Fax resume to 214-420-3001 or email to jsimo@kingoperating.com.

Fuels refinery with 150 employees in central US seeks candidates for a hands-on **Refinery Manager.** Candidate must have engineering degree with minimum 15 years in an operating environment. Must have experience with environmental compliance, maintenance turnarounds, process operations, and process safety management. Send resume and salary history in confidence to petroleumclassifieds@pennwell.com with "A011209" as the Subject.

OGJ Classifieds Get Results!

OIL & GAS "PRODUCTION MANAGER"

Responsible For:

- Oil & Gas Production
- Pipeline Operations
- Well Tending Operations
- Maintenance, repair and all capital expenditures

Prior experience a plus. Engineering degree a plus. Some regional travel required
Excellent opportunity to show what you're made of and your ability to manage and develop teams.

Join a winning team today! Email to cbork@usenergydevcorp.com Fax resumes to 1.800.947.0629 or call 1.800.636.7606 x312

EQUIPMENT FOR SALE

JL Bryan Equipment Inc.

SAND TRAPS for sale (new)
3600 psi 4" in and out
3" blow down, L-skid mounted
1-806-435-4511 office
1-806-435-0059 cell (Brent)
www.jlbryan.com

SURPLUS GAS PROCESSING/REFINING EQUIPMENT

NGL/LPG PLANTS:	**10 - 600 MMCFD**
AMINE PLANTS:	**60 - 5000 GPM**
SULFUR PLANTS:	**10 - 1200 TPD**
FRACTIONATION:	**1000 – 15,000 BPD**
HELIUM RECOVERY:	**75 & 80 MMCFD**
NITROGEN REJECTION:	**25 – 80 MMCFD**

ALSO OTHER REFINING 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

FCC Unit -- 10,500 bpd
Alkylation Unit -- 6,500 bpd
Both Units Completed 1996
Excellent Condition
Doug Wood
Plant Process Equipment
281-333-7700
dwood@plant-process.com

EQUIPMENT FOR SALE

FOR SALE / RENT

5.2 MW MOBILE GEN SETS
CALL: 800-704-2002

SOLAR TAURUS 60

- GAS - LOW NOx (OIL)
- 60 Hz - 13.8KV or 50 Hz - 11KV
- LOW HOUR - SOLAR SERVICED

DIESELS • TURBINES • BOILERS

24/7 EMERGENCY SERVICE
IMMEDIATE DELIVERY

www.wabashpower.com | info@wabashpower.com
Phone: 847-541-5600 Fax: 847-541-1279

wabash POWER EQUIPMENT CO.
444 Carpenter Avenue, Wheeling, IL 60090

NATCO
Producing Solutions

Water, Oil and Gas Treatment/Conditioning Equipment

For Sale, Lease, Contract Service

Separators, Hydrocyclones, Float Cells, Filtration, Electrostatic Oil Treaters, Amine Units, Glycol Units, JT-Plants, Refrigeration Units, LACT Units

For Information Call 713.849.7520

www.NATCOGroup.com

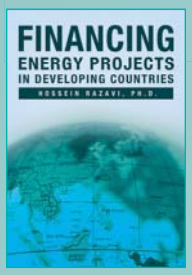
PIPE/FITTINGS

Pipe, Fittings & Hoses: 4"-6"-8"-10" New/used aluminum pipe. Custom steel & aluminum fittings. Free catalog. www.schumacherirrigation.com 800-246-3685

BUSINESS OPPORTUNITY

Want to purchase minerals and other oil/gas interests. Send details to: P.O. Box 13557, Denver, CO 80201.

If you haven't shopped PennWell Books lately, *here's what you've been missing!*

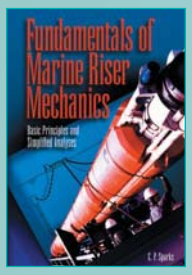


FINANCING ENERGY PROJECTS IN DEVELOPING COUNTRIES

Hossein Razavi, Ph.D.

484 Pages/Hardcover/December 2007 • ISBN 978-1-59370-124-6 • $79.00 US

This authoritative new book by Hossein Razavi, director of energy and infrastructure at The World Bank, provides firsthand information and analysis of how multilateral, bilateral, and commercial financiers decide to support an energy project.

