FLYING BLUE
Petroleum

A customised service to become a privileged passenger

Join the club immediately on www.airfrance.com or www.klm.com.
Click on Flying Blue then Petroleum.

AIRFRANCE KLM

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.

Production Projects Worldwide

Contains upstream projects in 47 countries, shows the development of individual fields, and the supporting infrastructure. The Survey in Excel spreadsheet identifies:

- country
- project name
- operator & company name
- project phase
- peak year
- development type details
- liquids and gas
- cost when available

Allows you to focus on what regions will have future growth, type of project, new discoveries, field redevelopment, stranded-gas projects, heavy-oil or deepwater projects and development of unconventional resources such as tight sands, shale gas, and coal bed methane gas.

Offshore Drilling Rig Construction Survey

Four types of vessels are tracked – Jack-up Rigs, Semi-submersibles, Drillships, and Tender Assist Vessels. Include – Rig Name, Owner, Design, Shipyard, and Country, Delivery Date, Cost in $ millions.

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, commercial, experimental and exploration wells.

For more information

Visit the web site:
www.ogjresearch.com
Look under the heading Surveys/Oil & Gas 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: 1.918.831.9559
E-mail: sales@pennwell.com

OIL&GAS JOURNAL online research center.

PennWell

www.ogjresearch.com

PennEnergy

Week of Apr. 27, 2009/US$10.00

PennWell®

OIL&GAS JOURNAL®

International Petroleum News and Technology / www.ogjonline.com

Capital Spending Outlook

Oilex group to drill in Timor Sea JPDA
Simulation: CBM reservoir thickness affects well output
Marathon uses new FCCU CO combustion promoter
Gazprom pipeline gas remains key to Europe

Microsoft

it's everybody's business to keep the communication and the oil flowing.

Does your enterprise software help get a question asked offshore in the North Sea answered in Houston?

ask for *people_ready* oil & gas solutions

microsoft.com/oilandgas

OIL&GAS JOURNAL®

Apr. 27, 2009
Volume 107.16

CAPITAL SPENDING OUTLOOK

Economic slump to chill capital spending in 2009 26
Marilyn Radler

REGULAR FEATURES

Newsletter 5
Letters 16
Calendar 17
Journally Speaking 22
Editorial 24
Area Drilling 40
Equipment/Software/Literature 57
Services/Suppliers 57
Statistics 58
Classifieds 61
Advertisers' Index 63
Editor's Perspective/Market Journal 64

COVER

ExxonMobil Corp.'s Baytown, Tex., refinery will undergo efforts to increase supplies and reduce the sulfur content of motor gasoline and diesel. ExxonMobil will invest more than $1 billion at its refineries in Baytown, Baton Rouge, La., and Antwerp, Belgium. This investment will increase the supply of cleaner burning diesel by 6 million gpd. With a crude capacity of about 567,000 b/d, the Baytown refinery is the largest in the US. OGJ's special report on Capital Spending Outlook begins on p. 26. Photo courtesy of ExxonMobil.

OIL&GAS JOURNAL online
The full text of Oil & Gas Journal is available through OGJ Online, Oil & Gas Journal's internet-based energy information service, at http://www.ogjonline.com.
For information, send an e-mail message to webmaster@ogjonline.com.

iea

marketforce
mobilising knowledge in business

> "… the thoroughly researched agenda combined with a range of senior figures from across the gas industry will make for an interesting and thought-provoking two days."
>
> **Preben Birr-Pedersen,** Chief Project Manager, **Energinet.dk**

The IEA & Marketforce's Inaugural Conference

FUTURE GAS EUROPE

Building a secure, competitive and sustainable industry

8th & 9th June 2009
Hotel Imperial, Vienna

www.marketforce.eu.com/eugas

Excellent speakers include:

STEFAN JUDISCH
Chief Commercial Officer (Supply)
RWE Supply & Trading

DR. JOCHEN WEISE
Member of the Board of Management
E.ON Ruhrgas

LÁSZLÓ VARRÓ
Senior Vice President for Strategy Development
MOL

JAN INGWERSEN
Vice President - Infrastructure and Regulatory Affairs
DONG Energy

ALAN SVOBODA
Executive Director Sales and Trading
ČEZ Group

BRENDAN DEVLIN
Policy Officer
European Commission

PETER CLARKE
Manager - Europe Gas Marketing
ExxonMobil

REINHARD MITSCHEK
Managing Director, **Nabucco Pipeline Project** and Senior Vice President – Gas Logistics
OMV Group

Key reasons to attend:

- Gain insight from an **outstanding line-up of senior speakers** from major European companies
- Sharing ideas, sharing solutions: take advantage of the great **networking opportunities** offered by our **peer-to peer roundtable discussions**
- Hear the **Middle-Eastern perspective** on the growing importance of **LNG** for Europe
- **Nabucco's Managing Director** will share the **project management lessons learnt** so far
- Get an update on the **current challenges in gas trading** in the face of persistent **price volatility**
- Listen to the **latest news from the European Commission** and hear the **industry's response** in an interactive panel discussion

Unrivalled content

Your questions answered

Networking opportunities

For more information on this event, please contact:

@ conferences@marketforce.eu.com +44 (0)20 7760 8699 www.marketforce.eu.com/eugas

General Interest

Editorial: Markey uses the d-word 24

Special Report: Economic slump to chill capital spending in 2009 26
Marilyn Radler

Figures show recession's impact on US industry in 1Q 30
Nick Snow

Stanislaw: Administration will bring oil, gas to energy policy table 31
Nick Snow

EPA issues proposed endangerment finding on GHGs 32
Nick Snow

WATCHING GOVERNMENT: Perceptions and bad policy 33

BMI sees 'no clear pattern' emerging for products market 34
Eric Watkins

WATCHING THE WORLD: Having Al-Bashir's back 36

Indonesia changes rules for oil, gas cost recovery 37
Eric Watkins

Global drilling spend to increase by 32% by 2013 37
Uchenna Izundu

USGS updates Piceance basin oil shale assessments 38
Paula Dittrick

First quarter US drilling plunges to 2004 levels 38

Exploration & Development

Oilex group to drill in Timor Sea JPDA 39

India seeks bids in eighth NELP licensing round 40

Drilling & Production

CBM reservoir thickness affects production from horizontal wells 42
Wang Zhiming, Zhang Jian

Processing

Marathon refineries employ new FCCU CO combustion promoter 47
Jeff Sexton, Rick Fisher

Transportation

Gazprom pipeline gas remains key to Europe 53
Dmitry Volkov, Gurcan Gulen, Michelle Foss, Ruzanna Makaryan

Copyright 2009 by PennWell Corporation (Registered in U.S. Patent & Trademark Office). All rights reserved. Oil & Gas Journal or any part thereof may not be reproduced, stored in a retrieval system, or transcribed in any form or by any means, electronic or mechanical, including photocopying and recording, without the prior written permission of the Editor. Permission, however, is granted for employees of corporations licensed under the Annual Authorization Service offered by the Copyright Clearance Center Inc. (CCC), 222 Rosewood Drive, Danvers, Mass. 01923, or by calling CCC's Customer Relations Department at 978-750-8400 prior to copying. Requests for bulk orders should be addressed to the Editor. **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. 16) 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
Pipeline Editor Christopher E. Smith, chriss@ogjonline.com
Senior Editor-Economics Marilyn Radler, marilynr@ogjonline.com
Senior Editor Steven Poruban, stevenp@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

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@pennwell.com
Associate Presentation Editor Michelle Gourd, michelleg@pennwell.com
Statistics Editor Laura Bell, laurab@ogjonline.com
Illustrators 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

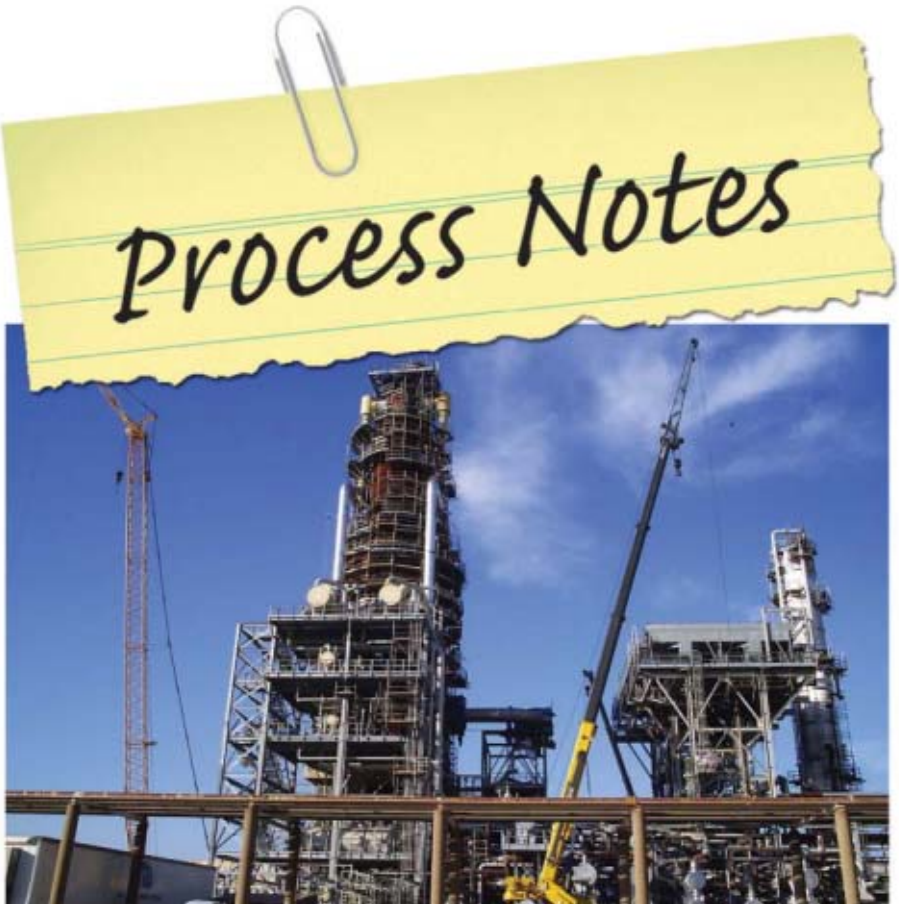
OGJ News
Please submit press releases via e-mail to: news@ogjonline.com

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



Why Do Many Crude/Vacuum Units Perform Poorly?

In many cases it's because the original design was based more on *virtual* than *actual* reality. There is no question: computer simulations have a key role to play but it's equally true that process design needs to be based on what works in the field and not on the ideals of the process simulator. Nor should the designer simply base the equipment selection on vendor-stated performance. The design engineer needs to have actual refinery process engineering experience, not just expertise in office-based modeling. Refinery hands-on experience teaches that fouling, corrosion, asphaltene precipitation, crude variability, and crude thermal instability, and many other non-ideals are the reality. Theoretical outputs of process or equipment models are not. In this era of slick colorful PowerPoint® presentations by well-spoken engineers in Saville Row suits, it's no wonder that units don't work. Shouldn't engineers wearing Nomex® coveralls who have worked with operators and taken field measurements be accorded greater credibility?

Today more than ever before this is important. Gone are the days when a refiner could rely on uninterrupted supplies of light, sweet, easy-to-process crudes. In troubled times fierce global competition for premium crudes means that refinery units must have the flexibility to handle heavy, viscous, dirty crudes that increasingly threaten to dominate markets. And flexibility must extend to products as well as crudes, for refinery product demand has become more and more subject to violent economic and political swings. Thus refiners must have the greatest flexibility in determining yields of naphtha, jet fuel, diesel and vacuum gas oil products.

Rather than a single point process model, the crude/vacuum unit design must provide continuous flexibility to operate reliably over long periods of time. Simply meeting the process guarantee 90 days after start-up is very different than having a unit still operating well after 5 years. Sadly few refiners actually achieve this—no matter all the slick presentations by engineers in business suits!

If you want to explore these issues in technical detail ask for Technical Papers 267 and 268.

PROCESS CONSULTING SERVICES, INC.

3400 Bissonnet
Suite 130
Houston, Texas 77005
USA

Ph: [1] (713) 665-7046
Fx: [1] (713) 665-7246
info@revamps.com
www.revamps.com

OGJ Newsletter

Apr. 27, 2009

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

General Interest — Quick Takes

Alaska lawmakers asked to fund in-state gas line

Alaska Gov. Sarah H. Palin urged state legislators Apr. 17 to approve $9 million in preparatory funding for pipeline work in an effort to avoid delays in constructing an in-state natural gas pipeline system.

Her action came after some members of the state's House Finance Committee expressed concern the preceding night that the governor's administration had not adequately communicated its position on an in-state gas pipeline.

Originally proposed as part of the huge proposed project to move gas from Alaska's North Slope to markets in the Lower 48 states, a system to bring gas to the state's widely scattered communities has attracted growing support as a stand-alone project from several government officials in the state.

"My focus is Alaska, and this administration has not shifted from our top priority: commercializing natural gas for Alaskans," Palin said. "This session we have been working diligently to address statewide energy needs, and the in-state gas pipeline project is a critical component of that effort. I appreciate lawmakers' assistance in moving this effort along."

Members of her administration have testified before state legislative committees, and the proposed project's manager, Harry Noah, has conducted open working groups with legislators, she noted. Palin said she also has met with Alaska House and Senate leaders to discuss plans to jump-start an in-state gas pipeline development.

Palin said she introduced two in-state gas development bills, HB 163/SB 135 and HB 164/SB 136, which have been heard in House and Senate energy committees. The House and Senate have passed several in-state gas resolutions, and the House amended HB 44 on Apr. 14 to include language for HB 163, the governor's bill, to expand the Alaska Natural Gas Development Authority's powers, she said.

The $9 million of funding would advance the proposed project through the second phase of a four-phased plan to develop an in-state gas pipeline, which her administration presented on Mar. 3, Palin said. Her office distributed an overview of the plan to House Finance Committee members Apr. 17, she said.

Texas wholesaler, officials plead guilty to charges

A Texas oil wholesaler and two of its executives pleaded guilty to violating the federal safe drinking-water law, the US Department of Justice said Apr. 16.

Texas Oil & Gathering Inc., its owner John Kessel, and its operations manager Edgar Pettijohn pleaded guilty to violating the Safe Drinking-Water Act for disposing of oil-contaminated waste water from its refinery process at an underground injection well permitted to accept wastes only from exploration and production operations, DOJ's Environment and Natural Resources Division said.

It said the Alvin, Tex.-based company also pleaded guilty to conspiracy and violating the Resource Conservation and Recovery Act (RCRA) for disposing of waste at a facility that did not have a permit. The crimes took place from January 2000 through January 2003, DOJ said.

The defendants misrepresented that the wastewater it was disposing at a Rosasharon, Tex., injection well came from an oil well the company had leased and was developing when the waste water actually came from various refinery and chemical liquids Texas Oil & Gathering had reclaimed, federal prosecutors said.

The government began to investigate after the well exploded and killed three workers. Although the defendants did not cause the blast, a closer review of waste in the well led to their prosecution, DOJ said.

It said that Texas Oil & Gathering faces a maximum $500,000 fine or twice the monetary gain or loss for the conspiracy count, and $50,000/day, twice the gain or loss, or $500,000, whichever is higher, for the RCRA count. Kessel and Pettijohn face up to 8 years in prison and a fine as high as $500,000, it added.

The pleas were entered in US District Court for Texas' Southern District. Judge Keith P. Ellison scheduled sentencing for Sept. 15.

Producers settle air pollution charges in Utah

Six independent producers agreed to spend $6.4 million to comply with the US Clean Air Act at their eastern Utah natural gas production facilities, federal regulators said Apr. 17.

The three settlements with Bill Barrett Corp., Wind River Corp., XTO Energy Inc., Dominion Exploration & Production Inc., Whiting Oil & Gas Corp., and Miller Dyer & Co. mandate air pollution reductions and conservation practices at the companies' wellheads, pipelines, and compressor stations, the US Environmental Protection Agency and Department of Justice said in a joint announcement.

They said the agreements cover operations on the Uintah and Ouray Indian Reservation near Vernal. They were filed in federal district court in Salt Lake City.

The $6.4 million of outlays include retrofitting pneumatic controls with lower emitted components, reviewing processes to increase gas recovery and reduce air emissions at compressor stations and wellsites, installing low-bleed or no-bleed pneumatics, and controlling emission sources such as large engines, gas dehydrators, and condensate tanks at all new facilities constructed in the next 5 years, the federal agencies said.

It also includes shale-plating all future access roads, spending $100,000 to fund two ambient air monitoring stations' operation and maintenance for a year, and using less polluting and more energy-efficient technologies in pilot programs, they added.

Market cycles may come and go,
but true quality and value remain constant.

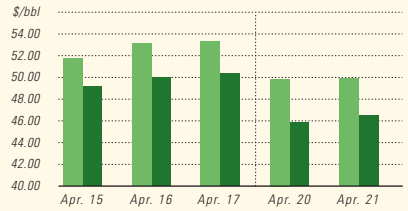
PERFORMANCE

Long-term growth. Short-term growth. And periods of no growth. They are all part of the business lifecycle. Through it all, Cameron provides quality that sees you through, time after time. Quality. Reliability. Dependability. Workmanship. Ingenuity. Problem-solving. Lasting value. These are the attributes you've always trusted Cameron for. Performance attributes that not only stand the test of time, but foster the growth and success of your performance. Choosing Cameron means you don't have to look back. You can look forward. That's because we've been there. We're here. We'll be around. That's why it's called solid. www.c-a-m.com

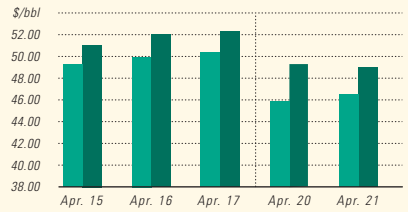
CAMERON

Industry Scoreboard

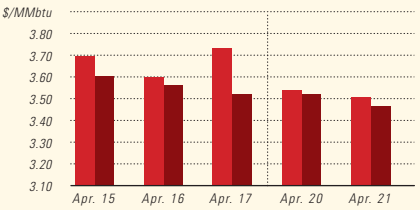
IPE BRENT / NYMEX LIGHT SWEET CRUDE



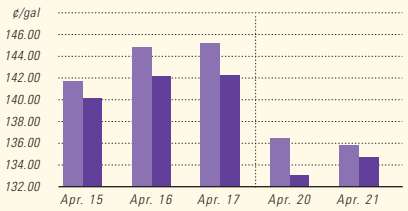
WTI CUSHING / BRENT SPOT



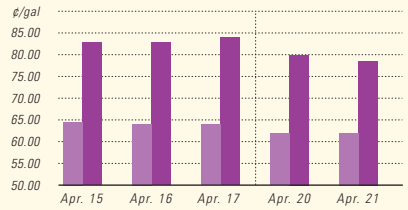
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



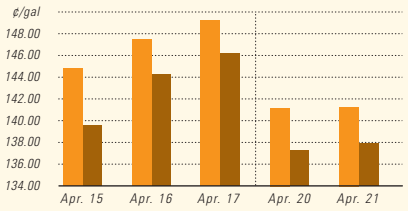
IPE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



NYMEX GASOLINE (RBOB)[1] / NY SPOT GASOLINE[2]



[1]Reformulated gasoline blendstock for oxygen blending.
[2]Nonoxygenated regular unleaded.

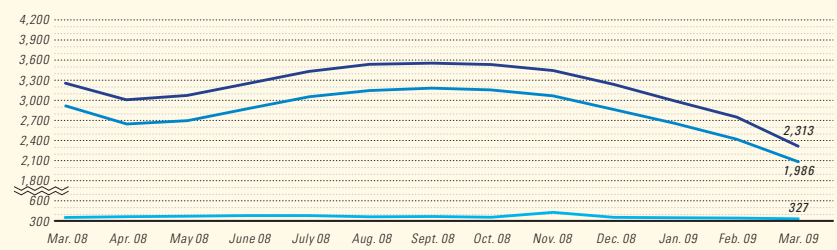
US INDUSTRY SCOREBOARD — 4/27

Latest week 4/10	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	9,048	9,085	–0.4	8,920	8,928	–0.1
Distillate	3,854	4,130	–6.7	3,961	4,191	–5.5
Jet fuel	1,445	1,552	–6.9	1,391	1,544	–9.9
Residual	553	607	–8.9	575	607	–5.3
Other products	3,822	4,370	–12.5	4,230	4,598	–8.0
TOTAL DEMAND	18,722	19,744	–5.2	19,077	19,868	–4.0
Supply, 1,000 b/d						
Crude production	5,466	5,147	6.2	5,353	5,119	4.6
NGL production[2]	1,793	2,201	–18.5	1,897	2,180	–13.0
Crude imports	9,415	9,686	–2.8	9,409	9,748	–3.5
Product imports	3,059	3,060	0.0	3,145	3,161	–0.5
Other supply[3]	1,646	1,387	18.7	1,584	1,436	10.3
TOTAL SUPPLY	21,379	21,481	–0.5	21,388	21,644	–1.2
Refining, 1,000 b/d						
Crude runs to stills	14,210	14,517	–2.1	14,210	14,645	–3.0
Input to crude stills	14,550	14,823	–1.8	14,550	14,958	–2.7
% utilization	82.5	84.3	—	82.5	85.1	—

Latest week 4/10	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	366,743	361,072	5,671	313,660	53,083	16.9
Motor gasoline	216,505	217,449	–944	215,751	754	0.3
Distillate	139,629	140,799	–1,170	106,079	33,550	31.6
Jet fuel–kerosine	39,338	39,061	277	39,709	–371	–0.9
Residual	36,170	36,235	–65	38,339	–2,169	–5.7
Stock cover (days)[4]			Change, %		Change, %	
Crude	25.9	25.4	2.0	22.0	17.7	
Motor gasoline	23.9	24.0	–0.4	23.3	2.6	
Distillate	36.2	36.6	–1.1	25.0	44.8	
Propane	38.9	33.5	16.1	20.6	88.8	
Futures prices[5] **4/17**			Change		Change	%
Light sweet crude ($/bbl)	49.80	50.46	–0.66	109.74	–59.94	–54.6
Natural gas, $/MMbtu	3.67	3.63	0.03	9.91	–6.24	–63.0

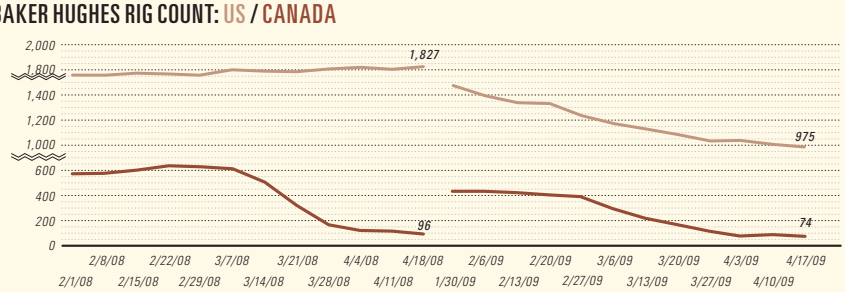
[1]Based on revised figures. [2]Includes adjustments for fuel ethanol and motor gasoline blending components. [3]Includes other hydrocarbons and alcohol, refinery processing gain, and unaccounted for crude oil. [4]Stocks divided by average daily product supplied for the prior 4 weeks. [5]Weekly average 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

VALHALL REDEVELOPMENT PROJECT (2008 - 2010):

POWERING BP'S OFFSHORE FIELD FROM SHORE

The 292 km Power-From-Shore system will replace the offshore gas turbines, making Valhall one of the most environmental friendly fields in the world. It also provides a safer and more efficient source of power supply. For BP, Nexans will provide project management, delivery, laying and installation of 292 km HVDC Integrated Return Conductor submarine cable bundled with submarine fiber optic cable. An unprecedented distance for an offshore installation, providing 78 MW power supply.

Nexans

www.nexans.com

marcom.info@nexans.com

The companies also agreed to pay $632,000 in fines and to spend $200,000 on supplemental environmental projects, EPA and DOJ said. They said complaints, which were filed along with the settlements, alleged that the producers violated hazardous air pollutant emissions standards; federal permitting, emissions monitoring, and reporting requirements; and other Clean Air Act provisions.

EPA said Dominion E&P and Miller Dyer came forward and discussed their violations under the agency's self-audit program. All of the producers cooperated to resolve the violations, it noted.

The investments will reduce air pollution by more than 1,300 tonnes/year and conserve enough gas to heat 1,080 homes/year, according to EPA. ✦

Exploration & Development — *Quick Takes*

ExxonMobil moving in rig at Point Thomson

ExxonMobil Production Co. has mobilized the drilling rig for the Point Thomson Project.

The rig, owned by Nabors Alaska, has been upgraded to drill the high pressure wells at Point Thomson. It was moved from Deadhorse to the drilling site in modules, some weighing more than 1 million lb.

No permanent roads exist to Point Thomson, so Fairweather E&P Services Inc. and Nanuq/AFC constructed more than 30 miles of ice road to enable the transport of heavy equipment and materials while protecting the North Slope environment. Most of the ice road follows the Beaufort Sea shore.

The Alaska Department of Natural Resources authorized the ice road permits on Jan. 27, 2009, allowing mobilization of the rig, and provided guidance to other regulatory agencies to expedite permitting to allow drilling to begin.

Craig Haymes, Alaska production manager for ExxonMobil, said, "We are moving forward with drilling and development activities at Point Thomson, for the mutual benefit of Alaskans and the Point Thomson Unit working interest owners. DNR staff and other local, state, and federal agencies have worked tirelessly to process permits necessary to allow drilling to begin.

"We are on schedule to begin production at Point Thomson by yearend 2014 and look forward to working with the state to resolve the remaining Point Thomson issues to ensure the project schedule is not impacted.

"Construction crews recently completed the final installation of camps and support facilities at the existing gravel pad to accept the rig. Over 250 people will work on these drilling operations, with an average of over 500 people at yearend 2014, when we expect to begin production," Haymes said.