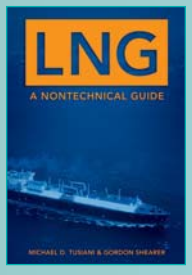


FUNDAMENTALS OF MARINE RISER MECHANICS: BASIC PRINCIPLES AND SIMPLIFIED ANALYSIS

Charles Sparks

354 Pages/Hardcover/November 2007 • ISBN 978-1-59370-070-6 • $125.00 US

Charles Sparks, one of the foremost authorities on riser mechanics, has written the definitive work on riser behavior. The primary parameters that influence riser behavior are identified and their influence illustrated using Excel spreadsheets provided on an accompanying CD-ROM.

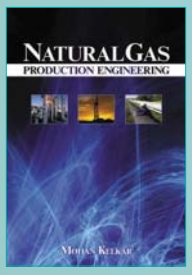


LNG: A NONTECHNICAL GUIDE

Michael D. Tusiani and Gordon Shearer

458 Pages/Hardcover/August 2007 • ISBN 978-0-87814-885-1 • $69.00 US

In their new book, authors Michael D. Tusiani and Gordon Shearer, using everyday language and real-world examples, present LNG as the most viable energy answer to the ever-increasing global demand for natural gas.



NATURAL GAS PRODUCTION ENGINEERING

Mohan Kelkar

Approx. 570 Pages/Hardcover/May 2008 • ISBN 978-1-59370-017-1 • $99.00 US

In this important new book, Mohan Kelkar, a respected author and professor, presents the quintessential guide for gas engineers, emphasizing the practical aspects of natural gas production.

PRACTICAL ENHANCED RESERVOIR ENGINEERING: ASSISTED WITH SIMULATION SOFTWARE

Abdus Satter, Ph.D., Ghulam M. Iqbal, Ph.D., P.E., and James L. Buchwalter, Ph.D., P.E.

706 Pages/Hardcover/March 2008 • ISBN 978-1-59370-056-0 • $125.00 US

The authors bring to this new book their life-long experience and expertise in reservoir engineering and simulation techniques and practice. Starting from basic principles and leading to real-life reservoir management aided by simulation software, *Practical Enhanced Reservoir Engineering* covers all phases of the reservoir life cycle.

PennWell®

Check us out today! www.pennwellbooks.com
or call for our catalog 1-800-752-9764

Houston
Regional Sales Managers. Marlene Breedlove; Tel: (713) 963-6293, Fax: (713) 963-6228, E-mail: marleneb@pennwell.com. Charlene Burman; Tel: (713) 963-6274, Fax: (713) 963-6228; E-mail: cburman@pennwell.com. Mike Moss; Tel: (713) 963-6221, Fax: (713) 963-6228: E-mail: mikem@pennwell.com. PennWell - Houston, 1455 West Loop South, Suite 400, Houston, TX 77027.

Southwest / South Texas/Western States/ Gulf States/Mid-Atlantic
Marlene Breedlove, 1455 West Loop South, Suite 400, Houston, TX 77027; P.O. Box 1941 Houston, TX 77251; Tel: (713) 963-6293, Fax: (713) 963-6228; E-mail: marleneb@pennwell.com.

Northeast/New England/Midwest/North Texas/ Oklahoma/Alaska/Canada
Charlene Burman, 1455 West Loop South, Suite 400, Houston, TX 77027; Tel: (713) 963-6274, Fax: (713) 963-6228; E-mail: cburman@pennwell.com.

Scandinavia/Denmark/The Netherlands/Middle East/Africa
David Betham-Rogers, 11 Avenue du Marechal Leclerc, 61320 Carrouges, France; Tel: 33 2 33 282584, Fax: 33 2 33 274491; E-mail: davidbr@pennwell.com.

United Kingdom
Linda Fransson, Warlies Park House, Horseshoe Hill Upshire, Essex EN9 3SR, UNITED KINGDOM Tel: +44 (0) 1992 656 665; Fax: +44 (0) 1992 656 700; E-mail: lindaf@pennwell.com.