The initial phase of the project will process 200 MMcfd of Point Thomson gas in order to produce 10,000 b/d of condensate into the Trans-Alaska Pipeline System by the end of 2014. The remaining gas will be recycled into the Point Thomson reservoir.

The Point Thomson Unit working interest owners committed $120 million to the drilling and development activities in 2008, with additional investments of about $250 million expected in 2009.

In addition to ExxonMobil, the other major Point Thomson owners participating in the current drilling and development activity include BP Exploration (Alaska) Inc. and ConocoPhillips Alaska Inc.

EnCana boosts Haynesville shale activity

EnCana Corp., Calgary, has a $580 million program to drill 50 Haynesville shale gas wells in East Texas and North Louisiana in 2009.

The company reported encouraging results from its own drilling and those of other producers, and the 2009 program will enable it to improve its understanding of the play, further evaluate its lands, and retain prospective acreage.

To facilitate unrestrained market access for its gas, the company has committed to supply 150 MMcfd on the proposed Gulf South pipeline expansion and 500 MMcfd on the proposed ETC Tiger pipeline.

Meanwhile, EnCana chalked up a 50% production increase in the Deep Bossier play in East Texas, where it averaged 409 MMcfd of production in the first quarter compared with an average of 334 MMcfd for all of 2008.

EnCana drilled 15 wells in the first quarter and 78 in all of East Texas in 2008.

Initial 30-day production rates in Amoruso field averaged more than 19 MMcfd, and the Charlene-1 well completed in January flowed at more than 50 MMcfd on initial tests.

Horn River drilling, gas plant take shape

EnCana Corp., Calgary, and its partner Apache Corp., Houston, have adopted a more efficient way to develop gas in the Horn River basin shales of Northeast British Columbia, EnCana said.

The companies hope to be able to drill fewer wells by increasing the number of fracs per horizontal leg to as many as 14 from the eight initially planned.

The companies will drill 12 wells in 2009, down from 20 originally planned.

EnCana is to build the Cabin gas processing plant 60 km northeast of Fort Nelson, BC, on behalf of industry co-owners that are major landholders in the basin. Its first phase is due in service in the third quarter of 2011. Initial capacity is 400 MMcfd, and the plant will be expanded in stages as the basin's gas production grows.

Salazar announces OCS revenue shares

Six US coastal states will share nearly $500 million from offshore oil and gas revenues in fiscal 2009 and 2010 to help restore and protect coastal wetlands, wildlife habitat, and marine areas, US Interior Secretary Ken Salazar said on Apr. 20.

Salazar said Alabama, Alaska, California, Louisiana, Mississippi, Texas, and their coastal local governments will have access to the money authorized under the 2005 Energy Policy Act (EPACT), which is allocated based on each state's qualified Outer Continental Shelf revenues generated off its coast.

The distributions will take place under the Coastal Impact As-

Wedge Series 500™

Key Features and Benefits

– Exceptional torque, compression and bending strength
– Reliable in the most demanding applications
– Ideal when clearance is needed for lean profiles
– Robust and easy to run thread design

The unique Wedge thread, combines exceptional torque, compression and bending

Pressure-energized metal seal provides 100% internal pressure rating

Our Wedge. Your Edge.

Specifically designed for use where torque strength is critical, our Wedge Series 500™ connections provide superior compression and bending resistance and also several times the torque strength of most competing technologies. They are used in demanding applications from highly deviated wells to strings that must be rotated and pushed into place. Wedge Series 500™ connections reliably perform even on pipes with large OD's and thin walls, they are perfect for tight clearance applications like lean profile due to their slim profile and compression, torque and bending capacity. Wedge Series 500™ connections are available in flush, near flush, upset and threaded and coupled configurations, with or without metal-to-metal seals.

Tubular technologies. Innovative services.

www.tenaris.com/tenarishydril

TenarisHydril

sistance Program, which was created under EPACT and is administered by the US Department of the Interior's Minerals Management Service.

In each of the two fiscal years, Louisiana will receive $121 million, Alaska $37.5 million, Texas $35.6 million, Mississippi $23.8 million, Alabama $19.7 million, and California $5 million. Portions of the money will go directly to 67 coastal political subdivisions, DOI said.

It said that Alaska's allocation rose more than 1,500% from the minimum in 2007 and 2008 because of about $2.6 billion of bonus payments in OCS Lease Sale No. 193 in the Chukchi Sea, held in February 2008, and variability of production in the Gulf of Mexico due to recent hurricanes. ✦

Drilling & Production — *Quick Takes*

BP ramps up Thunder Horse production

BP America has ramped up production by more than 100,000 boe/d from its Thunder Horse platform in the deepwater Gulf of Mexico through new wells.

Last month, the $1 billion platform produced more than 300,000 boe/d from seven wells. In December, production was over 200,000 boe/d from the third and fourth wells, signaling completion of commissioning and full operation. Thunder Horse now accounts for 1 of every 6 bbl of oil produced in the US.

Another two wells are to be added later this year to Thunder Horse, the gulf's largest deepwater producing asset, which is 150 miles southeast of New Orleans. The additions are key to boosting BP's future production in the area.

Designed to process 250,000 b/d and 200 MMcfd of gas, Thunder Horse produced its first shipment of oil last June. Operations with the technologically innovative project had been delayed by years due to technical problems and hurricanes. The field was originally discovered in 1999 in a reservoir 3 miles beneath mud, rock, and salt with pressures of 13,000-18,000 psi and temperatures of 88-135° C.

The Thunder Horse semisubmersible platform is in 6,050 ft of water on Mississippi Canyon Blocks 778 and 822. It has a deck load capacity of 40,000 tonnes. Production-drilling-quarters (PDQ) functions enable drilling subsea wells from the platform and processing production from the wells. Subsea wells are connected to production manifolds on the seafloor and then to the PDQ via riser flowlines.

Production is delivered to existing shelf and onshore pipelines via the Proteus and Endymion oil pipeline systems and the Okeanos gas pipeline system, which are part of the Mardi Gras Transportation System, the highest capacity deepwater pipeline system ever built.

BP operates the asset with 75% ownership, and ExxonMobil Corp. has 25%.

Premier signs Shelley field FPSO deal

Premier Oil PLC plans to continue development of Shelley oil field in the UK North Sea after signing a memorandum of understanding with Sevan Production UK Ltd. to use the floating production, storage, and offloading system.

Premier Oil is purchasing Oilexco North Sea Ltd. (OSNL), former operator of Shelley, which announced insolvency in January after failing to secure finance for its development program (OGJ Online, Mar. 27, 2009).

Shelley, now being drilled, is expected to produce more than 30,000 b/d starting in summer with the Sevan Voyageur FPSO, which is already moored at the field.

Sevan expects to operate the FPSO and receive reimbursement for the operating cost and a tariff payment based on actual monthly revenue from oil production from the field. "Work will now commence towards conclusion of a fully termed agreement," said Premier Oil.

Timing of Shelley's production depends on the availability of diving support vessels.

OSNL's creditors approved a company voluntary arrangement that will help in the $505 million sale of the company to Premier Oil. It is awaiting approval from its shareholders, among other measures, before the deal can be finalized.

Sevan Marine licenses FPSO technology

Sevan Marine ASA has agreed to license to Eni Norge AS the technology required for its circular floating production, storage, and offloading vessel that will process oil and gas from Goliat field in the Barents Sea.

Sevan Marine's 1000 FPSO will have an oil production capacity of 100,000 b/d, gas production of 3.9 million cu m/day, and oil storage capacity of 1 million bbl. Subsea wells will be linked to the FPSO, with flowlines and risers scheduled to be installed in June-July 2010 and May-August 2011. The field will start production in 2013 and is expected to produce for 15-20 years.

Eni in March awarded the postfeed engineering contract to Sevan for the FPSO, but it has not yet selected a contractor for the engineering, procurement, and construction work (OGJ Online, Feb. 9, 2009).

Goliat is northwest of Hammerfest in 400 m of water. Eni is operator and holds a 65% stake, while StatoilHydro has 35%. ✦

Processing — *Quick Takes*

Marsden Point refinery expansion under way

New Zealand Refining Co. Ltd. (NZRC) has begun construction on a 35,000-b/d expansion of its 107,000-b/d Marsden Point refinery.

The company is adding the capacity by modifying a 90,000-b/d distillation tower. The project, scheduled for completion by yearend, will eliminate the need to import resid as supplemental feed for a 30,000-b/d hydrocracker.

The Marsden Point facility is New Zealand's only refinery.

In February, NZRC said one of its four major-company share-

SPE is what you do.

Disciplined thinking

When you join SPE, you can immediately begin to focus in on your areas of interest and expertise through our six technical disciplines. Our membership combines the brightest minds in the E&P industry, giving you access to new people, new places, and new ideas from all over the world.

SPE has something for everyone working in the upstream oil and gas industry, no matter where on the globe you may be.

Join our worldwide membership today at www.spe.org/join.

Society of Petroleum Engineers

SPE International

www.spe.org

holders, Shell New Zealand Holding Co. Ltd., was reviewing ownership options, which might include divestment of its 17% interest.

Other major-company shareholders are BP New Zealand Holdings Ltd. 24%, Mobil Oil NZ Ltd. 19%, and Chevron New Zealand 13%.

The international companies are NZRC's largest customers.

Aramco, Sumitomo to expand Rabigh JV

Saudi Aramco and Sumitomo Chemical Co. have signed a memorandum of understanding for phase two development of their $10.3 billion Petro Rabigh petrochemical joint venture.

The two firms signed the MOU to carry out a feasibility study to assess investments needed to expand Petro Rabigh's existing ethane cracker for an additional 30 MMscfd of feedstock ethane, to build a new aromatics complex using about 3 million tons/year of naptha, and to construct other petrochemical units.

The study is to be completed by September 2010, while the new facilities are scheduled to start operating in the July-September quarter of 2014, if found feasible. The two firms are considering producing high-performance resins for autoparts, acrylic resins for LCDs, and about 10 other products at the new site.

The two companies' joint Rabigh Refining & Petrochemical Co. began full-scale operations on Apr. 8, producing polyethylene and four other general-purpose resins for China and other Asian markets. ✦

Transportation — *Quick Takes*

Crude oil port partners leave joint venture

A partnership to build a large offshore crude oil receiving terminal in the US Gulf of Mexico has dissolved.

Houston-based Enterprise Products Partners LP and TEPPCO O/S Port System LLC, an affiliate of TEPPCO Partners LP, have jointly withdrawn from the Texas Offshore Port System partnership in a disagreement with the third partner, an affiliate of Oiltanking Holdings America Inc.

Enterprise announced its decision Apr. 21; TEPPCO on Apr. 16.

Enterprise and TEPPCO each relinquishes its one-third interest, forfeits its initial investment, and has taken a one-time noncash charge of $34 million against second-quarter 2009 earnings.

In August 2008, affiliates of Enterprise, TEPPCO, and Oiltanking Holding Americas Inc. formed a joint venture to design, construct, own, and operate a new Texas offshore crude oil port and pipeline system for delivering waterborne crude to refining centers along the upper Texas Gulf Coast.

TOPS was to include an offshore port, two onshore storage facilities with about 5.1 million bbl of crude storage capacity, and an associated 160-mile, 1.8 million b/d pipeline. Total cost of the project was estimated at $1.8 billion.

According to nearly identical press releases from both companies, Oiltanking has responded by alleging that the dissociation is wrongful breach of the TOPS partnership agreement. Both companies say their actions "are permitted by, and in accordance with, the terms of the TOPS partnership agreement," and they will, "should the need arise,…vigorously defend" their actions. At presstime Apr. 22, a promised statement from Oiltanking had not been issued.

Arrow's CSM-LNG proposal gets approval

Brisbane-based Arrow Energy Ltd. and its partner Liquefied Natural Gas Ltd. of Perth have taken another step towards building the world's first coal seam methane (CSM)-to-LNG plant following Queensland's approval of the group's environmental impact statement (EIS) for the proposed Fisherman's Landing plant site near Gladstone, Queensland. The approval completes the EIS process and enables the partners to progress to development approvals stage.

Five specific approvals are now needed to enable a final investment decision to be taken on the project by yearend.

The group also is working with the Gladstone Ports Corp. to obtain access to the site so that early preparation works can begin in October. The overall plan involves construction of a 450 km pipeline from Arrow's CSM fields in the Surat basin of southeastern Queensland to Gladstone where LNG Ltd. will build the initial 1.5-million-tonne/year LNG plant at Fisherman's Landing. A second train of similar capacity also is planned.

Arrow will have primary responsibility for the CSM development, while LNG Ltd. will focus on the plant development.

Arrow can acquire up to 20% interest in the Fisherman's Landing facilities and also has an option to acquire a 50% stake in any other CSM-LNG plants subsequently developed.

The scheduled on-stream date for the first train is 2012.

AGA Gas awards LNG terminal contract

AGA Gas AB plans to import LNG through a small scale terminal 55 km south of Stockholm by May 2011, a company spokesman told OGJ. The terminal with capacity to process 300,000-400,000 tonnes/year of LNG will be at Brunnsviksholme outside Nynashamn. It will be supplied with LNG from the Skangass liquefaction plant in Stavanger, which has a capacity of 300,000 tonnes/year, and other terminals in Europe.

"Our terminal will have 20,000 cu m of storage capacity," said the company representative. "We have awarded the construction contract of the terminal to NCC Construction Sweden."

A new LNG tank will be built in slip form 33 m high and 38 m in diameter. It is expected to be finished during the first half of 2010. The terminal and tank will cost 275 million Swedish Krona.

"The terminal…will be the first of its type in Sweden and will facilitate the utilization of natural gas in Central Sweden. Fortum, among others, will use the natural gas to replace petroleum for city-gas production in Stockholm and the Nynas refinery will use the natural gas in its production of hydrogen gas," said NCC Construction. The harbor for the terminal will receive tankers 160 m in length with a depth of 9 m. "These will be ships with a capacity of 50,000 cu m," the AGA Gas spokesman told OGJ.

A 100-m bridge will connect Brunnsviksholme with the mainland. The contract also includes construction of a service building, an access road to Norviksvagen, a vehicle bay for receipt of LNG, and some ground work. ✦

Lurgi – your clean conversion partner.

Lurgi is the worldwide leading partner when clean conversion is postulated. We command sustainable processes which allow us to make better use of oil resources or biomass than ever before.

With our technologies we can produce synthesis gases, hydrogen or carbon monoxide: for downstream conversion to petrochemicals. Based on resources like natural gas, coal and tar sand we produce synthesis gas which we convert into low-pollutant fuels.

Enhanced sustainability: from biomass which does not compete with the food chain, we can recover ultra-pure fuels burning at a low pollutant emission rate which are excellently suited for reducing the carbon footprint. You see, we are in our element when it comes to sustainable technologies.

Visit us in Hall 9.1
Stand K32–N40

Build on our technologies.
Call us, we inform you: +49 (0) 69 5808-0
www.lurgi.com

A member of the Air Liquide Group

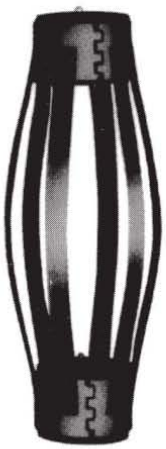
AIR LIQUIDE Lurgi

1127_e

Everything for Oilwell Cementing

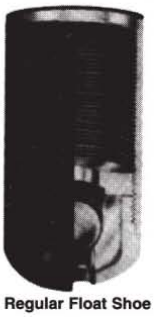
Everything *but the Cement!*

HINGE-TYPE CENTRALIZERS



Industrial Rubber's Hinge-Type Centralizers feature channel-formed collar rings with hinges placed within the channel to eliminate hinge damage. This construction assures that hinges will not rupture while casing is being run regardless of hole direction or irregularities in formations and that the centralizer will provide effective centering down hole.

The design of the split collars and narrow bow springs provide maximum effective centralizing of the casing with minimum obstruction to annular flow. Industrial Rubber Hinge-Type Centralizers are available in sizes 2⅜" through 20".



Regular Float Shoe

Automatic Fill-up Float Shoe

FLOAT EQUIPMENT

Regular Ball-Type
Flapper Type
Automatic Fill-up

Industrial Rubber's three types of float shoes and float collars are engineered for rugged dependability. Drillable parts are made from high strength aluminum alloy formulated for ease of drilling. All three types of float equipment are designed to provide adequate flow passage and to withstand the abrasive action of large volumes of fluids. Write or call for details on rugged and dependable float equipment from Industrial Rubber, Inc.

WRITE FOR NEW CATALOG

EVERYTHING FOR OILWELL CEMENTING.

Plugs, casing centralizers, baskets, float equipment, stage cementing tools,

EVERYTHING BUT THE CEMENT.

CALL TOLL-FREE 800-457-4851 FOR PRICE AND DELIVERY

PRIVATELY OWNED -ESTABLISHED IN 1965

MasterCard
Now accepting MasterCard and VISA
VISA

INDUSTRIAL RUBBER, INC.
OIL TOOL DIVISION

P. O. Box 95389 Oklahoma City, Ok. 73143-5389
Phone 405/632-9783 Fax 405/634-9637
Visit our website at www.iri-oiltool.com

97-4

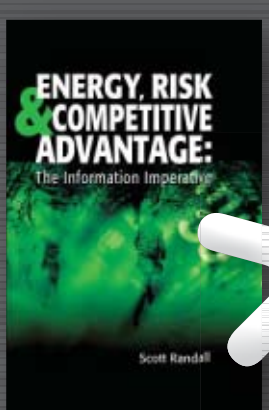
Letters

Wrong attitudes

The editorial "Stopping the juggernaut" to me highlighted all that is wrong with attitudes in the oil and gas industry today (OGJ, Apr. 6, 2009, p. 20). Instead of acknowledging the problems with the failing US auto industry and its unwillingness to adapt to consumers' wants and needs by producing desirable and fuel-efficient cars, the author turns the argument to personal attacks on the Obama administration using terms like "radicalism", "btu bankruptcy," and "environmental extremism." Exactly what is extreme about building cleaner cars and wanting to conserve a valuable and finite resource for future generations?

The oil and gas business will continue to thrive and provide society with the resources it needs, regardless of government intervention or lack thereof. The demand for oil and gas is not going to decrease at any time in the foreseeable

KNOW YOUR
Market!



ENERGY, RISK & COMPETITIVE ADVANTAGE:
The Information Imperative
By Scott Randall
ISBN: 978-1-59370-134-5
Price: $85.00 US

PennWell
ORDER YOURS TODAY:
WWW.PENNWELLBOOKS.COM

future, and to suggest that producing more fuel-efficient cars will lead to some sort of economic catastrophe or steer fuel consumption away from petroleum is both foolish and irresponsible. If the oil and gas industry cannot adapt to changing markets by investing in greener technologies and promoting the efficient and responsible use of its products then maybe the industry as a whole needs to take a good look at itself. Efforts by the petroleum industry should be focused on staying relevant, being innovative, and adapting to the changing marketplace, and this can only help to diversify and strengthen the economy over the longer term.

Aaron Santucci
Calglary

Why GM swooned

Somewhat belatedly I read your splendid editorial about Barrack Obama's arrogant sacking of GM Chairman Rick Wagoner and the dangers this portends for the oil and gas industry (OGJ, Apr. 6, 2009, p. 20). Having spent most of my professional life in the Detroit area, and having done 450 metallurgical studies for Ford Motor Co. and also 1,000 testing jobs on high-strength steels for sour oil and gas wells, some of my comments might be of interest.

Only the federal government had the power to bring the world's greatest and most successful corporation to its knees. The existence of roughly 75 million GM cars and trucks on American highways today should be testimony enough to GM's success. Americans love their products. They're functional, long-lasting, beautifully styled, and part of Americana. My wife and I couldn't be happier with our two Buicks. It was GM that gave America the electric starter, automatic transmission, and countless dozens of other automotive innovations copied by all the foreign competition. More than any other companies, it was GM and Ford that made the mountain of vehicles, aircraft engines, planes, and weapons that got us through World War II.

If GM had simply grown with the population and the economy since the heady days of the '50s and '60s, its market capitalization would be nearly a trillion dollars today. Instead, it had crashed to under $1 billion at the low point about a month ago. Only the feds could have brought about this thousandfold implosion. Though the news media and Sen. Richard Shelby (R-Ala.) remain totally ignorant of the government's role in bringing down this industrial colos-

© Kronos 2009

I want a time & attendance solution that works right out of the box.

A Yes.

B Large, unknown ERP implementation fees make the current economic uncertainty all the more exciting.

T&A systems can reduce costs dramatically. But not if they take 18+ months and millions of dollars for your ERP vendor to implement. At Kronos, we understand your workforce management issues and what it takes to address them. Which is why all our easily configurable solutions deliver complete automation, high-quality information, and are easy to own. With thousands of installations in organizations of all sizes — including over half the Fortune 1000® — we're proving **workforce management doesn't have to be so hard.**

Visit Kronos.com/configure10 for the free IDC White Paper: "Optimizing Resources, Lowering Costs in a Challenging Economy".

KRONOS®

TIME & ATTENDANCE SCHEDULING ABSENCE MANAGEMENT HR & PAYROLL HIRING LABOR ANALYTICS

OIL&GAS JOURNAL Previous Page | Contents | Zoom In | Zoom Out | Front Cover | Search Issue | Next Page qMags

sus, I can sum it up in a few key steps:

1. *The Wagner Act of 1936.* This put all the bargaining power in the United Auto Worker's hands. At contract time the union singles out Ford or GM and presents its extreme demands (pattern bargaining). Does the targeted auto company gleefully serve up super-high wages for unskilled assembly jobs, gold-plated health benefits, "30-and-out" retirement (at ages as low as 47 or 48), and nearly full pay for not working during a slowdown, simply out of the goodness of its heart? Not at all. Every day that the union is on strike, that company loses customers to the other automakers. This drives the company to its knees, leading to the present exorbitant cost structure of the Big 3. The Wagner Act prevents the Big 3 from locking arms and saying, "There won't be another car made in Detroit until this contract is settled." Such a position would lead to much more reasonable wages and benefits, competitive with those of the Japanese, Korean, and German transplants.

2. *Foreign competition.* It was the genius of our founding fathers, saying no to imports from England and creating the rights of private property and the ideas of free enterprise, that brought on our high standard of living and lucrative markets. No other country had this. Why then were the Japanese allowed to waltz in and steal vast chunks of our rich automotive market? Originally, foreign imports were seen only as a way to help Germany and Japan rebuild their broken economies after World War II. That thought was overlooked and forgotten after their economies rebounded. The Japanese had a great advantage because their laws forced them to build small cars for their narrow streets. Sadly, our policymakers have zero loyalty to American workers, and the foreign competition closed Big 3 factories and squeezed profits.

3. *Excessive regulations.* You could fill a large room with all the costly regulations that Congress has dumped on the auto industry. Worst of all are the emission regulations that have reached absurdly low limits of hydrocarbons, NOx, and carbon monoxide. Never mind the fact that exhaust gases are vastly cleaner than when I was a boy (and those don't seem to have hurt me), they continue to cut the limits in half about every 5 years. Cynically, I would describe this as job security for the Environmental Protection Agency bureaucracy, for the EPA emissions laboratory located 1 mile from my home, and for all the inspection stations. It's like jumping half way to a line: You never get there. But an immense amount of research and development has been spent by the Big 3 to meet these unjustifiable limits. Furthermore, the rising CAFE standards in themselves reduce emissions, obviating the need for the extremely low limits. Needless to say, the very strict emission limits have added a lot to the cost of cars and have reduced fuel economy. Henry Ford would roll over in his grave if he heard that we are putting burnt gases back through the engine.

4. *Wall Street bankers—the coup de grace.* One year ago my son Ed, an engineer at the Cadillac engine plant in Livonia, Mich., told me that GM was going to be just fine. They had the fabulous new Chevrolet Malibu, the popular Cadillac CTS, and other fine new products; gas mileage and reliability were excellent; they had fewer recalls than the Japanese; and the stock price was about $25-40. But recently the stock price was under $2, and the market cap under $1 billion. What happened? Gasoline at $4.50/gal (partly caused by Wall Street speculators?) killed the markets for the only vehicles (SUVs and pickup trucks) they really made money on. But then, when gas prices plunged, the banking collapse brought on by greedy bankers (with shockingly inept oversight by Congress, of which Obama was a member) kept potential car buyers from getting loans on new cars. Plain and simple, it was the utter greed and malfeasance of the bankers that have suddenly brought the Big 3 to their woeful state. With meager inflow of money to meet their prodigious legacy costs, GM burned cash at billions per month and was forced to ask Washington for help. As you stated, the feds became "emergency creditor" to GM, and Obama exploited the situation, abusing his power to sack the very competent Rick Wagoner. Imagine: Obama, who never managed anything as big as a hamburger stand or a car wash, destroying the head of the world's largest manufacturing company!

I know very many engineers that work, or have worked for the auto industry. With rare exceptions, they are very intelligent, competent, and dedicated. I would stack them up against the banking executives any day. How strange that the bankers, earning obscene salaries and bonuses, get off scot-free while shoving my engineering friends into the unemployment line and millions of other American workers into desperate financial circumstances. Someone noted that most of the 10 men on Barrack's automotive team drive foreign cars. How much loyalty to the Detroit folks can we expect from them?

David L. Sponseller
President, OMNI Metals Laboratory, Inc.
Ann Arbor, Mich.

Calendar

✦ 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

APRIL

CPS/SEG International Geophysical Conference & Exposition, Beijing, (918) 497-5500, (918) 497-5557 (fax), e-mail: semery@seg.org, website: www.seg.org. 24-27.

AIChE Spring National Meeting, Tampa, (203) 702-7660, (203) 775-5177 (fax), website: www.aiche.org. 26-30.

API Spring Refining and Equipment Standards Meeting, Denver, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 27-29.

EAGE European Symposium on Improved Oil Recovery, Paris, +31 88 995 5055, +31 30 6343524 (fax), e-mail: eage@eage.org, website: www.eage.org. 27-29.

ENTELEC Conference & Expo, Houston, (972) 929-3169, (972) 915-6040 (fax), e-mail: blaine@entelec.org, website: www.entelec.org. Apr. 29-May 1.

MAY

EAGE International Petroleum Conference & Exhibition, Shiraz, +31 88 995 5055, +31 30 6343524 (fax), e-

OIL&GAS JOURNAL Previous Page | Contents | Zoom In | Zoom Out | Front Cover | Search Issue | Next Page qMags

Calendar

mail: eage@eage.org, website: www.eage.org. 4-6.

Offshore Technology Conference (OTC), Houston, (972) 952-9494, (972) 952-9435 (fax), e-mail: service@otcnet.org, website: www.otcnet.org. 4-7.

✦GPA Permian Basin Annual Meeting, Austin, (918) 493-3872, (918) 493-3875 (fax), e-mail: pmirkin@gpaglobal.org, website: www.gasprocessors.com. 5.

Interstate Oil and Gas Compact Commission Midyear Meeting (IOGCC), Anchorage, (405) 525-3556, (405) 525-3592 (fax), e-mail: iogcc@iogcc.state.ok.us, website: www.iogcc.state.ok.us. 10-12.

ERTC Asset Maximisation Conference, Prague, 44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 11-13.

ACHEMA International Exhibition Congress, Frankfurt, +1 5 168690220, +1 5 168690325 (fax), e-mail: amorris77@optonline.net, website: http://achemaworldwide.dechema.de. 11-15.

IADC Environmental Conference & Exhibition, Stavanger, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 12-13.

North American Unconventional Oil & Gas Conference & Exposition, Denver, (403) 209-3555, (403) 245-8649 (fax), website: www.petroleumshow.com. 12-13.

NPRA National Safety Conference, Grapevine, Tex., (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npra.org. 12-13.

International School of Hydrocarbon Measurement, Norman, Okla., (405) 325-1217, (405) 325-1388 (fax), e-mail: lcrowley@ou.edu. Website: www.ishm.info. 12-14.

Uzbekistan International Oil & Gas Exhibition & Conference, Tashkent, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 12-14.

Pipeline Simulation Interest Group (PSIG) Meeting, Galveston, Tex., + 966 3 873 0139, + 966 3 873 7886 (fax), e-mail: info@psig.org, website: www.psig.org. 12-15.

Iraq Oil + Gas Summit, Houston, (202) 536-5000, (202) 280-1239 (fax), e-mail: lwilson@nfemail.com, website: www.New-Fields.com. 13-14.

Louisiana Oil and Gas Symposium, Baton Rouge, (225) 578-8657, (225) 578-9257 (fax), e-mail: hammer@lsu.edu, website: www.brgs.la.org. 19-20.

NPRA Reliability & Maintenance Conference, Grapevine, Tex., (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npra.org. 19-22.

IADC Drilling Onshore Conference & Exhibition, Houston, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 21.

Gastech International Conference & Exhibition, Abu Dhabi, +44 (0) 1737 855000, +44 (0) 1737 855482 (fax), website: www.gastech.co.uk. 25-28.

APPEA Conference & Exhibition, Darwin, +61 7 3802 2208, e-mail: jhood@appea.com.au. website: www.appea2009.com.au. May 31-Jun. 3.

SPE Latin American and Caribbean Petroleum Engineering Conference, Cartagena, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. May 31-Jun. 3.

JUNE

Caspian International Oil & Gas/Refining & Petrochemicals Exhibition & Conference, Baku, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@

© Kronos 2009

I want to make sure we're getting full production for every paid hour.

A Yes.

B My boss may scream at me in our monthly variance meetings, but that's how I know he cares.

How can you be sure your people are on the floor and doing what they should? And just as importantly, doing it well? At Kronos, we understand your workforce management issues and what it takes to address them. Which is why all our solutions deliver complete automation, high-quality information, and are easy to own. With thousands of installations in organizations of all sizes — including over half the Fortune 1000® — we're proving **workforce management doesn't have to be so hard.**

Visit Kronos.com/effective10 for the free White Paper: "Overall Labor Effectiveness: Achieving a Highly Effective Workforce".

KRONOS®

TIME & ATTENDANCE SCHEDULING ABSENCE MANAGEMENT HR & PAYROLL HIRING LABOR ANALYTICS

Kickoff Event for the OTC

21st Annual

ASME/UH OTC Crawfish Boil

Crawfish • Beer and soft drinks • Barbecue • Hot dogs
Bratwurst • Live band • Children's games • Desserts • Raffles

Proceeds go to Engineering Scholarships

Sunday, May 3 / 1-5 p.m.

$30/ticket ($35 at the door)

University of Houston (entrance #1 – off Spur 5)

Lynn Eusan Park

For tickets & sponsorship Information:
contact Diane Ashen, (713) 271-1983

Thank You 2008 Sponsors

TITANIUM SPONSORS

ASHEN & ASSOCIATES WORLDWIDE EXECUTIVE SEARCH
RADOIL
CAMERON
DRIL-QUIP
AKER KVAERNER
VETCO GRAY - A GE OIL & GAS CO.
WEATHERFORD
PENNWELL

PLATINUM SPONSORS

BAKER HUGHES
STRESS ENGINEERING SERVICES
TECHNIP
AMECPARAGON
OCEANEERING
SCHLUMBERGER
ALCOA OIL & GAS
NATIONAL OILWELL VARCO

CORPORATE SPONSORS

TEJAS RESEARCH & ENGINEERING
TESCO CORPORATION
TRANSOCEAN
NATCO
B.J. SERVICES
OIL STATES
FORUM OILFIELD TECHNOLOGIES
DASS MACHINE OF ARKANSAS

bp

Event Underwriter

Calendar

ite-exhibitions.com, website: www.oilgas-events.com. 2-5.

Asia Oil & Gas Conference, Kuala Lumpur, 65 62220230, 65 62220121 (fax), e-mail: info@cconnection.org, website: www.cconnection.org. 7-9.

AAPG Annual Meeting, Denver, (918) 560-2679, (918) 560-2684 (fax), e-mail: convene@aapg.org, website: www.aapg.org. 7-10.

PIRA Scenario Planning Conference, Houston, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 8.

ILTA Annual International Operating Conference & Trade Show, Houston, (202) 842-9200, (202) 326-8660 (fax), e-mail: info@ilta.org, website: www.ilta.org. 8-10.

International Oil Shale Symposium, Tallinn, Estonia, +372 71 52859, e-mail: Rikki.Hrenko@energia.ee, website: www.oilshalesymposium.com. 8-11.

SPE EUROPEC/EAGE Conference and Exhibition, Amsterdam, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 8-11.

PIRA Understanding Global Oil Markets Seminar, Houston, (212) 686-6808, (212) 686-6628 (fax), website: www.pira.com. 9-10.

GO-EXPO Gas and Oil Exposition, Calgary, Alta., (403) 209-3555, (403) 245-8649 (fax), website: www.petroleumshow.com. 9-11.

Petro.t.ex Africa Exhibition & Conference, Johannesburg, +27 21 713 3360, +27 21 713 3366 (fax), website: www.fairconsultants.com. 9-11.

Oil and Gas Asia Exhibition (OGA), Kuala Lumpur, +60 (0) 3 4041 0311, +60 (0) 3 4043 7241 (fax), e-mail: oga@oesallworld.com, website: www.allworldexhibitions.com/oil. 10-12.

ASME Turbo Expo, Orlando, (973) 882-1170, (973) 882-1717 (fax), e-mail: infocentral@asme.org, website: www.asme.org. 13-17.

Society of Petroleum Evaluation Engineers (SPEE) Annual Meeting, Santa Fe, NM, (713) 286-5930, (713) 265-8812 (fax), website: www.spee.org. 14-16.

PIRA London Energy Conference, London, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 15.

IPAA Midyear Meeting, Dana Point, Calif., (202) 857-4722, (202) 857-4799 (fax), website: www.ipaa.org. 15-17.

PIRA Scenario Planning Conference, London, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 16.

Atlantic Canada Petroleum Show, St. John's, Newfoundland & Labrador, 403) 209-3555, (403) 245-8649 (fax), website: www.petroleumshow.com. 16-17.

IADC World Drilling Conference & Exhibition, Dublin, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 17-18.

PIRA Understanding Global Oil Markets Seminar, London, 44 1493 751 316, e-mail: miles@pira.com, website: www.pira.com. 17-18.

AAPL Annual Meeting, Clearwater Beach, Fla., (817) 847-7700, (817) 847-7704 (fax). e-mail: aapl@landman.org, website: www.landman.org. 17-20.

IAEE International Conference, San Francisco, (216) 464-2785, (216) 464-2768 (fax), website: www.usaee.org. 21-24.

Society of Professional Well Log Analysts Annual Symposium (SPWLA), The Woodlands, Tex., (713) 947-8727, (713) 947-7181 (fax), website: www.spwla.org. 21-24.

SPWLA Annual Symposium, The Woodlands, Tex., (713) 947-8727, (713) 947-7181 (fax), e-mail: webmaster@spwla.org, website: www.spwla.org. 21-24.

International Offshore and Polar Engineering Conference (ISOPE), Osaka, (650) 254-1871, (650) 254-2038 (fax), e-mail: meetings@isope.org, website: www.isope.org. 21-26.

Asia LPG Seminar, Singapore, (713) 331-4000. (713) 236-8490 (fax), website: www.purvingertz.com. 22-25.

API Exploration & Production Standards Oilfield Equipment and Materials Conference, Westminister, Colo., (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 22-26.

Moscow International Oil & Gas Exhibition (MIOGE) & Russian Petroleum & Gas Congress, Moscow, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 23-26.

JULY

Rocky Mountain Energy Epicenter Conference, Denver, (303) 228-8000, e-mail: conference@epicenter2008.org, website: www.denverconvention.com. 7-9.

API Offshore Crane Operations and Safety Conference, Houston, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 14-15.

Oil Sands and Heavy Oil Technologies Conference & Exhibition, Calgary, Alta., (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.oilsandstechnologies.com. 14-16.

AUGUST

SPE Asia Pacific Health, Safety, Security and Environment Conference and Exhibition, Jakarta, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 4-6.

SPE Asia Pacific Oil and Gas Conference and Exhibition, Jakarta, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 4-6.

EnerCom's The Oil & Gas Conference, Denver, (303) 296-8834, email: kgrover@enercominc.com, website: www.theoilandgasconference.com. 9-13.

Oil Sands and Heavy Oil Technologies Conference & Exhibition, Calgary, Alta., (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.oilsandstechnologies.com. 14-16.

ACS Fall National Meeting & Exposition, Washington, (202) 872-4600, e-mail: service@acs.org, website: www.acs.org. 16-20.

IADC Well Control Conference of the Americas & Exhibition, Denver, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 25-26.

Summer NAPE, Houston, (817) 847-7700, (817) 847-7704 (fax), e-mail: info@napeexpo.com, website: www.napeonline.com. 27-28.

SEPTEMBER

Oil & Gas Maintenance Technology North America Conference, New Orleans, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.ogmtna.com. 1-3.

EAGE Near Surface European Meeting, Dublin, +31 88 995 5055, +31 30 6343524 (fax), e-mail: eage@eage.org, website: www.eage.org. 7-9.

© Kronos 2009

It's critical that I know my actual unit labor costs.

A Yes.

B Around here, we use the "Peanut Butter" method of accounting.

Sure, you're making products. But which products are making you money? Without accurate labor costs, it's all just a guess. At Kronos, we understand your workforce management issues and what it takes to address them. Which is why all our solutions deliver complete automation, high-quality information, and are easy to own. With thousands of installations in organizations of all sizes — including over half the Fortune 1000® — we're proving **workforce management doesn't have to be so hard.**

Visit Kronos.com/lean10 for the free White Paper: "The Lean Workforce: Applying Lean Principles to Improve Workforce Management".

KRONOS®

TIME & ATTENDANCE SCHEDULING ABSENCE MANAGEMENT HR & PAYROLL HIRING LABOR ANALYTICS

Journally Speaking

Energy knowledge needed

Sam Fletcher
Senior Writer

More people are discussing energy issues, but most don't know enough to make informed decisions and are still advocating "wishful" solutions, according to a recent study by Public Agenda, a nonpartisan research organization in Washington, DC.

Based on a national survey, Public Agenda concluded the US public doesn't know critical facts about energy problems and isn't prepared for the necessary tradeoffs. "Half of all Americans (51%) could not correctly identify a renewable energy source such as solar or wind power, 39% could not name a fossil fuel, 65% overestimated US dependence on Middle Eastern oil, and 52% thought that by reducing smog, the US has come 'a long way' in addressing global warming," it said.

People needn't become energy experts, but they do need to understand the basic facts and implications of different choices. Simply increasing information isn't enough, however, said social scientist Daniel Yankelovich, who founded Public Agenda with Cyrus Vance, former secretary of state under President Jimmy Carter. "People can absorb factual information much faster than they can overcome wishful thinking and denial or accept far-reaching changes in habits and lifestyles," Yankelovich said.

Americans are "well advanced" in the initial public awareness stage of the energy learning curve. But the longest and most arduous stage requires they "confront their own wishful thinking and denial as they wrestle with the need to make painful tradeoffs and sacrifices," researchers said. The final stage will be resolution and support for remedial action.

Fast problem, slow public

"This is a unique challenge to policy makers: the combination of a fast-moving, complex problem and a comparatively slow-moving public trying to come to grips with it," Yankelovich said. "While the challenges are significant, and the hurdles extensive, there's nothing in our research to suggest that they're insurmountable," he said.

Most Americans focus on one or two energy issues such as prices or climate change, not recognizing the connections to other issues. The survey showed US residents care more about the price and secured supplies of energy supplies than about climate change. Among respondents, 89% said they worried about fuel prices, with 57% worried "a lot." Almost as many, 83%, were concerned about dependence on foreign oil, with 47% worrying "a lot." Climate change was less an issue with 71% of the respondents concerned and only 32% worried "a lot."

Public Agenda officials said, "Global warming simply doesn't have the same urgency yet for the public, possibly because it's further off, but the high price of gasoline remains fresh in their minds."

Most respondents said they're willing to change driving habits, but reject any increase in the cost of driving. They oppose increasing gas taxes to fund renewable energy (53%) or to achieve energy independence (57%), floor prices for gasoline (72%), and congestion pricing (61%) to force people to change their driving habits. Yet they support the use of federal decrees to force utilities to invest in cleaner, renewable energy supplies and ban coal-fired power plants.

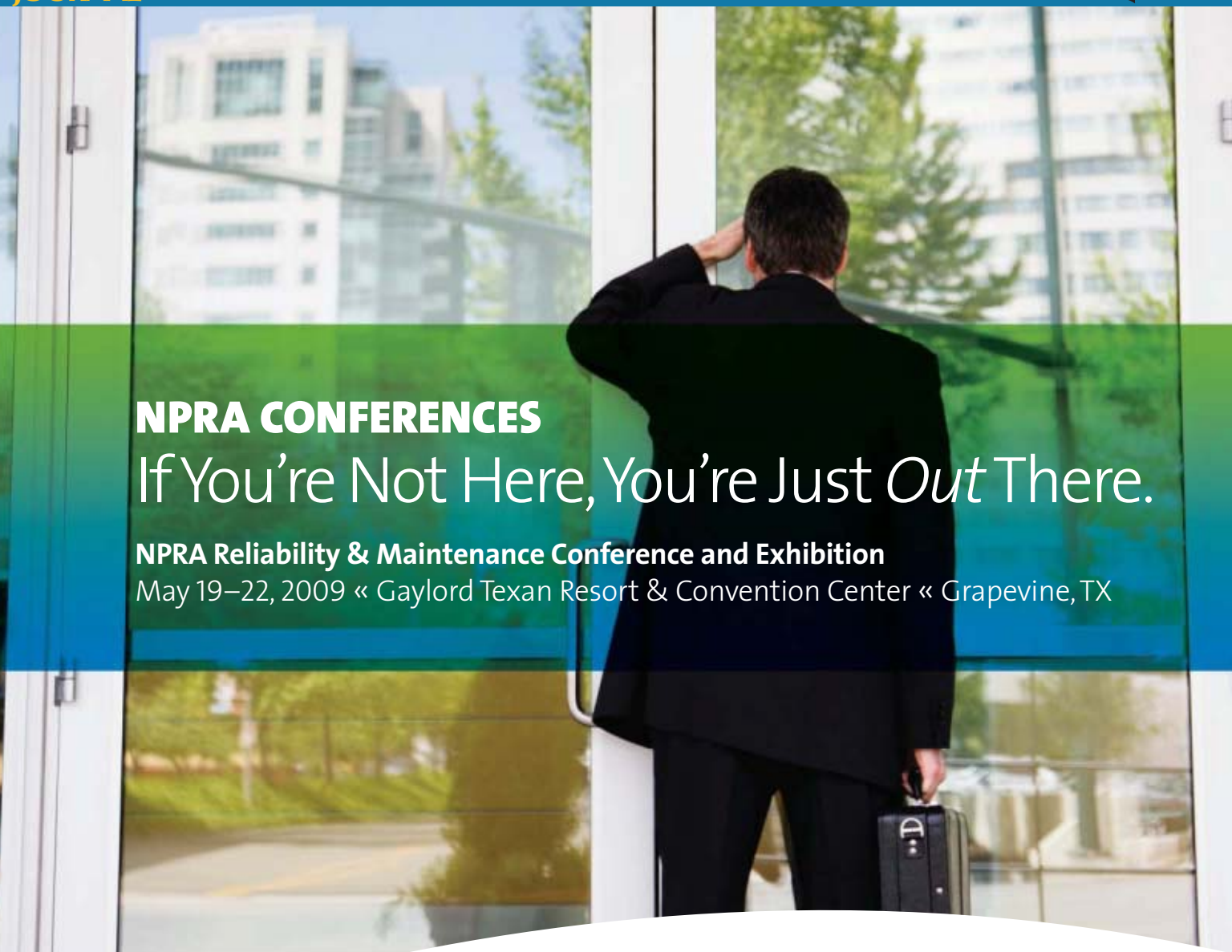
Based on their responses to 90 survey questions, the participants were divided into four groups with distinct starting points, values, and frameworks for examining issues. The largest (40%) was labeled "Anxious" because they worry about energy costs, scarcity, and global warming. They tended to be younger with lower income and less knowledge of energy issues, researchers said. The second largest group (24%) was the "Greens," who were politically moderate, had higher incomes, and were more knowledgeable about energy issues. They were the most willing (72%) to pay higher taxes to fund development of alternative energy sources.

The next division (19%) was the "Disengaged," who neither knew nor worried much about energy. They were politically moderate, lower income, and disproportionately older and female.

The smallest division (17%) was the "Climate Change Doubters," indicating their attitude on global warming. They were politically conservative and supported nuclear power and oil drilling. They divided on whether to invest in fossil fuels (48%) or solar (39%). "But even that sets them apart—all the other groups favor the alternatives by three quarters or more," researchers said.

But while members of the four groups assessed issues from different perspectives, they sometimes expressed similar views of the problem and solutions, indicating important common grounds for addressing the energy challenge, researchers said.

The survey is the start of a continued evaluation of the public's learning curve on energy. Results of the report are available at: http://www.publicagenda.org/reports/energy and at www.planetforward.org/energy-index. ✦



NPRA CONFERENCES

If You're Not Here, You're Just *Out* There.

NPRA Reliability & Maintenance Conference and Exhibition
May 19–22, 2009 « Gaylord Texan Resort & Convention Center « Grapevine, TX

Don't get locked out of NPRA's Reliability & Maintenance Conference.

In today's demanding economy, you want more value for your dollar. NPRA's Reliability & Maintenance Conference and Exhibition delivers it with an expanded program that includes **more than 40 workshops** in seven subject tracks, two keynote speakers, and several Q&A and discussion panels.

The Exhibition will showcase the latest technologies and services for you to see and evaluate. **More than 240 companies** will exhibit their equipment, materials, and special expertise in solving problems that are critical to your competitiveness.

The 2009 RMC is **your best opportunity to see and hear about the latest in reliability, maintenance, and turnarounds** from noted experts and fellow practitioners.

Register today at **npra.org/rmc** or
call us at 202.457.0480 for more information.

NPRA
NATIONAL PETROCHEMICAL
& REFINERS ASSOCIATION

Today's refining and petrochemical businesses.
The more you know about us, the better we look.

Editorial

Markey uses the d-word

US Rep. Ed Markey (D-Mass.) deployed the d-word as he opened subcommittee hearings on legislation calling for aggressive action on climate change. The d-word is denial—the political crime of wondering out loud if human beings really should try to reengineer the climate. Punishment for this offense is ostracism.

"The time for delay and denial and inaction has come to an end," Markey declared Apr. 21 before his Energy and Environment Subcommittee of the Energy and Commerce Committee began hearing testimony on the American Clean Energy and Security Act. Markey and Henry Waxman of California, chairman of the full committee, sponsor the bill. They of course displaced John Dingell of Michigan as committee chair and Rick Boucher of Virginia as the subcommittee leader, whom environmental extremists found too soft on global warming. "It's time," Markey said, "to put Americans back to work in the jobs needed to bring about the age of the clean energy economy."

Pressure to act

Markey may think it's time to do these things in part because of pressure to act from the administration of President Barack Obama. On Apr. 13, Carol Browner, director of the White House Office of Energy and Climate Change, said the administration wants legislation in hand when its emissaries attend an international conference on climate change in Copenhagen at the end of the year. Four days after she spoke, the Environmental Protection Agency proposed to find that "greenhouse gases in the atmosphere threaten the public health and welfare of current and future generations." The stipulation, sanctioned by a 2007 ruling of the Supreme Court, would enable EPA to regulate emissions of greenhouse gases under the Clean Air Act—and thus to gain unprecedented control over individual lives and the national economy.

EPA's finding of "endangerment" came as no surprise. But its timing, so soon after Browner's articulation of Executive Branch wishes and so soon before Markey's hearings, sent a clear message to Congress: It's your way—by December—or our way. The squeeze leaves little time for deliberation of a proposal that amounts to nothing less than overhaul of the US economy. And it leaves no room for disagreement—or what some dismiss as denial. The ruling elite has decided to manipulate emissions of greenhouse gases, and there will be no further discussion about the need for or wisdom of doing so.

Denial of a different type is fiercely at work here. It relates to cost.

At this point, arguments over details are distractions. The central mechanism of climate adjustment almost surely will be a cap on emissions accompanied by a system for trading emission allowances. The allowances might be auctioned at the start of the program or distributed at low or no initial cost. The difference has to do more with timing than with the existence or amount of cost. Fundamentally, any system to control emissions of greenhouse gases must lower use of cheap energy and raise use of expensive substitutes. This formula yields cost. And inevitable inefficiencies of implementation, including the corruption certain to find its way to the trading of emissions allowances, will amplify the effect.

EPA chimed in quaintly on cost the day before Markey opened his hearings. The Waxman-Markey bill, it said, would lower average annual household consumption—raise cost—by $98-140/year on a discounted basis due to elevated energy prices, price changes for other goods and services, and "impacts on wages and returns to capital." But the estimate assumes the government returns most program revenue to households. "A policy that failed to return revenues from the program to consumers would lead to substantially larger losses in consumption," EPA warned.

More denial?

So it seems worth asking, at this moment in American history, how readily a government choking on self-imposed debt will part with money flowing to it from any source. Or does the question represent evidence of denial and thereby disqualify itself from serious attention?

Panic over global warming is about to subject a teetering US economy to extra and possibly extreme peril. It's not too soon to apportion blame. ✦

New Advanced Downhole Flowmeters Enhance Hydrocarbon Recovery

Baker Hughes' new SureFlo™ series of downhole flowmeters offers real-time flow data to help you optimize production and advance reservoir performance in a wide range of applications, including subsea wells.

- SureFlo 390 flowmeter is the industry's first downhole electronic multiphase flow meter.
- SureFlo 298 bulk rate, two-phase flowmeter provides the industry's highest accuracy measurements for specific applications including production allocation in offshore wells.
- SureFlo 298EX flowmeter is the industry's first fullbore-access, downhole electronic flowmeter, with no flow restrictions.
- SureFlo 290 flowmeter offers cost-effective flow measurement for marginal and heavy oil reservoirs.

BAKER HUGHES

Find out how our SureFlo series of flowmeters can optimize production and advance reservoir performance on your next field development. Contact your Baker Hughes representative today.

SureFlo downhole flowmeters – Advancing Reservoir Performance.

www.bakerhughes.com/sureflo

Visit the Baker Hughes OTC Booth 4241

©2009 Baker Hughes Incorporated. All Rights Reserved. 25207

Economic slump to chill capital spending in 2009

Marilyn Radler
Senior Editor-Economics

Oil and gas producers—slammed by the worldwide economic downturn, lower oil and gas prices, and tight credit markets—have slashed their 2009 capital budget plans.

Capital expenditures for oil and gas projects are set to shrink worldwide this year, with outlays in the US especially hard hit.

OGJ's annual capital spending survey shows that oil and gas industry capital spending in the US will fall 26% this year to $242 billion.

Total Canadian spending will decline 15% to $53 billion (Can.), but spending plans indicate an increase in Mexico. Outside North America, upstream oil and gas capital expenditures will decline from a year ago.

In response to the worldwide economic downturn and resulting drop in oil demand, many small oil and gas producers have slashed their original 2009 capital spending plans.

The larger operators mostly have stayed with their plans, but many of these spending outlooks call for a decline in 2009 outlays from last year's levels. These companies stand poised to take advantage of lower costs during the slowdown. But with economies in Southeast Asia still growing, there will be no precipitous decline in costs during this downturn.

Earlier this month the Conference Board reported that real gross domestic product in the US is forecast to have declined 5.9% during the first quarter of this year, signaling a deep point in the recession, and that the US may see real GDP decline 2.6% in 2009; this would be the largest decline since 1946.

"The Conference Board projects that growth in the second quarter will stay negative and will be very slow in the third quarter as capital spending will remain low and inventories will not be depleted until year's end. Overall industrial production is also unlikely to move up before the fall. Even the recovery in the fourth quarter will be held back by these negative trends and increased unemployment, which is typically a lagging indicator," the Conference Board said.

Companies that invest now will realize savings as costs decline, though. The Centre for Global Energy Studies recently noted in its Monthly Oil Report that oil companies are seeking big cost reductions from service providers, with Total talking about cuts of 20% and BP 40%, according to Thierry Pilenko, CEO of Technip.