France/Belgium/Spain/Portugal/Southern Switzerland/Monaco
Daniel Bernard, 8 allee des Herons, 78400 Chatou, France; Tel: 33 (0)1 3071 1224, Fax: 33 (0)1 3071 1119; E-mail: danielb@pennwell.com, France, Belgium, Spain, Portugal, Southern Switzerland, Monaco.

Germany/Austria/Northern/Switzerland/Eastern Europe/Russia
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. Andreas Sicking, Germany, Austria, Northern Switzerland, Eastern Europe, Russia, Former Soviet Union.

Japan
e. x. press Co., Ltd., Plama Building, 2F, 2-13-8, Nihonbashi Kayabacho, Chuo-ku, Tokyo 103-0025, Japan, Tel: 81 3 3556 1575, Fax: 81 3 3556 1576; E-mail: manami.konishi@ex-press.jp; Manami Konishi.

Brazil
Grupo Expetro/Smartpetro, Att: Jean-Paul Prates and Bernardo Grunewald, Directors, Ave. Erasmo Braga 22710th and 11th floors Rio de Janeiro RJ 20024-900 BRAZIL; Tel: (55-21) 3084 5384, Fax: (55-21) 2533 4593; E-mail: jpprates@pennwell.com.br and bernardo@pennwell.com.br.

Singapore/Australia/Asia-Pacific
Michael Yee, 19 Tanglin Road #09-07, Tanglin Shopping Center, Singapore 247909, Republic of Singapore; Tel: (65) 6 737-2356, Fax: (65) 6 734-0655; E-mail: yfyee@singnet.com.sg. Singapore, Australia, Asia Pacific.

India
Rajan Sharma, Interads Limited, 2, Padmini Enclave, Hauz Khas, New Delhi-110 016, India; Tel: +91-11-6283018/19, Fax: +91-11-6228928; E-mail: rajan@interadsindia.com.

Italy
Vittorio Rossi Prudente, UNIWORLD MARKETING, Via Sorio 47, 35141 PADOVA - Italy; Tel:+39049723548, Fax: +390498560792; E-mail: vrossiprudente@hotmail.com.

Oil price extremes do not repudiate US 'deregulation'

A popular belief deserving stern resistance holds that oil price extremes of 2008 justify the revival of aggressive market regulation.

According to this view, the painful levels oil prices reached in the first half of last year testified to the failure of deregulation; therefore, the government must intensify its incursion into energy markets.

This reading of things takes a short, skewed view of deregulation.

If price is the only gauge, what might be called the era of deregulation in the US was in fact more beneficial than not.

To the extent that the US actually deregulated energy markets, the legislative and regulatory adjustments occurred during the 1980s, in the latter half of which, oil prices crashed.

In the decade of the 1990s, oil prices remained so low that few observers outside the oil business took much note of them.

During that period, the annual average spot price of West Texas Intermediate crude was $19.72/bbl. The highest annual average price came in the decade's first year at $24.53/bbl. The lowest price came toward the end of the decade, in 1998, at $14.42/bbl.

If price is the measure, "deregulation" thus was a very good deal in the 1990s—for consumers anyway. But the comfort couldn't last.

Low prices stimulated oil consumption.

Furthermore, the US never fully deregulated oil and gas markets. It liberated consumption and prices from controls. But it continued to cap domestic supply with restrictive leasing and permitting of federal land, onshore and off.

While demand rose, domestic supply didn't. Imported oil had to make up the difference. And US buyers increasingly had to compete for oil in trade with buyers elsewhere as global demand increased in response to economic and population growth.

So prices in the current decade have risen. They have averaged nearly $50/bbl so far in a strongly upward trend that ended last July.

The price zoom reflects the pressure of demand expansion against physical and regulatory limits on capacities to bring oil to market.

If there has been a failure of deregulation in the US, it's that the process never applied fully to supply.

(Online Jan. 2, 2009; author's e-mail: bobt@ogjonline.com)

The Editor's Perspective

by Bob Tippee, Editor

Market Journal

by Paula Dittrick, Senior Staff Writer

Oil prices climb in early 2009

Crude oil futures prices started off 2009 with positive movement on New York and London markets amid rising geopolitical tensions.