"With such big savings on the cards, it is little wonder that investment deci-

sions are being delayed until costs have come down," CGES said.

US upstream spending

Spending in the US for upstream operations will decline almost 29% this year. This includes outlays for oil and gas exploration, drilling, production, and offshore lease payments to the Minerals Management Service.

This upstream outlook is based in part on OGJ's annual drilling forecast, which predicted that the total number of US well completions in 2009 would be 43,384 (OGJ, Jan. 19, 2009, p. 35). The 2008 well completion total is estimated at 52,097.

In the wake of soaring worldwide demand for inputs such as labor, drilling rigs, steel, and copper, costs have been reassessed since the last edition of OGJ's capital spending outlook (OGJ, Apr. 28, 2008, p. 20). This led to upward revisions of 2008 upstream spending figures.

But 2009 drilling and exploration capital expenditures in the US will decline 27% from last year to $174.6 billion.

Low oil and gas prices have slowed drilling and curtailed production in most areas of the US. The American Petroleum Institute this month reported that first-quarter 2009 US oil and gas drilling activity dipped to levels not seen since 2004.

According to API's latest Quarterly Well Completion Report, an estimated 11,071 oil wells, gas wells, and dry holes were completed in the first quarter of 2009, down 22% from a year earlier and down 35% from last year's fourth quarter. The estimated number of new exploratory wells fell 11% from first-quarter 2008.

The API statistics show that gas continues to be the primary target for US drilling, with an estimated 5,735 gas wells completed in the first quarter, down 23% from a year earlier. This decline represents the most severe quarterly decline for gas drilling in this decade, API said.

OGJ estimates that outlays for production this year will total $33.2 billion, down from $45.5 billion last year.

Another component of US upstream spending is the total of bonus payments that the MMS collects from lease sales for tracts on the Outer Continental Shelf.

The MMS has two lease sales scheduled for this year. One sale for tracts in the Central Gulf of Mexico took place in March and attracted $703 million in high bids. Another lease sale for tracts in the Western Gulf of Mexico is scheduled on Aug. 19.

Based on declining investment and the fact that fewer tracts will be offered in the upcoming sale, OGJ estimates that a total of $1.08 million will be generated by the two 2009 lease sales. Last year MMS conducted four lease sales and received $6.883 million in high bids.

US downstream outlays

Construction of pipelines will cushion the fall in capital spending in all other categories, including transportation, processing, marketing, and LNG. OGJ forecasts that all oil and gas spending excluding upstream projects will decline almost 6% this year.

Capital spending at refineries in the US will fall 22% to $10.14 billion. The decline follows a surge in project spending that took place last year. Fewer new projects are planned to get under way this year, and some projects are being slowed.

In December 2008, Sunoco Inc. reported that it would focus on base maintenance and the completion of major compliance projects in 2009 and 2010, including completing a distillate hydrotreater conversion in Philadelphia.

Through 2008, Sunoco spent $140 million on the Philadelphia ultralow-sulfur diesel project. It plans to spend a further $70 million on it this year.

Some integrated operators have indicated they will reduce capital outlays at their refineries this year, including Marathon Corp., which announced plans to spend almost 35% less at its refineries than last year. Chevron Corp. said it will reduce this year's capital outlays at refineries to $2 billion from $2.3 billion last year.

ConocoPhillips reported that capital spending at its US refineries in 2009 would total $1.1 billion, down from 2008 outlays of $1.6 billion. The company said this year's investment is primarily for projects related to sustaining and improving the existing business with a focus on safety, regulatory compliance, reliability, and capital maintenance.

In addition, ConocoPhillips said projects to expand conversion capability and increase clean product yield continue, including funding for a hydrocracker project at its San Francisco refinery. But the company noted that it will

WHERE FUNDS WILL GO FOR US PROJECTS

Table 1

	2009, million $	Change 2009-2008, %	2008, million $	Change 2008-2007, %	2007, million $
Exploration-production					
Drilling-exploration	174,621	–27.1	239,646	10.7	216,462
Production	33,178	–27.1	45,533	10.7	41,128
OCS lease bonus	1,080	–84.3	6,883	119.1	3,142
Subtotal	**208,879**	**–28.5**	**292,062**	**12.0**	**260,732**
Other					
Refining	10,140	–22.0	13,000	57.0	8,280
Petrochemicals	50	–95.0	1,000	19.0	840
Marketing	1,950	–35.0	3,000	20.0	2,500
Crude and products pipelines	5,164	16.5	4,431	146.8	1,796
Natural gas pipelines	10,374	63.6	6,343	45.2	4,367
Other transportation	840	–30.0	1,200	23.7	970
Mining, other energy	900	–25.0	1,200	20.0	1,000
Miscellaneous	3,750	–25.0	5,000	22.0	4,100
Subtotal	**33,168**	**–5.7**	**35,174**	**47.5**	**23,853**
Total	**242,047**	**–26.0**	**327,236**	**15.0**	**284,585**

CANADIAN SPENDING PLANS

Table 2

	2009, million $ (Can.)	Change 2009-2008, %	2008, million $ (Can.)	Change 2008-2007, %	2007, million $ (Can.)
Exploration-production					
Drilling-exploration	25,045	–8.0	27,223	20.0	22,686
Production	9,896	–8.0	10,757	20.0	8,964
Subtotal	**34,941**	**–8.0**	**37,980**	**20.0**	**31,650**
Oil sands*	15,000	–25.0	20,000	10.7	18,065
Other					
Refining	1,500	–25.0	2,000	–42.3	3,465
Petrochemicals	10	–95.0	200	–39.9	333
Marketing	400	–27.3	550	–18.8	677
Crude and products pipelines	485	46.5	331	292.6	84
Natural gas pipelines	28	–91.9	338	—	—
Other transportation	225	–25.0	300	4.5	287
Miscellaneous	550	–15.4	650	2.2	636
Subtotal	**3,197**	**–26.8**	**4,369**	**–20.3**	**5,482**
Total	**53,138**	**–14.8**	**62,349**	**13.0**	**55,197**

*In situ, mining, and upgrading.

slow down some of its refining projects due to economic conditions.

Pipelines, other spending

Expenditures are set to climb this year for crude and products pipelines and for gas pipelines in the US. Construction activity for pipelines, especially new gas systems like the Midcontinent Express Pipeline between Texas and Alabama, will push spending up 44% from last year.

OGJ's most recent Worldwide Pipeline Construction report identified plans for the construction of nearly 4,000 miles of gas pipelines and just over 3,000 miles of crude and products lines in the US this year (OGJ, Feb. 9, 2009, p. 52).

OGJ forecasts that spending on these gas lines, including compressor stations, will climb 64% this year to $10.37 billion. Spending for crude and products lines in the US will total $5.16 billion, up 17%.

With no major projects taking place this year, capital spending at US petrochemical plants is forecast to plunge to $50 million from $1 billion last year.

Also, a slowdown in LNG project development will suppress spending for import terminals in the US, while cost reductions brought on by the economic recession will drive down marketing and corporate expenditures from last year's levels.

Spending in Canada

Cost-cutting will affect capital spending for projects in Canada this year as well. Oil sands development outlays will plunge more than conventional E&P spending, and the total of all other capital expenditures in Canada will drop from last year.

Capital expenditures for conventional oil and gas exploration, drilling, and production in Canada will decline 8% to $34.94 billion (Can.), following last year's 20% jump.

OGJ's drilling forecast earlier this year called for well completions to fall to 16,360 from last year's total of 17,802. There were 14,856 well completions in Canada in 2007, according to the Canadian Association of Petroleum Producers (CAPP).

Oil sands capital spending, which includes funds for in-situ extraction, mining, and upgraders, will slump 25% from a year ago to $15 billion (Can.). CAPP reported that oil sands capital expenditures totaled $18 billion (Can.) in 2007, the latest year for which the association has reported such data.

Canadian Natural Resources Ltd. reported that competition for resources during 2005-08 drove up costs for the first phase of its Horizon oil sands project 43% above the original estimate. Global demand for workers, steel, and copper surged along with oil prices during the project.

Marathon has announced that it will cut its 2009 oil sands spending to $887 million from 2008 outlays of $1 billion. The company said the year-on-year decrease reflects not only a stronger US dollar but also the expectation that nonessential projects will be deferred.

As in the US, midstream and downstream spending in Canada will decline as a whole by 27% from last year. Construction of crude and products pipelines will be the only growth area in this category in 2009.

Refining spending is set to decline 25% to $1.5 billion (Can.). Petrochemical outlays will drop 95% to just $10 million (Can.).

Late last year, Petro-Canada announced that its 2009 capital budget included about $560 million (Can.) for its downstream business, with the majority allocated for new growth project funding. This was to be directed toward the 25,000 b/d delayed coker at the company's Montreal refinery and additional reliability items associated with its Edmonton refinery conversion project. These plans were made before Petro-Canada's agreement to merge with Suncor Energy was finalized (OGJ Online, Mar. 24, 2009).

In announcing the merger, Petro-Canada and Suncor said they expect to achieve annual operating expenditure reductions of $300 million (Can.) from efficiencies in overlapping operations, streamlining business practices, and improved logistics. They also expect to achieve annual capital efficiencies of $1 billion (Can.) through the elimination of redundant spending and targeting capital budgets to high-return, near-term projects.

With plans for about 500 miles of construction, spending this year for crude and products pipelines will climb 47%. But plans call for only about 34 miles of new gas pipelines in Canada, dropping such spending to $28 million (Can.) for the year.

Spending elsewhere

Capital spending outside the US and Canada this year also will slow, though

to a much less extent.

In Mexico, Pemex announced that its 2009 capital budget includes a 15% total increase. The plan calls for 84% of the new nearly 186 billion peso budget to be allocated for exploration and production, and 12% is to be spent on refining projects. The remainder is set for petrochemicals and other expenditures.

Upstream spending outside North America is forecast to decline 6% from a year ago, according to the most recent Barclays Capital Original E&P Spending Survey, released Dec. 19, 2008.

The Barclays survey said Russian companies, after several years of world-leading spending growth, are now showing some of the largest cuts in 2009 E&P outlays.

Lukoil has reported that its 2009 capital budget will fall 40% but also said that a drop in costs and ruble devaluation will leave its investment effectively unchanged from last year.

Meanwhile, some US-based companies have also released details of their capital budget plans outside North America.

ConocoPhillips reported that in Europe, Asia, Africa, and the Middle East, its E&P capital program this year will be about $5.1 billion.

This funding will go to coalbed methane projects in Australia, the continued development of both Bohai Bay in China and Gumusut oil field off Malaysia, Ekofisk oil field in the North Sea, Shah gas field in Abu Dhabi, and Kashagan oil field in the Caspian Sea, among other projects, ConocoPhillips said.

ConocoPhillips's non-US refining and marketing spending plan was $600 million, with a focus on projects related to reliability, safety, and the environment, plus an upgrade project at its Wilhelmshaven, Germany, refinery.

In November 2008, ConocoPhillips and Saudi Aramco halted until the second quarter of this year the bidding for construction of a 400,000 b/d export refinery at Yanbu, Saudi Arabia, citing uncertainties in the financial and contracting markets.

Some large LNG liquefaction and regasification projects are currently under construction. In Chile, the Quintero LNG regasification terminal will be completed this year. A handful of terminals are in the planning and construction phases in China. And at Ras Laffan, Qatar, three phases of QatarGas liquefaction remain under construction.

In Western Australia, Woodside Energy's Pluto LNG project will pipe gas in a 180 km 36-in. line from Pluto and Xena fields to the new liquefaction facility at Burrup, with a total cost of $12 billion (Aus.). ✦

Mears Pipeline Integrity Group can help you meet compliance goals. Our Engineering and Technical Support team can help develop plans and procedures necessary for a comprehensive program. And our Construction/Inspection Group will document pipeline integrity and perform corrective and remedial work as necessary, all available on a turnkey basis. Mears Group can be your solution.

Call (800) 632-7727 or visit www.mears.net

mears
A QUANTA SERVICES COMPANY

Figures show recession's impact on US industry in 1Q

Nick Snow
Washington Editor

Government and industry statistics show that the US oil and gas industry was hit hard as the economic recession deepened during this year's first quarter.

US oil and gas drilling plunged to levels not seen since 2004, ending 6 consecutive years of year-to-year growth for the period, said the American Petroleum Institute on Apr. 15. US petroleum product deliveries dropped 3.4% year-to-year to an average 19.2 million b/d, their lowest first-quarter level since 1998, API said in a separate report Apr. 15.

A day earlier, the US Energy Information Administration said in its latest short-term energy outlook that it expects reduced demand from a weaker economy to offset any demand increases resulting from lower product prices this summer driving season. EIA said it anticipates US motor gasoline demand will rise 1% year-to-year to 9.1 million b/d from levels that were depressed last summer because of dramatically higher retail prices.

It expects retail gasoline prices, which averaged $3.81/gal nationwide last summer, to average $2.23/gal during the 2009 period. EIA forecasts diesel fuel prices, which averaged $4.37/gal nationwide last summer, will average $2.27/gal this driving season.

"My leading petroleum indicator for how the general economy is doing is diesel fuel," API Chief Economist John C. Felmy told OGJ on Apr. 16. "Demand for low-sulfur diesel was down about 6% during the first quarter. Until I see that change, it tells me that economic activity is slowing down."

Smaller US share

In its March monthly statistical report, API said the 19.2 million b/d of average US product deliveries, which is how it measures demand, during 2009's first quarter contrasted with a first-quarter peak of 20.8 million b/d in 2005.

"The substantial, 4-year decline means that the US share of world oil consumption fell from nearly 25% in the first quarter of 2005 to under 23% in early 2009, based on International Energy Agency estimates," API said. Paris-based IEA on Apr. 13 also slashed its forecast for worldwide oil demand (OGJ Online, Apr. 13, 2009).

API's latest quarterly well completion report showed that an estimated 11,071 oil wells, gas wells, and dry holes were completed in the US during 2009's first 3 months—22% less than in 2008's first quarter and 35% lower than the total for 2008's final quarter. The estimated number of new exploratory wells fell 11% from 2008's first quarter, while the estimated number of deep wells—those 15,000 ft or deeper—and shallow gas wells slipped 13% and 36%, respectively, year-to-year, it indicated.

A resurgence of oil well completions, which began earlier in the decade, subsided this past quarter as the total fell 23% from a year earlier to 4,060 wells, API said. Overall, the share of estimated oil well completions was 36% of total drilling activity in the past 3 months, down from 40% a year earlier, it added.

Gas continued to be the primary domestic drilling target, with an estimated 5,735 wells completed during 2009's first quarter, according to API. This was still 23% lower than the total for the comparable 2008 period and represented the most several quarterly declines for gas plays this decade.

API, which does not track gas production, said domestic crude oil and condensate production increased 4.7% year-to-year in the first quarter to average 5.3 million b/d.

EIA said it expects US crude production to increase by 440,000 b/d to an average 5.4 million b/d this year, largely due to a larger Gulf of Mexico contribution as Thunder Horse and Tahiti platforms go into operation. EIA forecast a 0.3% drop in US gas production for the year.

Different paths

"Natural gas and oil are taking different paths," said Frederick Lawrence, vice-president of economics and international affairs at the Independent Petroleum Association of America. "Oil prices have gone up since Jan. 1, but natural gas has not," he said on Apr. 16. "So if a company's operations are gas-directed, it's going to be hit harder, especially if it's full of more-expensive gas plays."

Some producers may have become victims of their own success with the stunning growth of deep shale gas production, Lawrence told OGJ. "It improves the country's energy security, but its economics aren't favorable for producers right now," he said. "Producers with marginal wells face similar problems. Higher prices probably will return with demand, but it's not clear when that will happen. They need to keep operating in the meantime."

Felmy noted that gas prices have dropped sharply year-to-year. "The slower economy depressed demand, but there also was robust production last year, which could set a record. Combine that with strong inventories and gas producers face depressed prices right now," he said. EIA noted that Henry Hub spot prices began April below $4/Mcf, adding that it expects them to stay around that level until seasonal space heating demand revives next fall.

Producers also are responding to lower prices and demand by reducing their activity. "Several capital budgets have been revised downward after starting the year lower than they were in 2008," said Lawrence. "It's a combination of lower oil and gas prices and, for smaller firms, much tighter credit," said Felmy.

That apparently led to workforce reductions during the first quarter. Although they represented only part of the US oil and gas industry, the latest US Bureau of Labor Statistics monthly employment figures showed that there were an estimated 167,600 domestic oil and gas extraction jobs on a seasonally adjusted basis in March, down 0.2% from 167,900 in February and 1.1% from 169,400 in December 2008.

Producers face other forces beyond operating costs and low commodity prices, Lawrence said. "They realize that a host of political and general economic issues could affect them. We know that for a lot of companies, the Obama tax proposals could add a lot more pressure on their bottom lines at a particularly bad time," he said.

Summer outlook

EIA said the estimated 217 million bbl of gasoline stocks as of Apr. 1 appear to be ample heading into the summer driving season. It expects diesel and other distillate inventories to be a record 142 million bbl at the same time because overseas demand, which was strong a year ago despite record-high prices, is much lower this year because of the worldwide recession.

"The expected continuing decline in diesel fuel consumption in the United States this year as well as the growing weakness in distillate fuel usage outside the US are projected to result in lower refining margins for distillate throughout the forecast period. Because of the global weakness in industrial output and the onset of a recovery in motor gasoline consumption, domestic diesel prices could fall below gasoline prices this summer," EIA said in its latest monthly forecast.

It suggested that US refiners probably will emphasize gasoline production this summer because its average wholesale margins will be higher at 39¢/gal than diesel's (31¢/gal, compared with 80¢/gal in summer 2008).

Lower demand led US refiners to reduce inputs to crude distillation units 2.6% to an average 14.5 million b/d this past quarter from 14.9 million b/d in 2008's first 3 months, according to API's monthly statistical report. Utilization fell somewhat year-to-year to 82.3% from 84.6% although operable capacity rose 0.3% to 17.63 million b/d from 17.59 million b/d.

Felmy said inventories looked good at the end of the first quarter, "but we still need to get through the switch from the summer to winter blend. We'll have to monitor that on a week-to-week basis. The report for May 1 will provide the best indication." ✦

Stanislaw: Administration will bring oil, gas to energy policy table

Nick Snow
Washington Editor

The US oil and gas industry should prepare to be actively involved as the administration of President Barack Obama applies its recovery-and-reform strategy to energy and the environment, a leading consultant said on Apr. 20.

"There's a new transformative energy playing field being put in place. Although the oil and gas industry has not been talked about much in a positive way by the policymakers who are involved, it has to be brought to the table," said Joseph A. Stanislaw, one of the founders of Cambridge Energy Research Associates, who now runs his own firm, JAStanislaw Group LLC.

"As it is, it will have to play by the new rules which call for less consumption and more greenhouse gas reduction. Eventually, the oil and gas business will have to compete alongside cleaner alternatives. That could be its biggest long-term challenge," he told reporters during a press briefing at the 2009 Deloitte Energy Conference in Washington, DC.

Stanislaw, who also is an independent senior advisor to the financial services firm's energy and natural resources practice, said that in President Obama's "second 100 days," the strategy will also include building on local green energy initiatives to forge a national energy framework, asserting global leadership by agreeing to the principles of a carbon framework, and investing heavily in education and basic research and development to support all forms of energy.

"There's a new transformative energy playing field being put in place. Although the oil and gas industry has not been talked about much in a positive way by the policymakers who are involved, it has to be brought to the table."
—Joseph A. Stanislaw, JAStanislaw Group LLC

But the administration's environmental agenda also could lead to substantially higher energy costs, another Deloitte expert indicated. Branko Terzic, the firm's energy and resources regulatory policy leader, said that in Deloitte's survey of 60 state regulators in March and April, 81.3% said they believed the administration's proposed cap-and-trade system for carbon dioxide emis-

sions would increase electricity costs in their states.

'Very ambitious'

Energy industries face the prospect of higher taxes even if current environmental bills aren't enacted, according to Clint Stretch, managing principal for tax policy at Deloitte Tax LLP. "These are a very ambitious set of proposals. If they don't pass, it will leave a big hole in the deficit," he said. "I predict that by 2011-12, we will have a major discussion about how to pay for government services that we've dodged the last 30 years. Carbon auctions, a carbon tax, a fuel tax or a broad-based consumption tax will be the only real revenue-raising players when we do," Stretch added.

Stretch said discussions of ending oil and gas financial incentives that some politicians consider loopholes went on for years in Washington before several became part of the Obama administration's proposed fiscal 2010 budget. "Some of them frankly are naive. They don't consider the consequences going forward," he said.

This push for higher taxes comes as oil and gas prices have plunged, added Gary A. Adams, US oil and gas leader in Deloitte's energy and resources industry group. "Right now, the US independent producers are feeling this hardest. Their cash flows are their lifelines. This could lead to mergers and acquisitions in the future. Companies with cash think values could drop further so this may not occur immediately," he said.

As demand has fallen, so have revenues for national oil companies whose governments rely heavily on energy to operate, Adams said. This could lead to improved contracts for integrated oil companies with the technical resources that are continuing to invest through the worldwide economic downturn, he suggested. "Majors also are reducing their costs, including centralizing more operations around the world," he said. ✦

EPA issues proposed endangerment finding on GHGs

Nick Snow
Washington Editor

Greenhouse gases (GHGs) contribute to air pollution, which may threaten public health or welfare, the US Environmental Protection Agency said on Apr. 17.

The proposed endangerment finding, which followed a scientific review that the US Supreme Court ordered in 2007, said that concentrations of six gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) are at unprecedented levels because of human activities, according to EPA. It said that these high concentrations are very likely the cause of higher average temperatures and other climate changes.

The agency said its analysis confirmed that climate change also increases drought, heavy downpours and flooding, and heat and wildfires; leads to rising sea levels and more intense storms; and damages water resources, agriculture, wildlife and ecosystems. It said the proposed finding also sees security implications from global climate change, including escalating violence in politically unstable regions incited by increasingly scarce resources and massive migration to more-stable areas.

"This finding confirms that greenhouse gas pollution is a serious problem now and for future generations. Fortunately, it follows [US President Barack H. Obama's] call for a low-carbon economy and strong leadership in Congress on clean energy and climate legislation. This pollution problem has a solution, one that will create millions of green jobs and end our country's dependence on foreign oil," EPA Administrator Lisa P. Jackson said.

In a second proposed finding, she said EPA found that combined emissions from motor vehicles contribute to the atmospheric concentrations of the six greenhouse gases. The proposed findings now enter a public comment period before EPA issues final findings, the agency said. The analysis does not include any proposed regulations, although Obama and Jackson both have said they would like to see comprehensive legislation passed to address the issue.

'Lost 8 years'

Congressional reaction was mixed. US Senate Environment and Public Works Committee Chairwoman Barbara Boxer (D-Calif.) said the finding was long overdue. "We have lost 8 years in this fight. The Clean Air Act provides EPA with an effective toolbox for cutting greenhouse gas emissions right now. However, the best and most flexible way to deal with this serious problem is to enact a market-based cap-and-trade system which will help us make the transition to clean energy and will bring us innovation and strong economic growth," she said. If Congress does not pass legislation to address the problem, she would call on EPA to use its authority, she added.

James M. Inhofe (R-Okla.), the committee's ranking minority member, said the proposed endangerment finding would unleash a torrent of regulations that would destroy jobs, harm consumers, and extend EPA's reach into every corner of American life. "It now appears EPA's regulatory reach will find its way into schools, hospitals, assisted living facilities, and just about any activity that meets minimum thresholds in the Clean Air Act. Rep. John D. Dingell [D-Mich.] was right: The endangerment finding will produce a 'glorious mess,'" Inhofe said.

US House Speaker Nancy Pelosi (D-Calif.) said she welcomed the action that will allow EPA to regulate air

pollution from vehicles. "Congress is working on a comprehensive solution to global warming, and I am committed to moving clean energy legislation this year that will include perspectives from across our nation to create jobs, increase our national security and reduce global warming," she said.

House Minority Leader John A. Boehner (R-Ohio) said EPA's action "is nothing more than a backdoor attempt to enact a national energy tax that will have a crushing impact on consumers, jobs, and our economy. The administration is abusing the regulatory process to establish this tax because it knows there are not enough votes in Congress to force Americans to pay it."

Rep. Edward J. Markey (D-Mass.), who chairs the House Select Committee on Energy Independence and Global Warming, said EPA's proposed finding now puts pressure on Congress to solve the problem. To that end, he said the House Energy and Commerce Committee's Energy and Environment Subcommittee, which he also chairs, would start to hold hearings next week. He said there would be nine panels with 80 witnesses.

'Fundamentally ill-suited'

Oil and gas and other industry groups expressed concern. "The proposed endangerment finding poses an endangerment to the American economy and to every American family. It could lead to GHG greenhouse gas regulations under a law fundamentally ill-suited to addressing the challenge of global climate change. The Clean Air Act was created to address local and regional air pollution, not the emission of carbon dioxide and other global greenhouse gases," American Petroleum Institute Pres. Jack N. Gerard said.

National Petrochemical & Refiners Association Pres. Charles T. Drevna said, "EPA's announcement really comes as no surprise, but what is surprising is the willingness to proceed without having addressed all of the valid concerns previously raised by stakeholders and consumers." He noted that NPRA subcurate views on energy issues.

For instance, 49% of the respondents said that Saudi Arabia exports the most oil to the US, while only 13% identified Canada as this country's top foreign supplier. "This is Myth No. 1. We kept it from the 2006 survey because we felt it was so deeply entrenched," Thornley said.

More than 67% said they believed the US could meet higher future energy demand through conservation and efficiency, he continued. Sixty-three percent said human activity is the greatest source of greenhouse gases. And less than 28% correctly believe that US air quality has improved since 1970.

Offshore drilling

The survey's single bright spot came when 64.4% of the respondents said they favored expanded domestic offshore oil drilling while 31.8% opposed it. In a follow-up question, more than 42% of those expressing opposition said it was because the US uses too much oil.

"I think folks are beginning to realize that we literally sit on top of a lot of resources, which could lessen our dependence on foreign oil. We just can't get to a lot of it, but we will go to cartels and ask them to increase their output. I don't know of another country in the whole world that refuses to tap its abundant natural resources," Thornley said.

"The hope of this project is that we can get away from myth-based policies and concentrate on facts," he said, adding, "We're not trying to take a position, just contribute something that informs the debate." ✦

Perceptions and bad policy

Government policymakers are often criticized for making the wrong decisions about energy. Voters' erroneous beliefs may be part of the problem, a new study suggests.

The study, "Energy and the Environment: Myths & Facts," was released Apr. 20 as a US House Energy and Commerce subcommittee prepared to hold 3 days' of hearings on cap-and-trade proposals later in the week. Three days earlier, the US Environmental Protection Agency said in a proposed endangerment finding that greenhouse gases threaten public health (OGJ Online, Apr. 20, 2009).

"We think this is important because policymakers are moving fast and furious. I don't care what the ultimate policy conclusions are as long as they base their actions on facts and consider all of the consequences," Drew Thornley, who conducted the study for the Manhattan Institute for Policy Research (MIPR), told me on Apr. 17.

"Prudent, sound public policies are rooted in reality, not theory or well-intentioned hopes. I don't doubt that a lot of motivation for some of these folks is pure and good. I believe we can protect the environment while not hurting the economy. I don't think they are mutually exclusive goals," the independent energy policy analyst said in a telephone interview.

Still inaccurate

Zogby International surveyed 1,000 adults in January about 10 energy perceptions for the study as a follow-up to MIPR's 2006 study on the same issue. The latest results show that many Americans still hold inac-

mitted comments to EPA in December 2008 questioning models the agency used as well as its acknowledged lack of ability to characterize climate change effects on health and welfare, which significantly complicates understanding the net effects.

Choosing to regulate GHG emissions under the Clean Air Act would constitute EPA's single largest and potentially most complex assertion of authority over the US economy and individuals' lifestyles, Drevna said. "Before moving forward with regulation, the United States must ensure that other major global contributors are similarly committed to reducing their ambient greenhouse gas concentrations. US efforts would be fore naught if the administration fails to receive such commitments, and American economic competitiveness would be compromised," he said.

A final endangerment finding would trigger GHG regulation under the Clean Air Act and preempt congressional debate on the issue, the National Association of Manufacturers warned. Using outdated programs under the law to regulate GHG emissions would burden an ailing economy while doing little or nothing to improve the environment, NAM Pres. John Engler said. "The clean air laws were designed to focus on local pollutants. GHG emissions, however, are global in nature and require a new framework," he said.

American Chemistry Council Pres. Cal Dooley said as that group reviews the proposed finding and prepares to comment, it will focus on the proposal's scope and any implications for GHG regulation from stationary sources. "We believe that the Clean Air Act is not well-suited to address greenhouse gas emissions from stationary sources. Given the national implications of carbon dioxide regulation by EPA and the interdependent nature of climate and energy issues, climate policy should be discussed and developed in Congress in tandem with energy policy," he said.

'No longer a question'

Environmental organizations cheered EPA's announcement. David Bookbinder, climate counsel for the Sierra Club, said, "Where the Bush administration lagged, the Obama administration is now leading. There is no longer a question of if or even when the US will act on global warming. We are doing so now. President Obama is taking it to the hoop when it comes to our most pressing problems. This step will allow the administration to move forward while continuing to work with Congress to pass a strong clean energy jobs and climate plan."

David Moulton, climate policy director at the Wilderness Society, said, "Now that EPA is no longer going to ignore the law, the howls we are hearing are from the same folks who have been busy blocking legislation in Congress to modify the law. One way or the other, the clear and present danger of endlessly dumping pollutants into the atmosphere must be confronted. We will either find a way to build a future for our children based on clean energy and sustainable jobs, or we will face a very unsentimental foe: a climate that makes life unsustainable."

Matt Vespa, a senior attorney with the Center for Biological Diversity, said, "The Clean Air Act is our best tool for reducing greenhouse emissions from cars, ships and airplanes. For four decades, [it] has protected the air we breathe, saved thousands of lives and produced economic benefits at least 42 times the cost of regulation. EPA should immediately implement its effective and efficient mechanisms to reduce greenhouse gas pollution."

Other groups were critical. Institute for Energy Research Pres. Thomas J. Pyle, said, "Carbon is lighter than oxygen, more abundant than nitrogen and forms the basis of all human, plant and animal life on earth. At least it did yesterday. Today, it's a danger to human health and, upon meeting air, a clear and present threat to our existence. That was the pronouncement made by EPA, and it will be one this generation and others that follow will not soon forget."

A coalition of eight free-market groups told Jackson in an Apr. 15 letter that an endangerment finding "will set the stage for an economic train wreck and a constitutional crisis." The groups, which include the Competitive Enterprise Institute, American Conservative Union, and Americans for Tax Reform, said it also "would lead to destructive regulatory schemes that Congress never authorized." They said, "Significant uncertainty persists with regard to climate sensitivity, the core scientific issue."

The groups maintained, "Despite the ongoing increase in air's [carbon dioxide] content, various measures of public welfare (life expectancy, heat-related mortality, weather-related mortality, air quality, agricultural productivity) continue to improve. Endangerment of public health and welfare is not 'reasonably anticipated.'" ✦

BMI sees 'no clear pattern' emerging for products market

Eric Watkins
Oil Diplomacy Editor

Analyst BMI says weaker demand for diesel in road transport use, gas oil for manufacturing and industrial applications, and falling jet fuel consumption have acted in concert "to pull the rug from under the middle distillates market."

Gasoline prices and margins earlier in the first quarter had made some progress. Since then, refiners have again struggled, BMI said.

"There is no clear pattern yet emerging for the oil products sector but, based on OPEC's efforts to limit crude supply, the downstream segment may

be in for a tough time if crude prices rally but products demand remains weak," the analyst said.

"This is a recipe for ongoing margin weakness, and refiners are preparing themselves for the big squeeze," BMI said.

The start-up of new refineries in Asia and the Middle East will provide an ill-timed boost to global capacity that would lead to reduced plant utilization rates if demand remains weak, BMI noted.

Quick rebound unlikely

Lower fuel prices may stimulate demand in certain markets but the trend towards higher fuels taxation and the overhaul of subsidies in some developing countries mean that a near-term rebound is far from certain.

In spite of some evidence that US drivers are migrating back to less fuel-efficient vehicles, the major shifts in patterns of consumption resulting from vehicle ownership changes are unlikely to be reversed simply because pump prices are temporarily lower.

The move in Europe away from gasoline and towards diesel is expected to continue for a while, despite steep price differentials. However, advances in small gasoline engine technology may mean these more economical units could end the love affair with diesel.

Over the longer term, expansion of the refining system is still needed, particularly as market growth will likely accelerate as the world pulls clear of recession-depression. However, refining margins are likely to be under pressure for many months. The downturn in refining profitability, coupled with weaker upstream economics and modest profits in fuels retailing, could cause international oil companies (IOCs) and national oil companies (NOCs) to reexamine investment plans.

Downstream capacity

The downstream oil market needs to see continued high-level spending in new crude distillation capacity, improved plant upgrading capability, and better storage and distribution logistics, BMI said.

Inevitably there will be reduced capital expenditure if industry earnings and cash flow remain under pressure. This can only result in the market tightening once again as demand picks up—with a return to extreme price volatility and generally higher fuel prices.

The continued weakness of refined product prices has played into the hands of those countries wishing to revise or abandon regulated systems. Many are seizing the opportunity and making sweeping changes that should bring prices more closely in line with the wider market.

This will have an appreciable impact on demand patterns over the medium-

OIL&GAS OGMT MAINTENANCE TECHNOLOGY NORTH AMERICA™

September 1-3, 2009 • Hilton New Orleans Riverside • New Orleans, LA

OGMT North America is the only conference for maintenance and reliability professionals focusing solely on oil and gas - including upstream, midstream and downstream operations.

OGMT North America is now accepting abstract submittals for the 2009 conference program.

Abstract Deadline: February 16, 2009

Presentations will cover the following topics:

- Predictive and Preventive Maintenance
- Fundamentals of Best-in-Class Maintenance
- Roadmap to Best-in-Class Maintenance
- Maintenance Knowledge Management
- Aligning Knowledge/Training Towards Performance Excellence
- Maintenance Best Practices
- Maintenance Risk Management
- Maintenance Change Management
- Maintenance Benchmarking
- Contracting Practices - Outsourcing
- Effective Maintenance KPIs (Key Performance Indicators)
- State-of-the-Art Maintenance Tools & Equipment
- Industrial Maintenance Solutions
- The Need and the Gain on Asset Management
- Profit Opportunities and Asset Utilization
- Effective Utilization of CMMS (Computerized Maintenance Management System)

Presentations must be of interest and of practical value to executives, managers and engineers engaged in the petroleum industry. Your abstract should address any of the topics outlined above or any other topic relevant to oil and gas maintenance technology.

For complete abstract submission guidelines, please visit www.ogmtna.com.

Please submit a 150-200 word abstract

Online: www.ogmtna.com

Email: Marilyn Radler, Conference Director, Email: MarilynR@PennWell.com

Fax: (713) 963-6285

Owned & Produced by: PennWell

Flagship Media Sponsors: Oil, Gas & Petrochem EQUIPMENT, OIL&GAS JOURNAL, Offshore

WATCHING THE WORLD

Eric Watkins, Oil Diplomacy Editor

Blog at www.ogjonline.com

Having Al-Bashir's back

Anyone in the oil and gas industry who thought that Sudanese President Omar Al-Bashir would soon be out of the picture may want to think again.

Last week, Al-Bashir underscored his role in Sudan by announcing that the country's reserves stand at 150 million bbl and that its average production is 500,000 b/d.

At the opening session of the new parliament, Al-Bashir said work has been finalized in Nargath oil field, which "will produce some 60,000 b/d" and that production in the Fula basin will hit "more than 40,000 b/d."

Not least, Al-Bashir—whose arrest is sought by the International Criminal Court (ICC) over alleged abuse in Sudan's Western Darfur region—spoke of a plan to upgrade the 100,000-b/d refinery at Khartoum.

Such statements don't suggest any overt fears on the part of the Sudanese leader who just last week received a warm welcome from his Ethiopian hosts on his arrival in Addis Ababa for his 2-day official visit.

The welcome mat

While no Western diplomats showed up to greet him, Al-Bashir was welcomed by Ethiopian Prime Minister Meles Zenawi and many other African diplomats at Bole International Airport.

Not least, ambassadors from China, Venezuela, Cuba, and North Korea also joined their African counterparts at BIA to welcome him.

During a joint press conference with Meles, Al-Bashir dismissed the notion that the ICC arrest warrant would have any effect on his rule or his plans to travel.

"We came to this meeting to show those who said we could not travel outside Sudan that we can travel outside Sudan," said Al-Bashir who, in addition to Ethiopia, has visited Egypt, Eritrea, Libya, Qatar, and Saudi Arabia since the ICC issued its arrest warrant on Mar. 4.

Chinese plans

Nor has the arrest warrant slowed plans by the Chinese to exploit Sudan's oil to the fullest. In fact, China National Petroleum Corp. recently announced that its Dalian Petrochemical processed 40,000 tonnes of high-acid oil imported from Sudan in March.

In a bid to reduce production cost, according to Chinese press reports, Dalian successfully blended Sudan's "cheap, low-quality, acid crude" with normal crude to "pave the way for upcoming large-scale processing."

With such large-scale production in mind, CNPC subsidiary PetroChina is building a 10 million tonne/year refinery in southern China's Guangxi Zhuang autonomous region, which is designed to do nothing but process Sudanese high-acid crude.

The restructuring and expansion project of PetroChina's Jilin Petrochemical's 10 million tpy refinery has begun, with operations at the catalyzing and cracking facility to be under way by mid-2010.

Such plans would not be possible without the approval of Al-Bashir, and the Chinese know it—as do others. While ICC may want to arrest him, the chief buyers of Sudanese crude will do their all to make sure that does not happen. ✦

to-longer term, but the likely effects are difficult to assess at such an early stage.

In first-quarter 2009, BMI said the global wholesale price for premium unleaded gasoline was estimated at $50.63/bbl.

This compares with $56.37/bbl in fourth-quarter 2008 and, during the two quarters, the price has ranged from a monthly low of $40.38 in December 2008 to the February 2009 level of $53.29/bbl.

Gasoline's downward trend

Gasoline prices in this year's first quarter are down 50.4% from $102.15/bbl in the equivalent period of 2008. For the second quarter, BMI is forecasting an average global gasoline price of $55.78/bbl, which represents a rise of 10.2% over the previous quarter, but a year-on-year decline of more than 56% from the impressive $127.92/bbl seen a year ago.

For the whole of 2009, the BMI assumption for gasoline is an average $56.89/bbl, with the price peaking at a forecast monthly average of $64.75 in December 2009. The overall year-on-year fall in 2009 gasoline prices is put at 44.1%.

Gas oil in the first quarter of 2009 averaged $56.83/bbl, based on a composite global price. This represents a year-on-year fall of 51% over first-quarter 2008, illustrating a slight relative weakening of diesel vs. gasoline.

During the second quarter, BMI's revised forecast is for global gasoil at an average $66.81, representing a quarter-on-quarter increase of 17.6%, but a 56.4% year-on-year decline.

Jet price declines

For 2009, BMI's forecast is for an average jet fuel price of $69.35/bbl, assuming a monthly high of $94.48/bbl in December. The full-year outturn represents a 42.8% fall from the 2008 level.

Jet prices averaged $58.93/bbl in the first quarter of this year, using the composite for New York, Singapore, and Rotterdam. The annual decrease was

50.4%, with jet matching the decline in gasoline prices.

The monthly low during the previous 6 months was $60.34/bbl in December 2008, with the price reaching $61.83/bbl in January.

Volatility has been low in the jet fuel market compared with gasoline and diesel. In second quarter, BMI assumes an average global jet price of $68.22/bbl, which represents a rise of 15.8% quarter to quarter and a year-on-year fall of 56.4%.

For 2009, the monthly average price is forecast to range from $53.75/bbl in February to $96.76/bbl in December, proving an annual level of $71.78/bbl. This compares with $124.95/bbl in 2008.

Naphtha was the weakest performer in 2008 among the major refined products, gaining 31% to $87.40/bbl during 2008. In the first quarter, naphtha averaged an estimated $42.91/bbl, compared with $93.70/bbl in first-quarter 2008 and $38.37 in fourth-quarter 2008.

The 2009 average naphtha price is put by BMI at $46.40/bbl, down 47% from the previous year's level.

Looking further ahead, BMI sees gasoline prices recovering to $63.45/bbl in 2010, rising further to $71.11/bbl in 2011 and stabilizing at around $76.58/bbl from 2012.

Gas oil is expected to rebound to $77.35 in 2010, reaching a plateau of $93.35/bbl from 2012. The price of jet is forecast to average $80.06/bbl in 2010 and $89.72/bbl in 2011, before leveling out at $96.62/bbl from 2012. ✦

Indonesia changes rules for oil, gas cost recovery

Eric Watkins
Oil Diplomacy Editor

The Indonesian government, responding to criticism of current cost recovery procedures in the oil and gas industry, has drafted new rules that will reduce national expenditure by redefining some cost components as downstream instead of upstream.

"We hope that this will decrease spending on cost recovery in our state budget," Indonesia's energy and mineral resources minister Purnomo Yusgiantoro said of the new rules.

Among other changes, natural gas transmission pipelines and LNG export terminals will be redefined as downstream components and no longer deductible as upstream expenditures.

Officials said the changes will become part of new regulations that have been drafted for the oil and gas industry, which are being held up pending "synchronization" with other regulations, including taxation laws.

The country's cost of recovery mechanism formerly allowed oil and gas contractors to reclaim expenses on certain upstream activities from the government after the start of production. The changes come in response to critics who questioned the program's transparency and said it was prone to abuse.

In 2008, the government paid oil and gas contractors around $9.35 billion under the scheme, up $650 million from the $8.7 billion paid out in 2007.

The government and Indonesia's House of Representatives have agreed to cap cost recovery spending at $12 billion this year, largely by redefining upstream costs as downstream.

In March, six domestic and international oil companies operating in Indonesia paid up to $167 million to the country's upstream watchdog BPMigas to settle cost-recovery claims.

The funds were paid as part of efforts by the country's Corruption Eradication Commission (KPK) to help prevent the possible abuse of cost-recovery claims and are being held in one of Indonesia's national banks pending official inquiries. ConocoPhillips paid $104.17 million, while several Indonesian firms paid the remainder: state-owned Pertamina, $45.52 million; Medco Energi, $10.89 million; Kondur Petroleum, $5.21 million; and Kalrez Petroleum and Kangean Energy Indoensia each less than $1 million.

At the time, officials said the KPK would continue giving recommendations on upstream oil and gas management, including cost recovery, asset management, and investment credits in a bid to prevent abuse and potential financial losses to the government. ✦

Global drilling spend to increase by 32% by 2013

Uchenna Izundu
International Editor

The global drilling market is expected to pick up by 2013 with deepwater rigs driving the growth, according to data from Douglas-Westwood Ltd. and Energyfiles.

Although there will be reduced spending in 2009 and 2010 due to the global recession that has reduced oil demand, operators are expected to increase spending on offshore drilling by 32% from 2009-13 compared with 2004-08.

Report author Michael R. Smith of Energyfiles said, "Shallow water exploratory drilling levels are not expected to ever return to their most recent 2007 peak but growth in deepwater drilling has supported exploratory drilling over the last 5 years—to reach 40% of all exploratory wells by 2013. The steady growth is a result of new ultra deepwater targets becoming increasingly viable, as the capability of deepwater

production systems is improved, giving additional encouragement to explorers to take these expensive risks."

The data revealed demand for high-specification floating rigs that can operate in deep water and harsh environments with utilization and day rates holding up. The report said there will be sufficient numbers of deepwater development rigs to meet market demand.

Until 2006, shallow oil drilling surged because of rising oil prices but has since leveled off. "A decline is now forecast followed by returning growth as many of the delayed projects of 2009 are restarted. Growth would be even more marked if not for better, more productive well bores allowing fewer wells per field," said Smith.

In 2004-08, $278 billion was spent on offshore global drilling. By 2013 this is forecast to increase to $367 billion.

According to the report, operators will see the number of wells being drilled around the world rise by 7% in 2009-13, despite a sharp decline in 2009 with Asia leading the trend followed by North American and Western Europe. About 19,570 wells are expected to be drilled by 2013. The data were published in the World Offshore Drilling Spend Forecast 2009-13. ✦

USGS updates Piceance basin oil shale assessments

Paula Dittrick
Senior Staff Writer

The US Geological Survey said western Colorado's Piceance basin has an estimated 1.525 trillion bbl of in-place oil shale.

USGS added that no economic extraction method currently is available in the US so it's unknown how much of the assessed resource is recoverable.

The latest assessment is 50% larger than the 1989 assessment of 1 trillion bbl. USGS said the increase stems from assessments of additional geographic areas and subsurface zones.

The Piceance basin contains one of the world's thickest and richest oil shale deposits (OGJ, Oct. 20, 2008, p. 22).

The USGS said it has not yet assessed the uppermost oil shale interval exposed on high ridges and plateaus in the southern Piceance basin, which includes some oil shale that could be potentially developed.

"In order to assess this interval, we would have had to digitize the detailed geologic mapping that was done by the USGS in that area in the 1970s and 1980s, and we simply ran out of time," a USGS spokesman told OGJ.

"We were mandated by Congress to assess all the Green River oil shales in 2 years, and we had to move on to the other two Green River oil shale basins, the Uinta basin in Utah, and the Greater Green River basin in Wyoming," he said. "In addition, there is a thin oil shale interval underneath Grand Mesa in the extreme southern part of the Piceance basin that was not assessed. This oil shale zone underlies about 163 sq miles of Grand Mesa, but it is highly unlikely that it will ever be developed."

API responds

The American Petroleum Institute said the new estimate demonstrates the need for continued oil shale research and development efforts.

"That is why we were disappointed that the Interior Department recently delayed issuing a second round of oil shale research and development leases," API said.

The study also found an estimated 43.3 billion tons of in-place nahcolite resources in the Piceance basin. Nahcolite is embedded with oil shale, and produces large quantities of carbon dioxide when heated in oil shale processing.

Oil shale does not contain crude oil but instead contains kerogen, which is an organic precursor to oil that must be heated for oil production. ✦

First quarter US drilling plunges to 2004 levels

US oil and gas drilling during the first quarter dropped to levels not seen since 2004, ending 6 consecutive years of year-to-year growth for the period, reported the American Petroleum Institute Apr. 15. An estimated 11,071 oil wells, gas wells, and dry holes were completed in 2009's first 3 months, 22% less than in 2008's first quarter and 35% lower than the total for 2008's final quarter, API said in its latest quarterly well completion report.

"The lower US drilling activity indicates that the exploration and production sector is not immune to the current economic downturn and that they, like most industries, are facing tough business choices," said Hazem Arafa, director of API's statistics department.

He said the estimated number of new exploratory wells fell 11% from 2008's first quarter, while the estimated number of deep wells (those 15,000 ft or deeper) and shallow gas wells slipped 13% and 36%, respectively, year-to-year. API estimates show that the resurgence of oil well completions, which began earlier in the decade, subsided this past quarter as the total fell 23% from a year earlier to 4,060 wells. Overall, estimated oil well completions' share of total drilling activity in the past 3 months was 36%, down from 40% a year earlier, it said.

Gas continues to be the primary domestic drilling target, with an estimated 5,735 wells completed during 2009's first quarter, API said. This was 23% lower than the total for the comparable 2008 period and represents the most severe quarterly decline for gas plays this decade, according to API.

Total estimated footage drilled during the first quarter reached 64.5 million ft, 30% less than in 2008's first 3 months. Total developmental oil well footage dropped 22% year-to-year, while estimated gas well footage fell 42%, API said. ✦

Oilex group to drill in Timor Sea JPDA

A group led by Oilex Ltd., Perth, has identified 10 prospects as potential drilling targets on Block 06-103 in the northwest corner of the Joint Petroleum Development Area in the Timor Sea between Australia and Timor-Leste.

Final prospect selection for the first two wells is under way, and the group has placed under contract a floating drilling unit capable of operating in the block. The unit is expected to be available to begin drilling in the third quarter of 2009.

The group identified the prospects from a portfolio of more than 20 prospects and leads on the block in the Flamingo Trough.

The prospect inventory includes a number of structures with the potential to contain mean estimated prospective resources in excess of 100 million bbl of oil and six other features that offer mean estimated prospective resource potential in excess of 50 million bbl. Of these high-graded prospects, four are in less than 470 m of water.

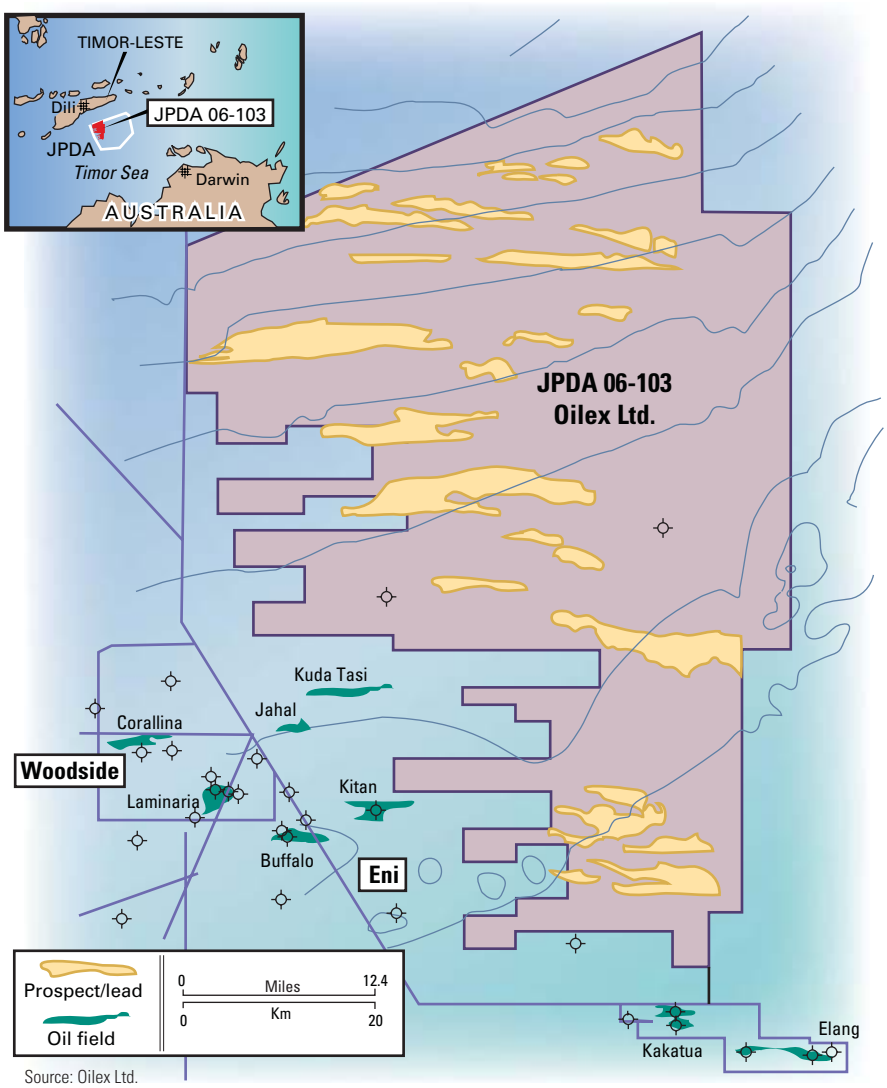
Operator Oilex completed seismic acquisition, processing, and interpretation in early 2009 on behalf of the joint venture. More than 3,000 sq km of 3D seismic were shot or reprocessed, and all of the open file 2D seismic data in the nearby region were incorporated into the interpretation.