Most analysts agree that markets are unconvinced the Organization of Petroleum Exporting Countries can cut production fast enough to offset plummeting demand for oil.

Analysts at Barclays Capital said violence in the Middle East and disputes between Russia and Ukraine provided support for higher oil prices in very early 2009.

"Oil prices have started the year on a strong note," Barclays analysts said. "While the violence in the Gaza strip does not affect any oil supplies directly, the market fears involvement from other countries like Iran could aggravate the situation," they added. On Jan. 4, an Iranian military commander suggested Islamic countries cut oil exports, Barclays said, adding, "This is unlikely to echo far in gulf countries already engaged in sharp cuts to support prices." Saboteurs in the Niger Delta used dynamite to partially destroy an oil pipeline operated by Eni SPA subsidiary Agip.

Agip issued no immediate comment on the scale of damage caused by the attack, which hit the Odimodi-Ogulagha part the pipeline in Nigeria's Delta state. No group immediately claimed responsibility.

More volatility likely

Volatility was the key word for oil prices last year.

Oil prices rebounded Dec. 31 with the front-month crude gaining more than $5/bbl to settle at $44.60/bbl in light trading on the New York Mercantile Exchange.

NYMEX oil prices peaked at about $147/bbl in July 2008 before tumbling upon a US credit crisis and a worldwide economic slump. In December 2008, oil prices on NYMEX dipped to below $34/bbl, marking the lowest price in more than 4 years.

Barclays' analyst Paul Horsnell noted, "Consensus is a process in which analysts try to look sensible and reliable, when reality tends not to be a sensible phenomenon and, in this decade at least, has involved shredding every single element of oil market consensus." So far this decade, consensus by analysts has tended to overestimate supply from outside OPEC. Analysts also were both high and low on their oil demand forecasts, Horsnell said.

He said, "So that gives us our first forecast for 2009...that consensus is way, way, way wrong in terms of supply, demand, and price. Forecast number two is that prices will as ever both overshoot and undershoot and, as in 2008, will be driven primarily by often sharp changes in perceptions and data flow about supply and demand conditions."

US to boost oil inventories

The US Department of Energy said it will start buying oil to replenish the Strategic Petroleum Reserve. SPR was heavily drawn down following Hurricanes Katrina and Rita in 2005. From May 2008 through yearend, DOE was prohibited by law from buying oil for SPR. DOE plans to buy 12 million bbl of crude. Deliveries are being sought for February, March, and April. "DOE plans to take advantage of the recent sharp decline in crude oil prices to enter the market," said a DOE release issued Jan. 2. For the week ended Dec. 26, 2008, US crude inventories rose by 500,000 bbl to 318.7 million bbl, the US Energy Information Administration reported. Gasoline inventories rose by 800,000 bbl to 208.1 million bbl.

US refineries ran at 82.5% of total capacity on average, a drop of 2.2% from the previous week. Distillate inventories rose by 700,000 bbl to 136 million bbl.

Separately, in its report on US natural gas inventories in underground storage, EIA reported a withdrawal of 143 bcf to 2.88 tcf for the week ended Dec. 26, 2008. The level was above the 5-year average of 2.82 tcf but lags last year's storage level of 2.95 tcf for the same period. Pritchard Capital analysts said, "The gas market seems poised to reset itself," in a process that includes shutting in some production and a more than a 30% drop in the number of active land rigs in the US. They see "a 4-6 month lag time before recent well decline rates translate into production volume decreases," adding, "We may see gas prices around $5/Mcf before things get better."

They also perceive a shift from a supply-constrained market to a demand-constrained market for LNG. "Global LNG prices on the spot market seem to be stabilizing [at] $8-9/MMbtu in the Atlantic Basin and in the $11-12 range in the Pacific Basin." With prices at the Henry Hub, La., spot market "well below the prices a year ago," LNG terminals at Lake Charles, La., and at Sabine Pass and Freeport in Texas remain inactive, analysts said.

(Online Jan. 5, 2009; author's e-mail: paulad@ogjonline.com)

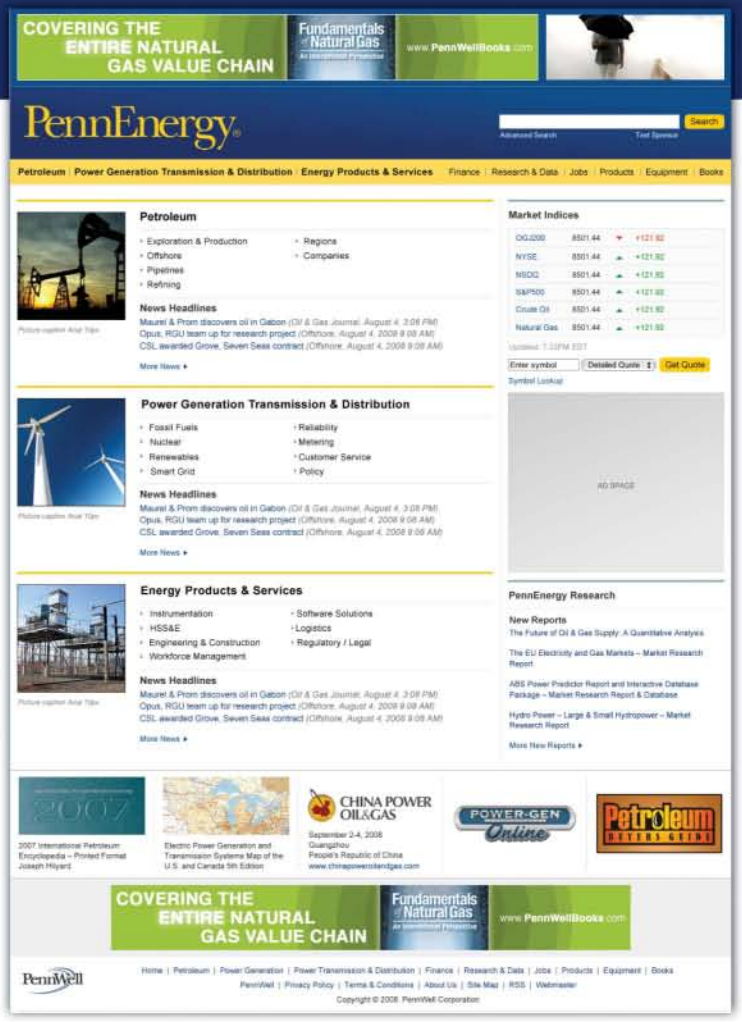
PennEnergy® Your Source for Energy News, Research, and Insight.

New Site.

More Content. Global Energy Coverage.

Introducing the NEW PennEnergy.com

PennEnergy.com launches with even more valuable energy-centric content and easier, more efficient navigation. The new web site provides the most complete and trusted source of energy-related topics including today's news plus ten years of archived web and magazine content from PennWell's award-winning energy publications.