Oilex said, "The results of the work confirm the initial view of the JV that this block is very attractive for oil exploration and has the potential to host very significant oil resources near to existing producing fields and the recent discovery, Kitan, by Eni Australia in the adjacent block to the west."

Kitan-1 flowed 6,100 b/d of oil on test. TD is 3,568 m. It is on Block 06-105 held by Eni 40%, Inpex of Japan 35%, and Talisman Resources Pty. Ltd. 25% (OGJ, Mar. 17, 2008, Newsletter). Kitan-2, 1.6 km east, went to TD 3,540 m. Early estimates are that 30-40 million bbl of oil are recoverable from Kitan.

Eni's proposed development area encompasses Kitan field and a satellite closure, Kitan South, 1.5 to 2 km south. A development plan calls for producing three wells through an FPSO and possibly tieing in the 1996 Jahal and 2001 Kuda Tasi marginal discoveries (OGJ Online, July 23,

FLAMINGO TROUGH OIL FIELDS, STRUCTURES



Source: Oilex Ltd.

2008). Jahal and Kuda Tasi hold a combined 10 million bbl recoverable.

A number of international oil and gas companies are reviewing Oilex's farmout terms, and the company hopes to complete farmout arrangements in the current quarter.

Each holding 25% interest in the block are Oilex, Global Energy Ltd. (Videocon), Gujarat State Petroleum Corp. (JPDA) Ltd., and Bharat PetroResources JPDA Ltd.

The Timor Sea Designated Authority began operating on Apr. 2, 2003, under the Timor Sea Treaty between the Timor-Leste and Australian governments. TSDA's charge is to administer the JPDA on behalf of the governments. The Oilex group was awarded Block 06-103 in August 2006. ✦

India seeks bids in eighth NELP licensing round

India has invited operators to bid for 70 exploration blocks covering 163,535 sq km under its eighth New Exploration Licensing Policy (NELP 8) round.

India has 24 deepwater blocks, 28 shallow-water blocks, and 18 onshore blocks on offer. Of the 24 deepwater blocks, 18 are off western Andaman, an area that is available for the first time. Deepwater blocks also are available in the Mumbai and Kerala-Konkan basins off the west coast.

For the oil and gas blocks, operators will have a 7-year exploration period and are to complete their minimum work program within 4 years.

Onshore acreage blocks are in the northeastern states of Assam (2 blocks) and Manipur (2), the eastern state of West Bengal (2), the central state of Madhya Pradesh (3), the western state of Gujarat (8), and the northern state of Haryana (1).

For coalbed methane acreage (CBM IV), the government has offered 10 blocks covering 5,000 sq km. These are in Assam (1 block), partly in Chhattisgarh and partly in Madhya Pradesh (1), Jharkhand (1), Madhya Pradesh (2), Maharashtra (2), Orissa (2), and Tamil Nadu (1).

Bidding for both CBM IV and NELP 8 will end on Aug. 10, with production-sharing contracts to be signed within 4 months.

However operators are worried over the lack of clarity on tax issues as the finance ministry has stopped a 7-year tax holiday for gas production from blocks awarded under NELP. According to reports from India, officials from the petroleum ministry are in discussions with the finance ministry to work out a solution as oil and gas should have a level playing field.

Oil Secretary RS Pandey said it was better to proceed with the licensing round amid the global economic slowdown to generate activity. He added, however, that if there were little interest, India may hold onto the blocks. If there is sufficient interest, another 30-40 blocks would be offered in the next phase, he said.

"This is the best time to get exploration assets," said VK Sibal, India's upstream regulator. "It will be available more easily. So, I think medium-to-aggressive bidding [will be] there."

India, however, has only offered one block in the Krishna Godavari basin off India's east coast, where Reliance Industries discovered large gas reserves 6½ years ago. Production started last week from the Dhirubhai 1 and 3 discoveries in the Bay of Bengal.

At peak production, it will produce over 550,000 boe/d. The gas is delivered to the onshore facility at Gadimoga, a small village in the East Godavari district of Andhra Pradesh. It flows to the East West Pipeline of Reliance Gas Transportation Infrastructure Ltd.

Since NELP was introduced in 1999, India has made 68 oil and gas discoveries in 19 exploration blocks. ✦

Benin

TGS-NOPEC Geophysical Co. began shooting 3,500 line-km of spec 2D seismic survey in the Gulf of Guinea off Benin.

The program is designed to help further define the extent of the petroleum system in Benin's ultradeep water. It extends the 10,000 km of 2D seismic shot in recent months off Ghana.

Hungary

The Balotaszallas-E1 well on Hungary's Tompa Block encountered a 560-m overpressured section of interbedded siltstones, shale, and sandstones with some conglomerates, said Toreador Resources Corp., Dallas.

Electric logs, mud logs, and gas readings of greater than 100,000 ppm encountered across the interval confirm the presence of natural gas. TD is 3,620 m.

The well is to be treated in May after a frac program is designed. Delta Hydrocarbons BV is carrying well costs for Toreador, which has a 25% working interest.

Italy

The deepest Miocene horizon in the Bezzecca-1 appraisal well on the Cascina San Pietro permit east of Milan flowed at the rate of 2.2 MMcfd of gas on a ¼-in. choke at 1,760 psi pressure during initial cleanup, said Po Valley Energy Ltd., Perth.

The company said the results at 1,925-45 m are above its expectations. Tests of the interval continued in mid-April with short tests to follow in Miocene and Pliocene intervals as shallow as 1,860 m.

Bezzecca is the company's fourth former Eni gas field redevelopment. Po Valley expects to start production in the third quarter of 2009 at Castello and Sillaro fields and is moving toward the granting of a production concession at Sant' Alberto in the San Vincenzo license.

Libya

The international arm of Algeria's state Sonatrach gauged an oil and gas discovery in the Libyan portion of the Ghadames basin.

Sonatrach International Petroleum Exploration & Production (Sipex) said the A1-65/02 well flowed 1,344 b/d of oil and 1.88 MMcfd of gas from the Ordovician Memouniat formation. TD is 9,033 ft.

It is the first discovery on the block, 140 miles southwest of Tripoli. The Libyan government awarded the block in 2005. Sipex operates the license with 25% interest, and NOC has the right to 75% of the production.

Oman

RAK Petroleum PCL of the emirate of Ras Al Khaimah plans to drill the Zad-2 well on Block 47 in Oman later in 2009 after having acquired subsidiaries of Indago Petroleum Ltd., London, that hold rights in Oman.

RAK Petroleum raised its interest to 100% in blocks 31 and 47 with acquisition of Indago Ventures 31 Ltd. and Indago Ventures 47 Ltd. If successful, RAK Petroleum said, the Zad prospect will become an important gas-condensate field 10 km from an existing pipeline. The exploration well will test the fractured Cambrian Amin sandstone reservoir, an analog to Kauther field.

Harvest Natural Resources Inc., Houston, signed an exploration and production sharing agreement with the government covering the Al Ghubar-Qarn Alam block in Oman.

Oman Oil Co. will have an option to back in for up to 20% interest if gas is discovered.

The ministry of oil carved the newly created 955,600-acre block, designated for exploration and production of gas-condensate, out of the Block 6 concession operated by Petroleum Development Oman. PDO will continue to produce oil from several fields.

Ghubar-Qarn Alam is in the Ghaba salt basin near Barik, Saih Rawl, and Saih Nihayda gas-condensate fields, which support Oman's exports of LNG. Harvest will target the same reservoir, Cambro-Ordovician Andam sandstone.

The company will spend $4.8 million in 2009 for geological-geophysical studies, to reprocess seismic, and prepare to drill. It will drill at least two wells in the first 3 years.

Turkey

Sherritt International Oil & Gas Ltd., Toronto, plans to spud the Durusu-1 exploration well in the western Black Sea off Turkey by the end of May 2009.

The well, in 80 m of water 20 km off the Turkish coast, is programmed to evaluate the Tertiary Danisman and Osmancik formations that produce gas onshore to the west. GSP Romania's Saturn jack up is to drill the well to 2,500 m subsea. The drillsite is in the Thrace basin on a block of seven licenses north and northwest of Istanbul that hug the coast to the border with Bulgaria.

Sherritt holds 42% working interest, HEMA Energy has 33%, and Toreador has 25% and is carried for the first $10.7 million of Durusu-1 well costs.

Nova Scotia

The Nova Scotia government finalized a 10-year oil and gas production lease covering the Windsor and Horton groups on the 474,625 gross acre Windsor Block onshore north of Halifax.

With $32 million spent so far on seismic, drilling, completions, and other work, Triangle agreed to drill seven wells by Apr. 15, 2014, and surrender areas not drilled or adequately evaluated. Royalty rate is 10%.

Tenure on some or all of the lands is eligible for renewal after the first 10 years if commercial production is established and-or drilling and evaluation criteria are satisfied.

The company mainly seeks gas in Mississippian-Devonian Horton Group shales, but the block also has conventional oil and gas potential.

Triangle, which operates through its subsidiary Elmworth Energy Corp., is seeking one or more partners to continue operations (see map, OGJ, Dec. 22, 2008, p. 35).

Arizona

The state gave conditional approval for formation of the 171,000-acre St. Johns Gas Unit for the production of carbon dioxide and helium in Apache County, Ariz.

The unit agreement calls for orderly development over a 5-year period and includes a minimum work program of five wells in the next 12 months. Enhanced Oil Resources Inc., Houston, is operator of the voluntary unit with an estimated 84% working interest.

The approval of the unit agreement is subject to final sanction by the federal government and review and approval by the state land commissioner of any substantive changes recommended by the federal government.

EOR Inc. predecessor Ridgeway Oil Corp. discovered St. Johns field in 1994 in the southeastern Holbrook basin.

Pennsylvania

Seneca Resources Corp., Buffalo, NY, said preliminary results are positive from its first three operated vertical wells in Devonian Marcellus shale in Pennsylvania.

The company drilled and cored a vertical well on Tract 595 in Tioga County and plans to spud a well this week on Tract 100 in Lycoming County.

It will decline to lease two other tracts that total 8,408 acres on which it was high bidder at a state sale in September 2008 because pipeline routes acceptable to the state are more than twice the length anticipated at the time of bidding.

Seneca expects to follow the current 10-well program with more than 100 horizontal wells on tracts 595 and 100 in the next few years. The company holds acreage in seven counties in the play.

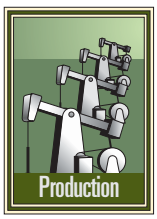
CBM reservoir thickness affects production from horizontal wells

Wang Zhiming
Zhang Jian
China University of Petroleum Engineering
Beijing

A stimulation study shows the importance of considering reservoir thickness when developing low-permeability coalbed methane resources with a horizontal lateral.

The study determined that when the thickness is less than a critical value, the well will produce less cumulative gas and decrease its commercial value. When the thickness exceeds the critical thickness, the productivity will not increase as reservoir thickness increases but will remain stable as thickness increases.

In addition, initial gas production from a horizontal well in a low-permeable coalbed methane reservoir will decrease in thick reservoirs. The peak gas rate will be less at first and than increase later as reservoir thickness increases.



Simulation basis

The authors have based the equations proposed for this simulation study on the Langmuir equation, Fick's pseudosteady-state law, and Darcy's equation. The study combines the equivalent radius model and function of pseudopressure to take into effect diffusivity and compressibility.

To solve the equations, the study uses a finite difference method, after which it establishes partial differential equations and definite conditions that describe the mechanism of coal gas and water flow.

Objectives

At present, most coalbed methane reservoir developments in China use fractured vertical wells and herringbone horizontal wells.

The cost of a fractured vertical well is low but these wells have a limited drainage area. The drainage area of herringbone horizontal wells is greater in comparison, but the wells have an initial higher cost.

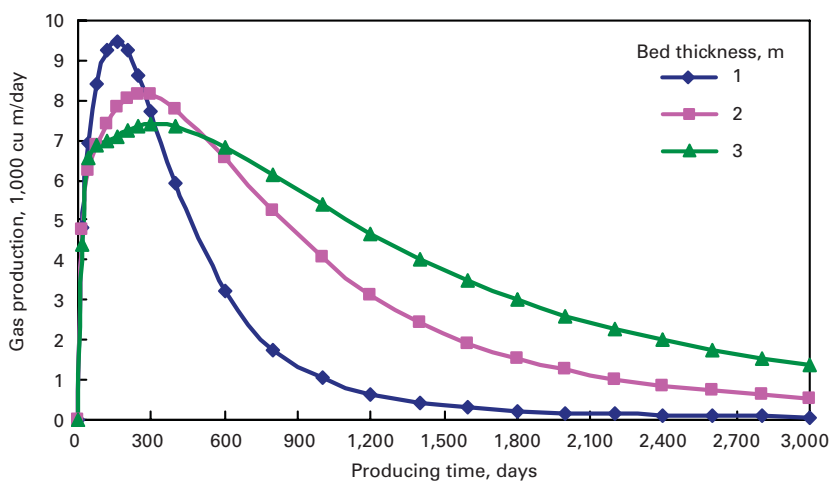
Although common for developing hydrocarbon reservoirs, horizontal wells are much less common for CBM reservoirs.

The CBM reservoirs in China always have a low permeability, less than 1 md,[1] and the reservoir pressure always is less than in other countries.[2] These factors are general characters in China, but the coalbed thickness varies substantially.

The study describes mathematical models for CBM and water flow by tak-

SIMULATED PRODUCTION PROFILE

Fig. 1



Equations

Basic gas flow differential equation:

$$\nabla\cdot\left[\frac{\bar{K}K_{rg}\rho_g}{\mu_g}\nabla(p_g-\rho_g gH)+\frac{\rho_g D_f}{C_f}\nabla C_f\right]+\rho_g q_m-\rho_g q_g=\frac{\partial(\rho_g S_g\phi)}{\partial t} \quad (1)$$

Basic water flow differential equation:

$$\nabla\cdot\left[\frac{\bar{K}K_{rw}\rho_w}{\mu_w}\nabla(p_w-\rho_w gH)\right]=\frac{\partial(\rho_w S_w\phi)}{\partial t} \quad (2)$$

Auxiliary equations:

$$S_g+S_w=1 \quad (3)$$

$$p_{cgw}(S_w)=p_g-p_w \quad (4)$$

Assumed sealed boundary:

$$\frac{\partial p}{\partial n}\Big|_{\varepsilon}=0 \quad (5)$$

Exchange capacity between absorbed gas in matrix and free gas in fractures:

$$q_m=\frac{V_m'}{\tau}\left[C_m-\frac{V_L p_g}{P_L+p_g}\rho_B\right] \quad (6)$$

Real - gas radial fluid flow equation:

$$q_g=\frac{KK_{rg}hZ_{sc}T_{sc}\left[2\int_{p_r}^{\bar{p}}\frac{p}{\mu_g Z(p)}dp-2\int_{p_r}^{p_{wf}}\frac{p}{\mu_g Z(p)}dp\right]}{668.714Tp_{sc}\ln\frac{r_e}{r_{weq}}} \quad (7)$$

According to the principle of pseudosteady - state equivalent radius based on the assumption of uniform inflow, the equivalent radius equation[7] taking into account of skin factor for horizontal well completion is:

$$r_{weq}=\text{Lexp}\left\{-1.75+\frac{h}{L}\sqrt{\frac{K_h}{K_v}}\ln\left[\frac{\pi r_w}{h}\left(1+\sqrt{\frac{K_v}{K_h}}\right)\sin\frac{\pi z_w}{h}\right]+\frac{2h^2}{L^2}\frac{K_h}{K_v}\left(\frac{1}{3}-\frac{z_w}{h}+\frac{z_w^2}{h^2}\right)-\frac{h}{L}\sqrt{\frac{K_h}{K_v}}S\right\} \quad (8)$$

Nonlinear fully implicit model of gas and water flow through coalbeds:

$$\Delta T_g\Delta\Phi_g+\Delta M_g\Delta S_g+V_{i,j,k}\rho_g q_{mi,j,k}-V_{i,j,k}\rho_g q_{gi,j,k}=\frac{V_{i,j,k}}{\Delta t}\left[(\rho_g S_g\phi)_{i,j,k}^{n+1}-(\rho_g S_g\phi)_{i,j,k}^{n}\right] \quad (9)$$

$$\Delta T_w\Delta\Phi_w-V_{i,j,k}q_{wi,j,k}=\frac{V_{i,j,k}}{\Delta T}\left[\left[(\rho_w S_w\phi)_{i,j,k}^{n+1}-(\rho_w S_w\phi)_{i,j,k}^{n}\right]\right] \quad (10)$$

$$\Delta\Phi=\Delta P-\gamma\Delta H \quad (11)$$

Where

T = Coefficient of transmissibility

M = Coefficient of diffusion

$V_{i,j,k}$ = Volume of grid i, j, k

Matrix form of nonlinear equations:

$$\begin{bmatrix}a_{gi,j,k}^1 & a_{gi,j,k}^2\\ a_{wi,j,k}^1 & a_{wt,j,k}^2\end{bmatrix}\begin{bmatrix}\bar{\delta}P_{i-1,j,k}\\ \bar{\delta}S_{wi-1,j,k}\end{bmatrix}+\begin{bmatrix}b_{gi,j,k}^1 & b_{gi,j,k}^2\\ b_{wi,j,k}^1 & b_{wi,j,k}^2\end{bmatrix}\begin{bmatrix}\bar{\delta}P_{i,j-1,k}\\ \bar{\delta}S_{wi,j-1,k}\end{bmatrix} \quad (12)$$
$$+\begin{bmatrix}c_{gi,j,k}^1 & c_{gi,j,k}^2\\ c_{wi,j,k}^1 & c_{wi,j,k}^2\end{bmatrix}\begin{bmatrix}\bar{\delta}P_{i,j,k-1}\\ \bar{\delta}S_{wi,j,k-1}\end{bmatrix}+\begin{bmatrix}d_{gi,j,k}^1 & d_{gi,j,k}^2\\ d_{wi,j,k}^1 & d_{wi,j,k}^2\end{bmatrix}\begin{bmatrix}\bar{\delta}P_{i,j,k}\\ \bar{\delta}S_{wi,j,k}\end{bmatrix}$$
$$\begin{bmatrix}e_{gi,j,k}^1 & e_{gi,j,k}^2\\ e_{wi,j,k}^1 & e_{wi,j,k}^2\end{bmatrix}\begin{bmatrix}\bar{\delta}P_{i+1,j,k}\\ \bar{\delta}S_{wi+1,j,k}\end{bmatrix}+\begin{bmatrix}f_{gi,j,k}^1 & f_{gi,j,k}^2\\ f_{wi,j,k}^1 & f_{wi,j,k}^2\end{bmatrix}\begin{bmatrix}\bar{\delta}P_{i,j+1,k}\\ \bar{\delta}S_{wi,j+1,k}\end{bmatrix}$$
$$+\begin{bmatrix}g_{gi,j,k}^1 & g_{gi,j,k}^2\\ g_{wi,j,k}^1 & g_{wi,j,k}^2\end{bmatrix}\begin{bmatrix}\bar{\delta}P_{i,j,k+1}\\ \bar{\delta}S_{wi,j,k+1}\end{bmatrix}=\begin{bmatrix}h_{gi,j,k}\\ h_{wi,j,k}\end{bmatrix}$$

Where a, b, c, d, e, f, g stand for the coefficients of left node, forward node, subjacent node, native node, right node, backward node and upper node separately. Also, 1and 2 stand for the condition of $\bar{\delta}P$ and $\bar{\delta}S$ separately.

Nomenclature

K	= Permeability, md
K_r	= Relative permeability, dimensionless
p	= Pressure, Pa
H	= Depth to base level, m
S	= Saturation, dimensionless
D_f	= Gas diffusion coefficient, sq m/sec
C_f	= Gas volumetric concentration, kg/cu m
V_L	= Langmuir volume, cu m/tonne
P_L	= Langmuir pressure, Pa
ρ_B	= Coal density, g/cc
q_m	= Matrix gas flow rate, cu m/sec
V_m'	= Matrix volume, cu m
C_m	= Matrix average gas content, cu m/cu m
q_g	= Surface gas flow rate, cu m/day
p_r	= Reference pressure, MPa
Z(p)	= Z-factor, dimensionless
r_{weq}	= Equivalent radius, m
L	= Horizontal length, m
h	= Reservoir thickness, m
r_w	= Well radius, m
z_w	= Height to the bottom of reservoir, m
s	= Skin factor, dimensionless
r_e	= Drainage radius, m

Greek

ρ	= Density, kg/cu m
μ	= Viscosity, mPa-sec
ϕ	= Porosity, dimensionless
∇	= Vector differential operator
τ	= Adsorption time constant, sec

Subscripts

g	= Gas
w	= Water
h	= Horizontal
v	= Vertical

ing into account desorption, diffusion, and filtration. It also is the first study to incorporate gas compressibility.

The objectives of the study were to:

- Develop a method of analyzing horizontal well productivity by considering the property of diffusivity and compressibility for CBM.
- Validate the existence of critical reservoir thickness in developing low-permeable CBM reservoirs with horizontal wells.
- Provide a theoretical range of critical reservoir thickness.

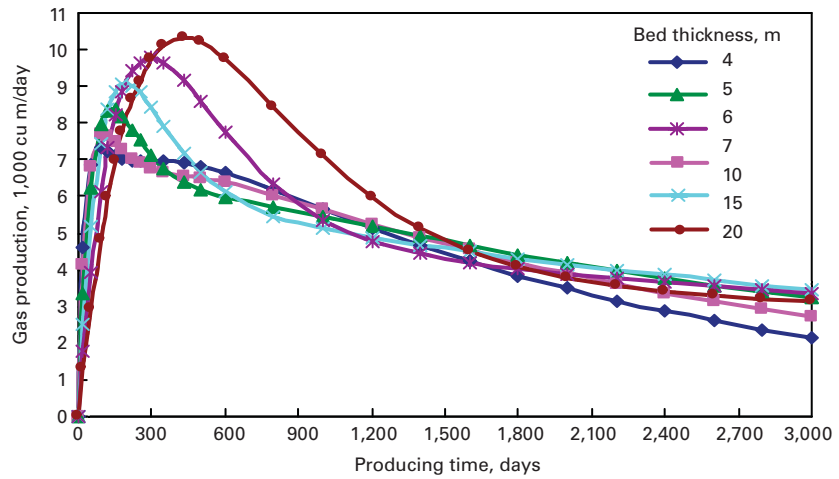
Gas, water flow model

The characteristics of coalbeds in China are the basis for the study's geologic model. To develop the transport equations for the water and gas phases, the study uses assumptions such as:

- The coalbed is a double-porosity medium composed of matrix and fractures.
- The coalbed is compressible, heterogenic, and anisotropic.
- Water initially saturates the fractures with no free gas or dissolved gas within. Gas is adsorbed in the matrix pores that contain no water.
- Gas flow in fractures includes diffusivity and compressibility, in which diffusion is in the pseudosteady-state regime.
- The study considers the effects of gravity and capillary pressure.
- Flow is isothermal.
- Methane is a real gas. Water is a

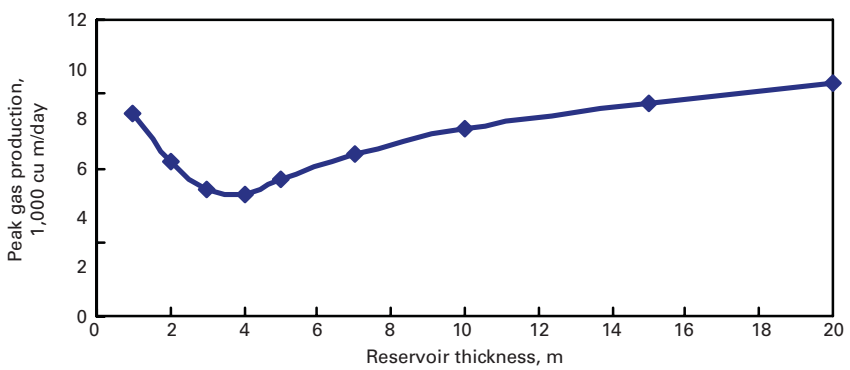
SIMULATED PRODUCTION PROFILE FOR THICKER BEDS

Fig. 2



PEAK GAS RATES

Fig. 3



slightly compressible fluid.

• The gas on the matrix face is in equilibrium with the free gas in fractures.

Mathematical model

Three steps describe the flow of methane in the reservoir: desorption, diffusion, and filtration.[3] As a result of the specific property of storage and transport, the study incorporates synthetically the model of adsorption-desorption, the model of matrix diffusion, and the model of Darcy filtration.

This study also incorporates gas and water flow in the matrix, fractures, and well. The Langmuir equation characterizes the gas adsorbing concentration in the micropores of the coal matrix and the exchange capacity between adsorbed gas on the matrix face and free gas in the fractures.[4]

The gas flow velocity in fractures consists of the diffusion velocity and Darcy velocity. The pseudosteady-state diffusion equation reflects the character of diffusion.[5] Recent mathematical models have ignored the compressibility influence. As a result, the deliverability equation for a gas well is not different from the equation for liquid, which is inconsistent with the actual conditions.

We have derived a real-gas deliverability equation for radial fluid flow by taking into account a pseudopressure function[6] and equivalent radius model. The accompanying equation box shows the models.

COALBED PROPERTIES

Table 1

Thickness, m	5.8
Porosity, fraction	0.026
Permeability, md	0.5144
Initial pressure, MPa	4.76
Temperature, K	304
Critical desorption pressure, MPa	4.4
Absorption time, days	1.775
Diffusion coefficient, sq m/day	2.16×10^{-3}

Numerical solution

Equation 8 has four unknowns: p_g, p_w, S_g, and S_w. Only two are independent variables and one can express the others as functions of the independent ones. We selected gas pressure p_g and water saturation S_w as the independent variables.

To solve the equations easily, we solved for the real parameters in the iterative step k+1 not with p_g^{k+1} and S_w^{k+1} but with the increment $\bar{\delta}p_g$ and $\bar{\delta}S_w$. One should pay attention to the grids that locate the well because one must transform the pressure into real-gas pseudopressure to calculate productivity.

In addition, one can evaluate the productivity by introducing an equivalent radius model if the reservoir along the horizontal well is heterogeneous.