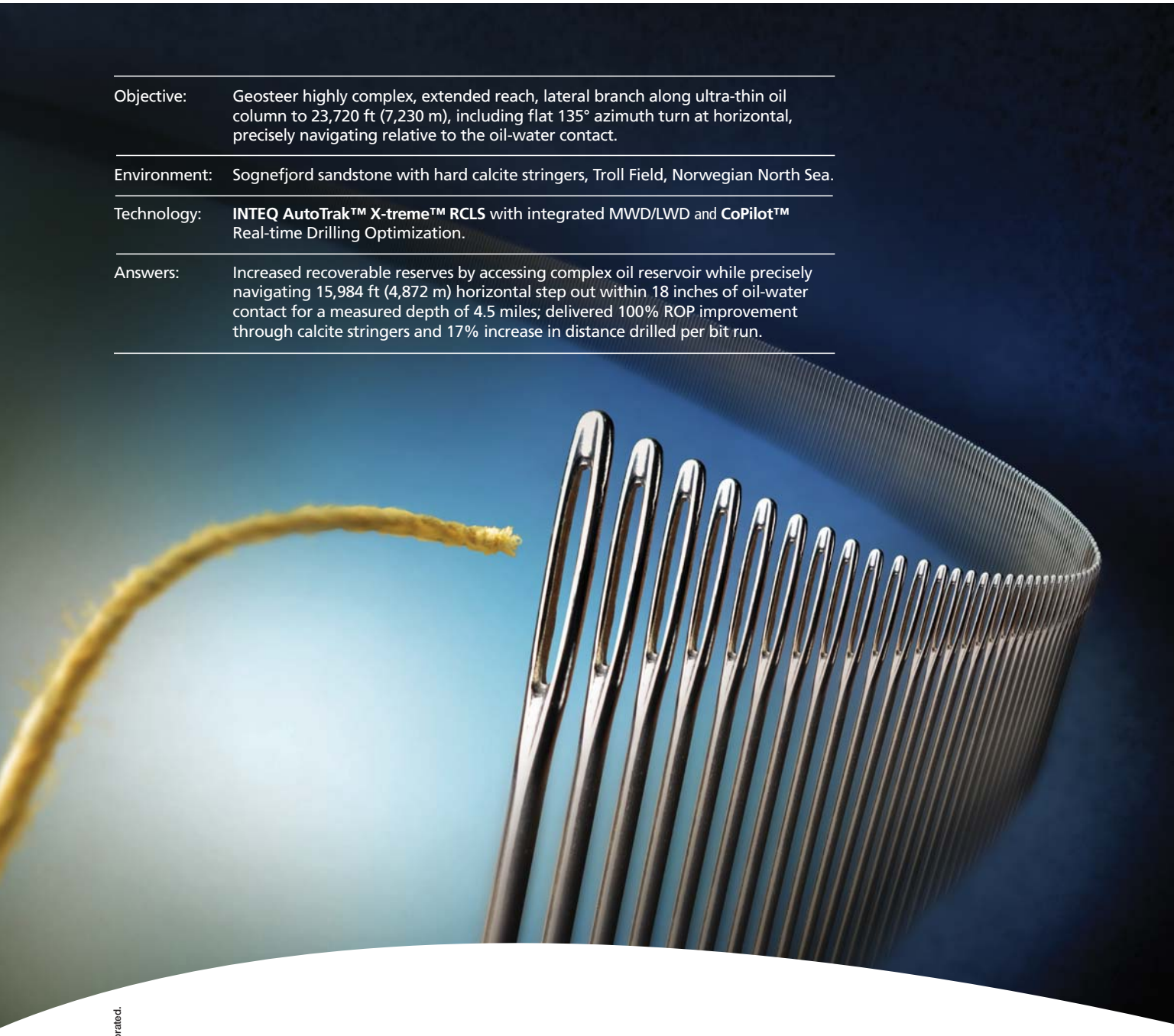
- Organized by Industry Segments and Topic Centers.
- Extensive research tools, white papers, and webcasts.
- Comprehensive energy-related financial information.
- Original and sourced energy news.
- Product, equipment, and service information.

Make PennEnergy a part of your day and know what is happening in the world of energy.

PennEnergy.com

Extended Reach. Precise Placement.

Objective:	Geosteer highly complex, extended reach, lateral branch along ultra-thin oil column to 23,720 ft (7,230 m), including flat 135° azimuth turn at horizontal, precisely navigating relative to the oil-water contact.
Environment:	Sognefjord sandstone with hard calcite stringers, Troll Field, Norwegian North Sea.
Technology:	**INTEQ AutoTrak™ X-treme™ RCLS** with integrated MWD/LWD and **CoPilot™** Real-time Drilling Optimization.
Answers:	Increased recoverable reserves by accessing complex oil reservoir while precisely navigating 15,984 ft (4,872 m) horizontal step out within 18 inches of oil-water contact for a measured depth of 4.5 miles; delivered 100% ROP improvement through calcite stringers and 17% increase in distance drilled per bit run.



One thin oil column. Just four and a half more miles to go.

Get precise, extensive answers at AnswersWhileDrilling.com/AutoTrak

BAKER HUGHES INTEQ