We treat the components on the left of the partial differential equations for gas and water as dimensional difference with block-centered grid and treat the components on the right as time difference.

After the set of difference equations describing the gas and water flow through coalbed is established, we treat the Darcy term, desorption term, diffusion term, and well productivity term implicitly. Then we obtain the nonlinear fully implicit model of gas and water flow through coalbed with Equations 9-11.

We adopted the Newton-Raphson algorithm to linearize the nonlinear equations. The matrix of coefficients is a seven diagonal, blocky, and banded sparse. Each block is a submatrix of two series. We can transform the equations into seven diagonals after we set initial bottomhole pressure. Then we can solve the model with an orthomin algorithm.

We can write the nonlinear equations in matrix form (Equation 12).

Thickness analysis

Table 1 summarizes the physical properties of the coals used in the study. The parameters are from No. 3 coalbed Jinshi 1 well in Fanzhuang block of the Qinshui basin.

Table 2 summarizes the gas well and fluid characteristics. The study changed the coalbed thickness to determine its influence on gas production.

Fig. 1 indicates that peak production rate decreases as thickness increases; however, thicker reservoirs have longer flow periods. Production from the 3-m thick coalbed would still be 1,365 cu m/day after 3,000 days, while production from the 1-m thick bed would be less than 1,000 cu m/day after 1,000 days.

As expected with thinner coals, the reservoir will dewater more effectively, thereby lowering fracture pressure sooner. This results in a higher initial gas production as well as the peak gas production rate occurring sooner than in a thicker coalbed. The deep drop in reservoir pressure, however, will cause the thinner bed to suffer more from the crustal stress that lowers the permeability, and therefore the production rate will decline quickly after the peak gas rate.

In thicker reservoirs it is different because the effect of matrix shrinkage will dominate as the pressure drops, thereby enhancing the permeability.[8] As a result, the production rate will stay higher after the peak gas rate.

Fig. 2 shows simulated production profiles for reservoir thicknesses greater than 4 m. The figure indicates that as reservoir thickness increases, the peak gas rate increases, the time of peak gas rate is delayed, and the production period lengthens.

The production difference of the two thicknesses, however, becomes nearly the same as the well continues to produce after the peak. The thinner coal beds have less of a difference.

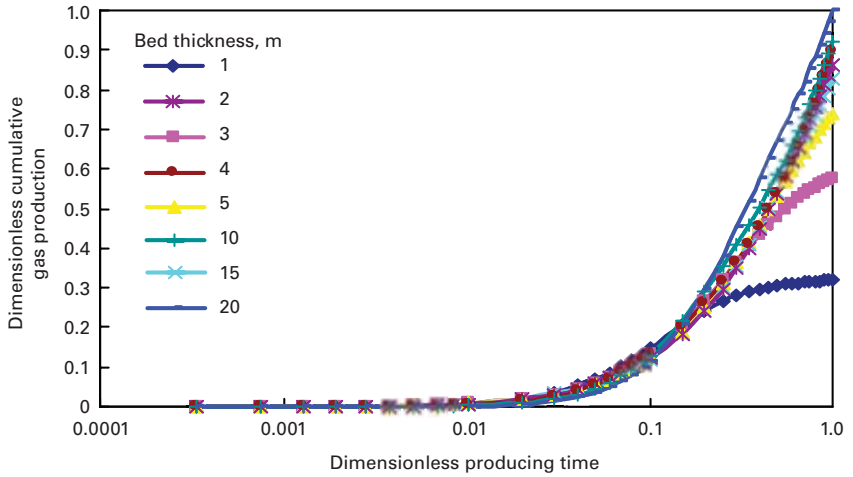
Fig. 3 illustrates that peak gas rates will decrease as thickness increases to 4 m and than start increasing. Peak gas production rate is at minimum, about 7,300 cu m/day, when the thickness is 3-4 m.

To determine the reason for this phenomenon and to verify the existence of a critical reservoir thickness, we looked at the relationship between dimensional cumulative gas production and dimensional time (Fig. 4).

Fig. 4 indicates that as thickness increases, the different in dimensional cumulative gas production between two thicknesses is less. When the reservoir thickness is greater than 4 m, the difference is negligible. Only when the thickness is greater than 15 m, the well will have a slight increase in cumulative gas production, indicating that a horizontal well does not have much of an advantage in thicker coalbeds.

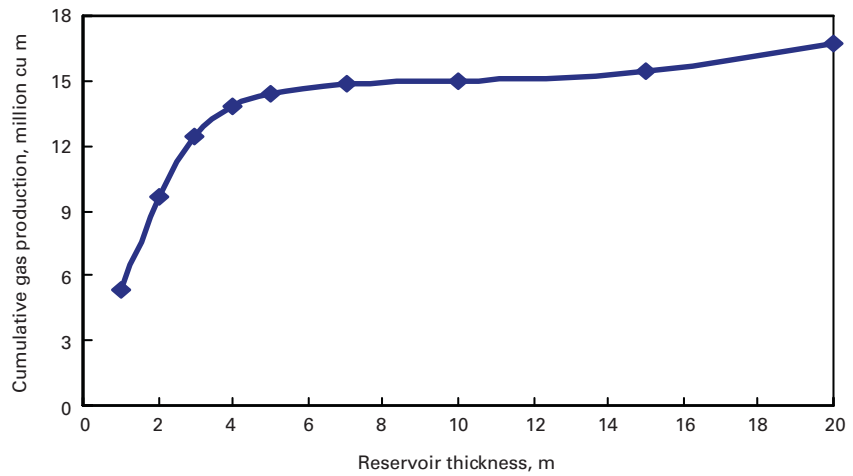
Dimensionless cumulative gas production

Fig. 4



Cumulative gas production after 3,000 days

Fig. 5



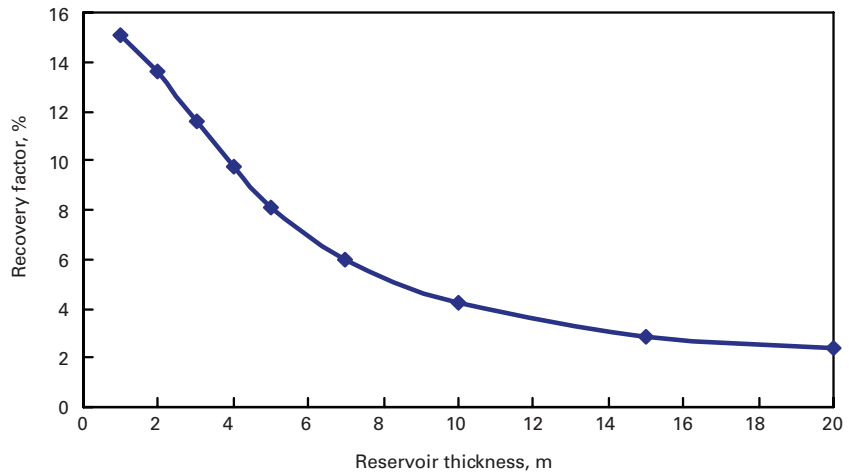
Gas well, fluid characteristics

Table 2

Horizontal length, m	1,000
Bottomhole pressure, MPa	2.5
Langmuir coefficient, MPa^{-1}	0.33
Langmuir volume, cu m/tonne	41.3
Gas viscosity, mPa-sec	0.02
Pore volume compressibility, MPa^{-1}	3.67×10^{-2}
Gas content, cu m/tonne	26.02
Water isothermal compressibility, MPa^{-1}	4.35×10^{-4}

GAS RECOVERY FACTOR

Fig. 6



This conclusion is also illustrated in Fig. 5 that plots cumulative gas production after 3,000 days for different thicknesses. In the figure, the cumulative gas production is much more stable when the thickness is greater than 4 m. The reservoir thickness does not affect the long-term productivity. Thus, we can conclude that the benefit of a horizontal well is less in thick coalbeds.

Fig. 6 shows gas recoveries for different thicknesses. We can draw the conclusion that thinner coal beds have a higher recovery factor. The cumulative gas production, however, is lower because of the size of the reserves are less.

As the reservoir thickness increases, the recovery factor is lower because the gas will not desorb as efficiently as in thinner beds, but the cumulative gas produced is higher.

As illustrated in Fig. 6, although the recovery factor keeps decreasing as the thickness increases, the change in recovery decrease is less when the thickness is comparatively thick.

Acknowledgment

The authors thank State Key Research Project "Well completion, high efficient stimulation and equipment development for coalbed methane" (2008ZX05000-037) for supporting this research. ✦

References

1. Song, Yan, et al., Reservoir Mechanism and Theoretical Base of Economic Development for Coalbed Methane, Beijing: Science Press, 2005.

2. Zhao Qingbo, et al., "Geology and Exploratory Development Technique for Coalbed Methane," Beijing: Petroleum Industry Press, 1999.

3. Gray, I., "Reservoir Engineering in Coal Seams: Part 1—The Physical Process of Gas Storage and Movement in Coal Seams," SPE Reservoir Engineering, Vol. 2, No. 1, February 1987, pp. 28-34.

4. Langmuir, I., "The Constitution and Fundamental Properties of Solids and Liquids," Journal of the American Chemical Society, Vol. 38, No. 11, 1916, pp. 2221-295.

5. Jin, Zhengguo, et al., Base of Materials Science, Beijing: Tianjin University Press, 2005.

6. Al-Hussainy, R., et al., "The Flow of Real Gases Through Porous Media," JPT, May 1966, 624-36.

7. Yu, Guodong, The Art of Productivity for Horizontal Wells, Beijing: China University of Geosciences, 2006.

8. Zhang, Jian, and Wang Zhiming, "Effects of Coal Bed Stress on Fracture Permeability," Journal of China University of Petroleum, Vol. 32, No. 6, 2008, pp. 92-95.

The authors

Wang Zhiming (wangzm@cup.edu.cn) is a professor in the petroleum engineering department at China University of Petroleum, Beijing. His main research interests are in dynamics of complex fluids and well completion engineering. Wang holds a PhD from China University of Petroleum. He is a member of SPE.

Zhang Jian (zhangjian_81@126.com) is a PhD student at the MOE Key Laboratory of Petroleum Engineering at China University of Petroleum, Beijing. His current research interests include CBM exploitation and well completion engineering.

Marathon refineries employ new FCCU CO combustion promoter

Jeff Sexton
Marathon Petroleum Co. LLC
Findlay, Ohio

Rick Fisher
Intercat Inc.
Manasquan, NJ

To meet objectives of a 2001 consent decree with the US Environmental Protection Agency, Marathon Petroleum Co. LLC, a subsidiary of Marathon Oil Co., agreed to decrease NOx emissions from each of its fluid catalytic cracking units at seven midwestern US refineries.

In satisfying this agreement, Marathon employed a new, second-generation non-platinum combustion promoter, COP-NP, developed by Intercat Inc., Manasquan, NJ. This article describes a series of successful trials of COP-NP in Marathon's FCCUs and gives relevant side-by-side test results of COP-NP with competitor additives.

Since signing its consent decree, Marathon has worked closely with EPA and other US refiners under similar decrees to ensure the objectives are met reliably and cost-effectively. In keeping with the spirit of these agreements, Marathon has consistently pushed technology boundaries by being among the first to implement many new emission-control technologies.

FCCU and emissions

The FCCU is typically the largest emitter of airborne emissions in a crude oil refinery. The FCCU's flue-gas stack emissions contain several environmental pollutants, including CO, nitrogen oxides (NOx), sulfur oxides (SOx), and particulates. In the US, beginning in the 1990s with the amendment of the Clean Air Act and subsequent consent-decree agreements, refiners have been required by the EPA to minimize emissions of these compounds.

In Europe, several European Union-wide directives target reductions in emissions of these compounds from the FCC flue-gas stack. In other countries, especially industrialized ones, limits have been placed on flue-gas emissions to minimize these pollutants, which are normally contained in the uncontrolled emission streams.

Several papers detail the terms of the US consent decrees and the European directives.[1-4] Other papers have outlined the complex chemistry of the numerous competing reactions that occur in the FCC regenerator and described the technical challenges of minimizing these environmental pollutants while maintaining an economically profitable refining operation.[5]

One of the stated objectives in Marathon Petroleum's 2001 consent decree was to decrease NOx emissions from each of its seven FCC units. Catalytic additives were required for NOx reduction and control in five of the FCCUs. The level of control was to be similar to those that could be achieved with hardware modifications, with final limits determined through an 18-month demonstration of performance.

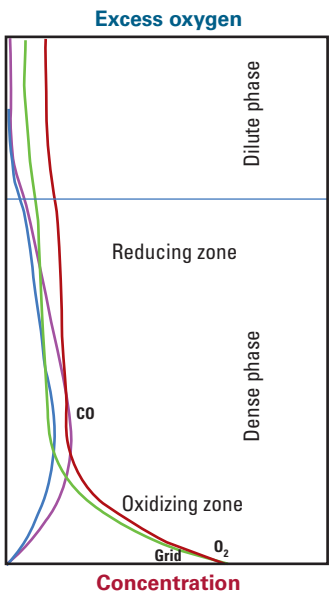
Marathon completed all additive demonstrations and reached agreement with EPA on final limits by yearend 2006.

FCC heat-balance control

The FCC unit operates in heat balance, meaning that the total energy coming into the FCC must equal the energy going out. The primary source of energy in the FCC unit is coke that forms on the catalyst surface. Combustion of coke in the FCC regenerator supplies the energy to run the cracking process.

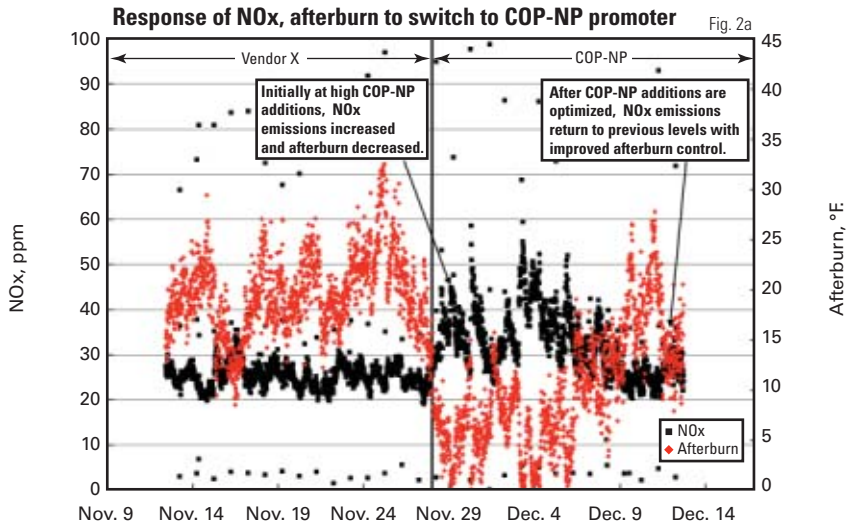
Total unit heat duty will typically be in the range of 500 to 1,000 btu/lb of feed to the unit. This process heat requirement establishes the amount of heat that must be supplied by combustion of coke. Because of

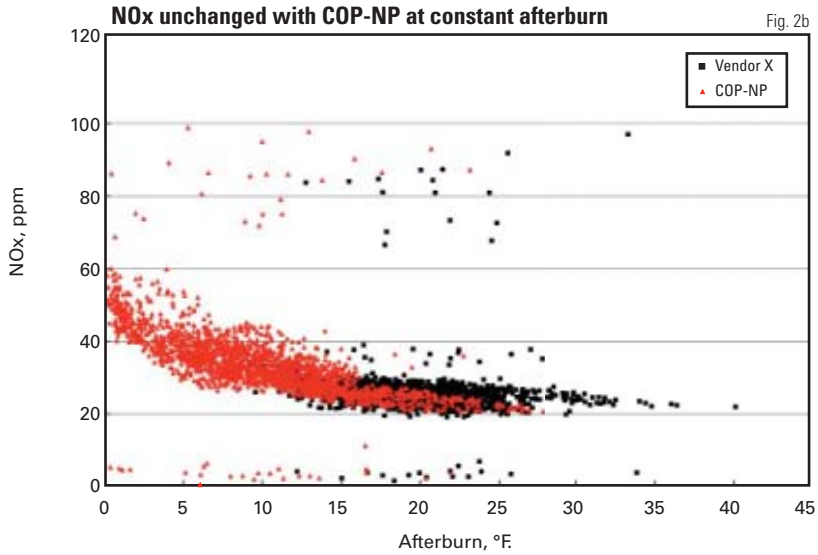
REGENERATOR CO, O_2 PROFILES Fig. 1

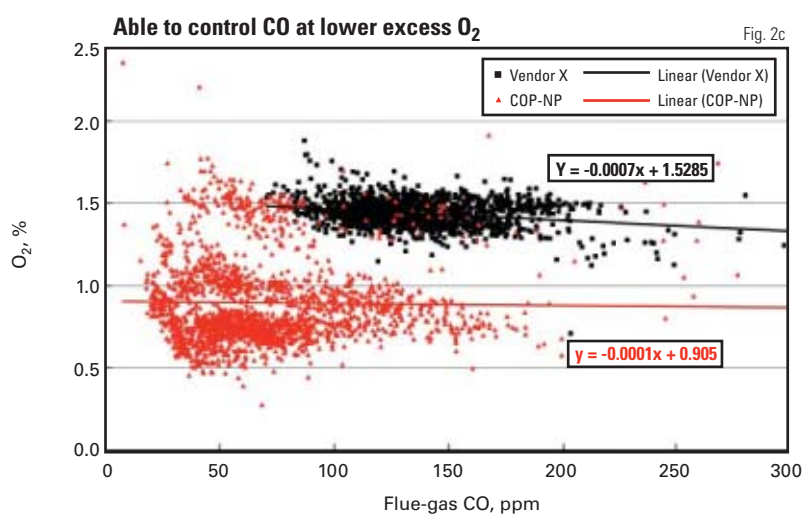


GARYVILLE FCCU

Fig. 2







the process control schemes that are normally employed in FCC, the unit operation will automatically adjust itself so that the energy produced via coke combustion equals the heat requirements of the process.

If the balance is shifted by changes to the feed quality or operating conditions, shifts in catalyst circulation rate and regenerator temperature will occur until a new equilibrium set of conditions is established.

The combustion of coke is considered to be a first-order reaction. Operating temperature is a prime variable in setting the coke combustion rates. Since the kinetics are first order, increasing or decreasing the temperature by about 30° F. will double or halve the combustion rate. This can be significant when the coke or air distribution in the regenerator is less than ideal.

The combustion of coke proceeds via carbon oxidation to CO and then CO combustion to CO_2. The activation energy for CO combustion is considerably higher than for carbon combustion, so that CO combustion is usually the rate-limiting step in the process. At temperatures less than 1,250° F., the thermally driven reaction rate of CO to CO_2 is very slow.

To help speed up the process, CO combustion promoter is added to the unit to increase the CO combustion rate. Because the heat release from CO combustion is about three times greater than the heat release from carbon to CO, it is important that this combustion occur in the dense bed of catalyst.

Without the catalyst bed to absorb this heat of combustion, the flue-gas temperature increases very rapidly—a phenomenon called "afterburning"—and represents an energy loss from the regenerator and a decrease in the overall thermal efficiency of the regenerator.

Use of promoter causes the CO to burn in the catalyst bed so that afterburning is controlled to acceptable levels. The benefits of this control include extending the mechanical life of downstream equipment, lower carbon on regenerated catalyst, improved

utilization of air, and decreased catalyst deactivation.

In a typical fluid-bed regenerator, the dense-phase catalyst particles are well mixed by fluidization. Air entering the bottom moves in plug flow up the regenerator. As the combustion reactions progress to remove coke from the catalyst, oxygen is consumed and the combustion products (CO and CO_2) change in concentration along the regenerator axis.

Changes in O_2 and CO concentration are of particular interest because NO and NO_2 are reduced in the presence of CO. The magnitude of change is expected to be different with different regenerator configurations and cocurrent vs. counter-current flow. In addition to regenerator configuration and mode of operation (partial vs. complete combustion), these compositions will also change with the flue CO/CO_2 ratio (in partial combustion), excess oxygen (in complete combustion), feed type, and other parameters that affect the coke on the catalyst.

Fig. 1 depicts the expected concentration profiles for CO and O_2 with regenerator elevation in a well mixed bed, with data from the Marathon FCC pilot plant.

An increase in excess oxygen would result in less reduction potential in the reducing zone. The relative concentrations of CO and O_2 largely dictate the emission chemistry. Thus, the above profile underscores that the emissions cannot be readily assessed from changes in oxygen concentration at the entrance (air grid) or exit (excess O_2 in flue) of the regenerator. Rather, it is important to understand the axial variations and their impact on emissions. Industry experience has shown emissions chemistry in particular will be affected by specific unit designs and bed hydrodynamics.

Effects of promoters

The combustion chemistry in the FCC regenerator that produces these pollutants is extremely complex; numerous interactions and reactions occur between the various chemical species. Ultimately, all of the combustion chemistry revolves around the competition for and the availability of oxygen in the regenerator.

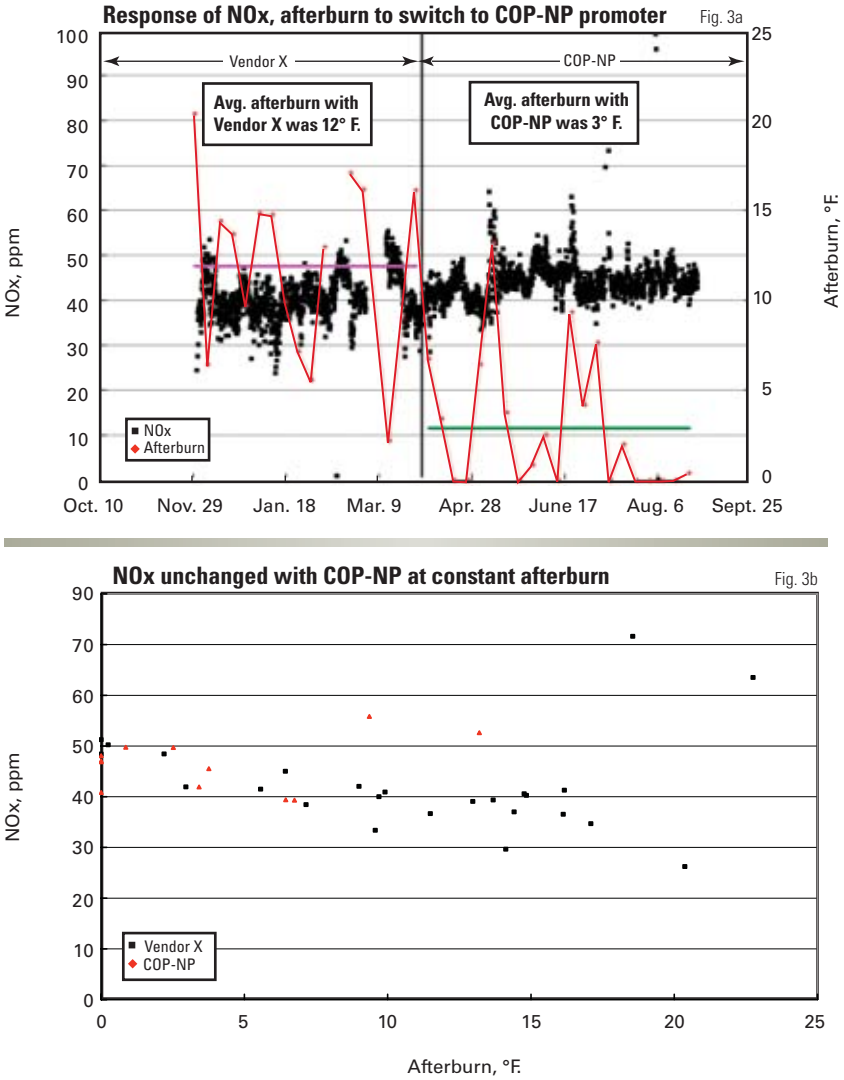
It has been shown that catalysts, additives, or process conditions that reduce one undesirable flue-gas component can inadvertently lead to an increase in emissions of another. An especially good example of one of the interactions that occurs in the regenerator is that between CO and NOx.

Laboratory research has shown that even in the oxidizing environment of the regenerator, CO can act as a reductant, reducing NOx to N_2. Thus, elimination of CO by complete oxidation of CO to CO_2 can result in an increase in NOx emissions from the FCCU.[6] It is important to be aware that when attempting to minimize emissions of these undesired chemical species in the flue gas, care must be taken in design and use of different emissions-control technologies. Otherwise unintended consequences and undesirable results could occur.

For nearly 35 years, the preferred method of controlling afterburn and CO emissions has been use of a platinum-containing combustion promoter to catalyze the oxidation of CO to CO_2 in the regenerator dense bed. Histori-

Robinson FCCU

Fig. 3



COP-NP PERFORMANCE AT NON-MARATHON PLANTS

Table 1

Topic	Refinery C	Refinery E	Refinery I
Additive type	COP-NP	COP-NP	COP-NP
Usage	Ongoing	Ongoing	Ongoing
Unit type/design	Braun SBS	Kellogg	UOP SBS
Unit capacity, b/d	38,400	105,000	65,000
Full or partial burn	Full	Full	Full
Afterburn before COP-NP	–5	–4	17
Afterburn after COP-NP	4	–20	16
Afterburn reduction, %	–180	400	6
NOx reduction, %	72	68	18
CO reduction, %	20	80	21
Excess O_2 before COP-NP	2.5	1.8	2.1
Excess O_2 after COP-NP	2.7	1.9	1.5
Previous promoter name	COP-850	COP-375	Vendor Z Pt promoter
Previous promoter dosage rate, lb/day	15	30	150
COP-NP dosage rate, lb/day	33	47	200

COP-NP PERFORMANCE AT MARATHON PLANTS

Table 2

Topic	Marathon Garyville	Marathon Robinson	Marathon Detroit	Marathon St. Paul
Additive type	COP-NP	COP-NP	COP-NP	COP-NP
Date of trial	Nov. 28, 2006	Apr. 2, 2007	Jan. 22, 2008	Oct. 11, 2008
Usage	Ongoing	Ongoing	Ongoing	Ongoing
Unit capacity, b/d	125,000	50,000	33,000	28,000
Full or partial burn	Full	Partial	Full	Full
Afterburn reduction, %	48	92	19	1
CO reduction, %	47	NA	54	4
NOx reduction @ constant afterburn, %	3 @ 20° F.	4 @ 2° F.	0.4 @ 68° F.	6 @ 81° F.
Excess O_2 before COP-NP	1.5	NA	1.4	1.1
Excess O_2 after COP-NP	0.7	NA	1.4	1.2
Previous promoter name	Vendor X	Vendor X	Vendor Y	Vendor Z
Previous promoter dosage rate	Base	Base	Base	Base
COP-NP dosage rate, % of base	50	33	62	44

cally these combustion promoters have contained low concentrations of highly dispersed platinum (Pt) on an inert alumina support.

Pt is an excellent combustion promoter that, unlike many other oxidation catalysts, can be used in low enough concentrations to catalyze CO oxidation without also catalyzing undesirable dehydrogenation reactions in the FCC reactor. It has been discovered, however, that while Pt is an effective oxidation catalyst for conversion of CO to CO_2, it also catalyzes the oxidation of nitrogen intermediate species (e.g., ammonia, NH_3; and hydrogen cyanide, HCN) found in the regenerator. This results in increased NOx emissions and runs counter to the desire to minimize all of these environmental pollutant emissions.

In recent years, a shift has occurred away from Pt-containing CO combustion promoters to promoters containing elements other than Pt. The desire is to use elements that are still effective in oxidizing CO to CO_2 and preventing afterburn, but which do not generate NOx in the process. Many of the currently available non-Pt combustion promoters have substituted palladium (Pd) for Pt as one active component. Commercial performance results, however, show that the performance of these materials varies widely and that additives available from different suppliers are not all equivalent.

Development of COP-NP

In development of a non-Pt CO combustion promoter, initial products substituted a different oxidizing agent for Pt, leaving all other additive properties unchanged. While many of these new additives have been successful in reducing NOx emissions, most are not as effective as CO combustion promoters, requiring from two to five times more additive to achieve the same degree of combustion effectiveness and afterburn control as with a Pt promoter.

Intercat took a different approach in developing its non-Pt combustion promoter, COP-NP. The company completely redesigned the new non-Pt combustion promoter, incorporating modifications to the base support as well as to the catalytically active components. This approach produced a far more active, stable, and selective combustion promoter than others on the market.

In developing COP-NP, Intercat recognized that the effectiveness of a CO promoter in the FCCU depends on several physical and chemical factors. The support must be a highly attrition-resistant material, have a high particle density, and have a minimum amount of particles smaller than 40µ. These properties are necessary to minimize first-cycle losses of the promoter and promote high retention in the unit's inventory.

The support should also have a moderately high surface area and a high pore volume to provide ready access of the reactants to the catalytically active sites. The catalytically active components must be uniformly dispersed on the support for maximum effectiveness. The chemical composition of the additive should not be easily poisoned by other components in the FCCU, nor should it generate undesirable side reactions.

All of these requirements were achieved in development of COP-NP by use of Intercat's proprietary formulation and manufacturing techniques.

Experience at refineries

The Marathon consent decree required catalytic additives to be used in five of the seven FCCUs to control NOx emissions. Since Intercat's COP-NP did not become commercially available until 2004, Marathon conducted its initial consent-decree trials of non-Pt combustion promoters with products from other vendors. Results were successful in that NOx emissions decreased from levels seen when Pt promoters were used, but maintaining adequate afterburn control proved difficult, requiring

several times higher additive additions than was desirable.

Following the demonstration period and having agreed with EPA on final flue-gas emissions limits, Marathon began searching for a second-generation non-Pt combustion promoter, one with better promotion activity and at least equivalent NOx reduction capability. By this time, performance results of COP-NP at non-Marathon refineries were just becoming available, some of which appear in Table 1.

In these unit trials, conducted at different US refineries, COP-NP proved itself effective in controlling afterburn and CO emissions while at the same time producing much less NOx than Pt-containing combustion promoters. These trials determined that CO combustion promotion activity and afterburn reduction capability of COP-NP was roughly equivalent to that of Intercat's COP-375, a 375-ppm Pt-containing promoter. NOx generation by COP-NP, however, was far less than with the Pt-containing promoter.

Marathon agreed to conduct competitive trials at multiple sites to evaluate various non-Pt promoters, selecting three different vendors for these trials.

Based upon the successful results at several other refineries, Marathon first started using COP-NP at its Garyville, La., refinery FCCU in late 2006. After analyzing the data from multiple trials with multiple vendors, Marathon decided to extend use of COP-NP to three additional units. Table 2 shows results from these trials.

The changeover to COP-NP at each location did not pass without incident, however. When Marathon first began using COP-NP, the unusually high promotion activity of this additive compared with competitive non-Pt promoters was not well understood. COP-NP was initially added at the same rate as Vendor X's product, the previous non-Pt promoter. This resulted in a large increase in promotion activity in the unit and initially led to a small increase in NOx emissions. Fig. 2a shows this difference between the two additives in effectiveness on NOx emissions and afterburn control at constant addition rates.

As soon as it was realized that COP-NP was significantly more active than Vendor X's product, the addition rate of COP-NP was gradually reduced. Additions were finally reduced to less than half the rate required for use of Vendor X's product.

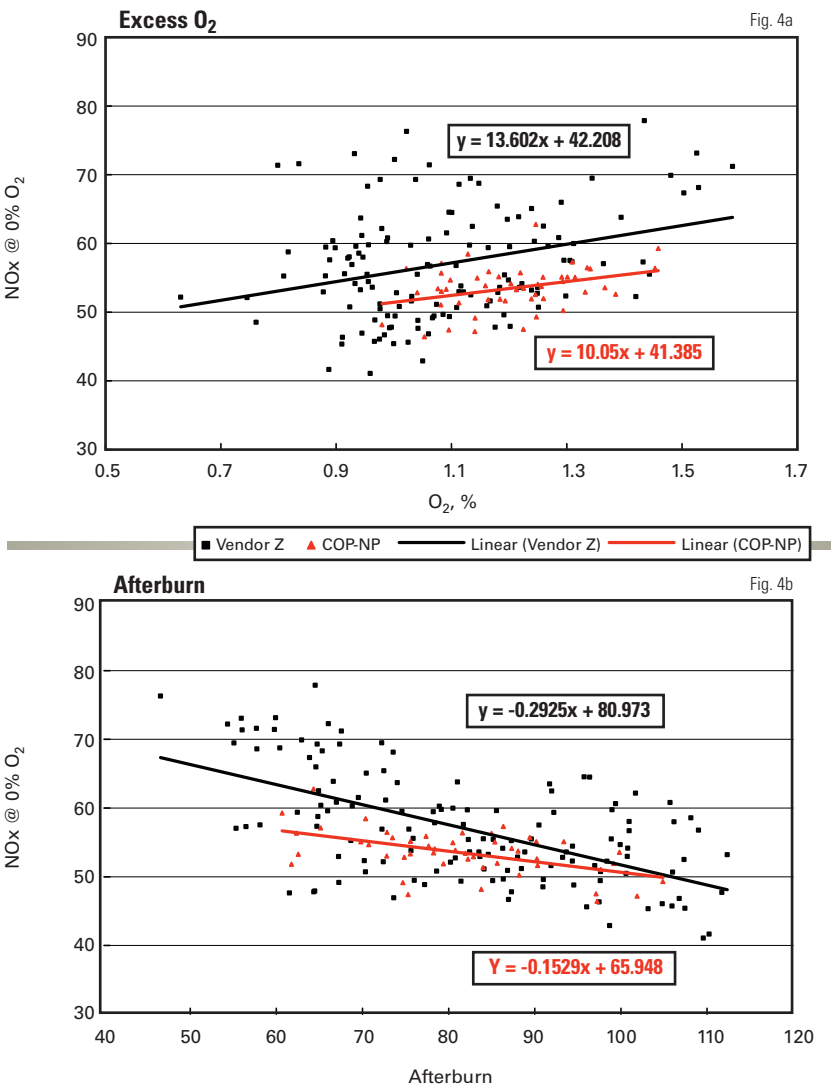
Even at this lower addition rate, afterburn decreased by 48% and CO emissions decreased by 47%. Fig. 2b shows that at a constant degree of afterburn, the NOx emissions with COP-NP were the same as with the previous additive.

Fig. 2c shows an additional benefit of COP-NP use at the Garyville refinery. It was found that CO emissions could be controlled at much lower excess oxygen levels (~0.7%) with COP-NP compared with the about 1.5% level previously required. This was of major operational benefit to the FCC in that it relaxed the constraint on the main air blower.

In terms of economic value added, the lower addition rate required with COP-NP resulted in a large reduction in operating expenses. This combined with benefits of the reduced air blower rate and the possibility of being able to increase feed rate as a result provided unanticipated economic benefits and

ST. PAUL PARK FCCU: VENDOR Z VS. COP-NP

Fig. 4



operating flexibility to the Garyville FCCU.

Following successful implementation at the Garyville refinery, Marathon expanded its use of COP-NP to other FCCUs in its system.

The second Marathon FCCU to use COP-NP was the Robinson, Ill., refinery. This FCCU operates in partial burn with 1.0 to 3.0% CO in the regenerator flue gas. This unit historically used a small amount of Pt COP to control the temperature profile of the bed. NOx emissions would increase dramatically, however, when the unit was operated in full-burn (>300 ppm).

In an effort to minimize emissions, Marathon started using a non-Pt COP manufactured by Vendor X. The required amount of this competitive product was 120 lb/day with NOx emissions averaging 42 ppm (vol) at 12° F. afterburn (Fig. 3a). When COP-NP was used at only 40 lb/day (a threefold reduction in additive additions), however, NOx emissions averaged 46 ppm (vol) and afterburn decreased to an average of only 3° F. A further decrease in additions of COP-NP is possible, which would result in even greater NOx emissions reductions.

This trial shows again that NOx emissions are the same with COP-NP as with the previous competitive product (Fig. 3b) with a threefold reduction in additive additions at constant degrees of afterburn. The conclusion is that COP-NP is a much more efficient and cost-effective additive.

Results of the COP-NP trial at Marathon's Detroit refinery were much the same as reported for the previous two refineries. This unit had been operating with severe afterburn but had accepted it in order to keep NOx emissions low enough to satisfy the company's consent-decree emissions requirements. In this case, COP-NP replaced Vendor Y's non-Pt combustion promoter.

COP-NP reduced afterburn by 19% and CO emissions decreased by 54%. NOx emissions remained essentially unchanged. The required promoter addition rate was reduced by 38% during use of COP-NP vs. vendor Y. Overall, COP-NP was successful in reducing afterburn and CO emissions, without increasing NOx emissions.

The fourth FCC unit in the Marathon system to convert to COP-NP was the St. Paul Park, Minn., refinery. Additions of COP-NP began in October 2008; this unit is just now yielding initial performance results.

In this case COP-NP replaced Vendor Z's non-Pt promoter. In addition to the results shown in Table 2, Fig. 4a shows that at the same level of excess O_2 in the regenerator, COP-NP generates less NOx. In addition, Fig. 4b shows again that at constant degrees of afterburn, the level of NOx emissions is the same or lower than with the competitor's additive.

Table 3 summarizes the performance data for COP-NP relative to the historical use of other additives it replaced in each of the Marathon FCC units. The data between these trials are consistent in that they show COP-NP to be more effective in reducing afterburn and CO emissions; more active, resulting in less additive required to be used; and more cost effective than other non-Pt CO combustion promoters that have been used.

Overall, the improved combustion promotion effectiveness of COP-NP has resulted in use of less additive for afterburn and CO emissions control and has led to significant cost savings for each of Marathon's FCC units.

Based upon the success of COP-NP, Marathon now uses the Intercat non-Pt combustion promoter on six of its seven FCC units. The only unit not using COP-NP continues to use Pt-COP with a backend control technology to manage NOx. ✦

COP-NP PERFORMANCE SUMMARY Table 3

Refinery	Afterburn reduction	CO reduction	Additive addition reduction	Approximate cost savings, ¢/bbl
	%			
Garyville	48	47	50	2.8
Robinson	92	NA	67	2.9
Detroit	19	54	38	2.1
St. Paul	1	4	56	3.3

References

1. Sexton, J., Joyal, C., and Foley, P., "EPA consent decrees: Progress on FCC Implementation," NPRA Annual Meeting, Mar. 20, 2007.

2. Aru, G.W., "FCC additive demonstrations—Part 1," PTQ, Q3, 2004.

3. Aru, G.W., "FCC additive demonstrations—Part 2," PTQ, Q4, 2004.

4. Radcliff, C., "Reducing FCC unit NOx emissions," PTQ Catalysis, 2008.

5. Evans, M., "Evaluating FCC Flue Gas Emission Control Technologies," Petroleum Technology Quarterly, first-quarter 2008.

6. Peters, A.W., Zhao, X., and Weatherbee, G.W., "The Origin of NOx in the FCC Regenerator," AM-95-59, National Petroleum Refiners Association, 1995 Annual Meeting.

The authors

Jeffrey Sexton (jeffasexton@marathonoil.com) is the cat cracking technologist for Marathon Oil Co., Findlay, Ohio, responsible for FCC technical and operating performance across Marathon's seven refineries. He previously worked for UOP in a variety of FCC assignments and has worked on more than 40 different FCC units around the world. Sexton currently chairs the US EPA Consent Decree FCC Technical Team and PSRI Technical Advisory Committee. He holds a BS in chemical engineering from Rose-Hulman Institute of Technology.

Rick Fisher (rfisher@intercat-inc.com) for the last 4 years served as senior technical service engineer for Intercat. He also worked for 7 years as a process engineer and planning engineer for the Fina/Total/Alon refinery, Big Spring, Tex., and 10 years as a process engineer, plant engineer, and process engineering manager for UDS Sunray, Tex., refinery. Fisher holds a BSc chemical engineering (1988) from the University of Oklahoma, Norman.

Gazprom pipeline gas remains key to Europe

Dmitry Volkov
Gurcan Gulen
Michelle Foss
Ruzanna Makaryan
Center for Energy Economics
Sugarland, Tex.

Europe will have to work with Gazprom to develop the supplies and transport routes to meet projected natural gas shortfalls, as increased European LNG receipts and such pipelines as the Trans-Sahara are unlikely to provide timely relief. The Europe-Gazprom relationship is mutually beneficial and the current economic downturn should place a premium on the importance of working together.

Background

The recent interruption of natural gas supplies to Ukraine by Gazprom stirred discussion of the company's reliability as a major supplier to Europe. Memories of similar events just 2 years before magnified these concerns. This article will analyze the foundations for these concerns, looking closely at transportation routes, availability of supply, and Gazprom's financial ability to pursue either new routes or new supplies.

Gazprom will do its best to supply Europe because the European Union (EU) is its largest and best paying customer, but a number of considerations will affect its ability to do so:

- Europe will continue to diversify its gas supply sources (mostly via LNG and storage) but even while doing so will continue to depend on Gazprom for a large portion of its natural gas.
- Although the amount of Russian gas shipped to Europe will likely increase, its share of overall European gas imports will decrease.
- In the medium to long term, Europe will face a natural gas supply gap (151 bcm/year in 2020, according to EuroGas), requiring it to worry about the availability of Russian gas beyond the volumes currently supplied. Several factors could limit the availability of extra supplies to Europe.

—Gazprom will continue to diversify its export options, building on current plans for a pipeline to China and for LNG projects.

—Russian domestic demand for gas will likely rebound to a healthy growth rate (0.5-1%/year) despite the loosening of price controls. The new pricing environment will offer Gazprom a more attractive market.

—Central Asian producers may divert supplies away from Gazprom; e.g., eastward to China.

—Gazprom's and independent producers' investment in upstream and transportation segments, though sufficient to meet existing contracts, falls short of what would be required to supply Europe in the long term.

Understanding dependence

Europe is concerned Gazprom will dangerously increase its share of European supply. A closer look at projected numbers, however, shows a drop in Gazprom's share of European imports.

Russia exported an average of 255 billion cu m/year in 2005-2007, including 142 billion cu m to the EU. Recent Russian government forecasts, however, project Russian natural gas exports of 287-332 billion cu m/year by 2020.[1] This outlook includes Sakhalin and Shtokman LNG export commitments and pipeline deliveries to Asia, particularly China, all of which would amount to about 50 billion cu m/year under the inertial (basic) scenario (Table 1).

By 2020 the EU can expect at most about 170 billion cu m/year from Russia, only 28 billion cu m/year more

GAZPROM NATURAL GAS EXPORTS

Table 1

	Gazprom exports; 2005-07, average	Projected Gazprom exports, 2020
	— Billion cu m/year —	
EU-27	142	[1]124-170
FSU	93	93
Non-EU Europe	20	20
Sakhalin II LNG, pipeline to China	0	39
Shtokman LNG	0	11
Total	**255**	**[2]287-332**

[1]Center for Energy Economics calculations. [2]"Concept of Long-Term Socio-Economic Development of the Russian Federation," Ministry for Economic Development of the Russian Federation, August 2008 (in Russian).

EUROPEAN GAS MARKET, GAZPROM'S SHARE

Table 2

	Total imports, 2006	Total imports needed, 2020	EU-27 demand, 2020	EU-27 production, 2020	EU-27 projected shortfall, 2020
	Billion cu m/year				
EU-27	[1]396	[2]490	[3]688	[3]198	[3]151
Gazprom's share	[2]51%	[2]25-35%			

[1]European Commission, "Energy. Statistical Yearbook 2006." [2]CEE calculations. [3]"Natural Gas Demand and Supply. Long Term Outlook to 2030," EuroGas, 2007.

than the current average. In the worst case scenario, only 124 billion cu m/year of Russian gas will be available to Europe, 18 billion cu m/year less than the current average.

For simplicity, these estimates assumed exports to the FSU and non-EU Europe would stay at current levels and Russia would not further diversify its pipeline and LNG export options beyond Sakhalin, Shtokman, and a pipeline to China. Any increase in these alternatives would further reduce the amount of gas available to the EU.

Predictions call for EU demand to increase roughly 20% by 2020 to 688 billion cu m/year according to a EuroGas study,[2] while indigenous production falls to 198 billion cu m/year (Table 2). The study projects a deficit of 151 billion cu m/year after domestic production and planned imports.

The same study projects an increase in EU dependence on suppliers outside Europe to 68% in 2020 from 41% in 2005. Gazprom's share of EU gas imports could be reduced to 35% in 2020 from 51% in 2006, under the most conservative case, and to 25% the least conservative case.

According to the EuroGas study, 151 billion cu m/year of the needed 490 billion cu m/year of imports projected in 2020 were not under long-term agreements yet. Plausible options for closing this shortfall include increasing pipeline supply from North Africa, increasing LNG imports, signing new contracts with Gazprom (and helping with whatever infrastructure development might be necessary), or developing non-Gazprom supply routes from the east, such as Nabucco.

Transportation routes

In its effort to diversify supply sources, Europe has studied various alternatives, including expanded LNG receipt capacity and increased storage capacity (so that more natural gas, particularly LNG could be stored for winter months). The Nabucco pipeline is another studied alternative. Although the economics of the project are difficult, the recent shutoff of supplies by Gazprom has reinvigorated the political desire to complete this pipeline.

Nabucco is supposed to deliver 31 billion cu m/year of natural gas from the Caspian region, potentially including Iraq and Iran, to Central Europe via Turkey. Several potential problems, however, continue to surround the project.

Not only would the Nabucco partners compete for supply against Gazprom, China National Petroleum Corp. (CNPC) and quite possibly India's Oil and Natural Gas Corp. (ONGC), Nabucco's value to Caspian producers has also been diminished by recent long-term contracts between Gazprom and Central Asian producers based on netback pricing formulas.

The chances of filling Nabucco with gas from Iran as an alternative are limited. It remains politically difficult to conduct long-term business with Iran. The country also seems to lack not only sufficient supply but also the necessary upstream and transportation investment to make connection to Nabucco viable.

Gazprom supports two other alternative pipelines: South Stream under the Black Sea and Nord Stream through the Baltic. Gazprom anticipates these routes will protect it, and presumably European customers, from unauthorized withdrawal of gas by transit countries such as Belarus and Ukraine and delayed payments. Gazprom is also using these pipelines (especially South Stream) to preempt Nabucco or other pipelines that would bring Caspian supplies to Europe.

The onshore portion of Nord Stream is under construction in Russia, but the project faces resistance from some EU members. Germany and Sweden raised ecological concerns regarding the project. Poland and the Baltic states, meanwhile, have voiced their preference for an onshore pipeline instead.

Russian supply

Even if the Nord Stream, South Stream, and the other routes are built, can Gazprom fill Europe's import gap?

The only two projects currently under way are Sakhalin and Shtokman, targeting Pacific and Atlantic markets, respectively. In the Atlantic Basin, natural target markets for Shtokman LNG include the Iberian Peninsula in Europe, virtually disconnected from the broader European natural gas network, and LNG regasification terminals on North America's East Coast.

Gazprom affiliate Gazprom Marketing & Trading (GMT) has already signed a preliminary memorandum of understanding with Spain's Gas Natural for LNG deliveries, expected to be executed at first on a swap basis similar to previous deliveries to the US, Japan, and Korea.

In North America, Gazprom has secured sales to the Rabaska LNG terminal in Canada. The North American LNG market, however, has so far been lower priced than those in Europe and Asia. Uncertainty has also grown regarding the medium-term supply-demand balance in the US and Canada. Unconventional gas plays in the region have proven to be economically feasible, if sensitive to lower price decks, and their share of supply was growing rapidly until the recent drop in prices. Produc-

tion of marketed natural gas in the US in December 2008 was at its highest in the past 24 years.

Changing supply-demand conditions are probably the main reason developers of another regasification terminal in Canada, Kitimat LNG, announced plans instead to build a liquefaction plant targeting Asian markets. At the same time, a joint venture between Teekay Corp. and Merrill Lynch Commodities Inc. wants to convert an LNG carrier into a 500,000 tonnes/year floating liquefaction plant near Kitimat by 2012.

Decreasing global energy consumption and the consequent drop in oil and gas prices led to dramatic changes in Gazprom's development and production plans. Gazprom officials have already discussed a production cut of as much as 7% in 2009. The company's January 2009 production decreased 13.7% year-on-year, mostly due to reduced exports through Ukraine, but also because of reduced natural gas demand in Europe.

Domestic consumption, typically about 65% of Gazprom's sales (see accompanying figure above), is also rapidly declining, following a dramatic drop in industrial production. Power generation, which accounts for roughly 40% of domestic gas consumption, slipped 7.3% year-to-year in January 2009. Export-oriented industries, the major natural gas industrial consumers, proved even more vulnerable to deteriorating market conditions. The chemical industry experienced a 74.1% dive between November 2008 and November 2007, while metallurgy was off 86.7%, wood processing 81.4%, and pulp and paper 85%.[3]

Gazprom's storage is practically full due to continuous low demand in both domestic and international markets. The lack of storage capacity deprived the company of any production flexibility and caused production to decline further. Even some of the independents, which can only export through Gazprom, started reducing their production.

Reduced demand by both domestic and international customers, however, should be a short-term phenomenon, with demand picking up relatively quickly, albeit at a slower pace. In the long run, independents should provide a level of comfort to both Gazprom and its customers, including Europe.

Independent Russian companies increased production in 2008 by 8.9%, to 113.5 billion cu m/year. They are continuing to invest, albeit at reduced rates given current economic conditions. In the future, they may provide a hedge against the risk Central Asian supplies may move away from Gazprom, eastward to China, for example. Gazprom has long-term contracts with most domestic independent suppliers but had to renegotiate contracts with Uzbekistan, Turkmenistan, and Kazakhstan multiple times.

Financial position

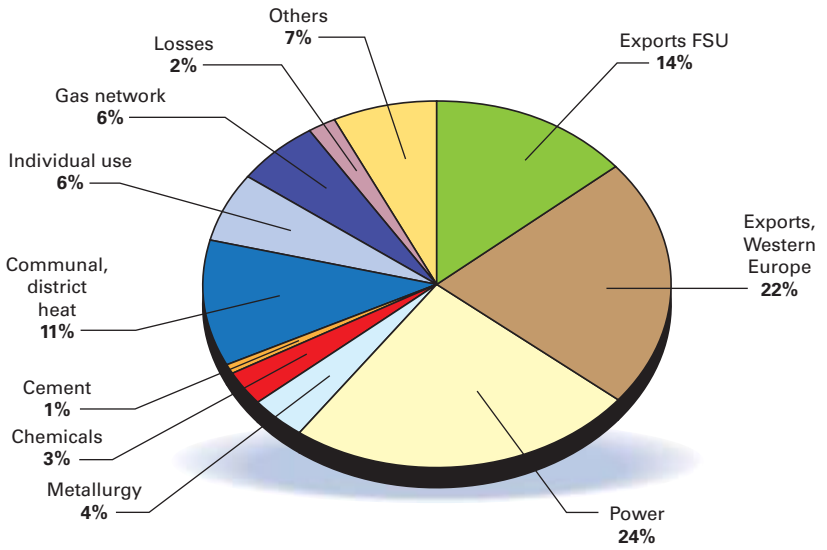
Lower natural gas prices will take a toll on Gazprom in 2009 and, due to the structure of export contracts, restrict its 2010 finances as well. The announced liberalization of domestic prices, however, will likely go on as planned, providing a counter to falling export revenues. Natural gas tariffs for nonresidential customers increased 25% in 2008 and a further 15% in 2009 (reduced from an initially planned 28% hike). Despite the price increase, domestic demand should not fall to levels sufficient to erase the tariff gains in Gazprom revenues.

It is also likely that lower demand will slow development of capital-intensive projects such as Bovanenkovskoye and Kharasavey fields in Yamal. These natural gas fields stand as the major resource to replace falling production at the mature Yamburg, Urengoy, and Zapolyarnoye fields.

Gazprom invested about $2 billion in Bovanenkovskoye and Kharasavey fields in 2008, in addition to another $1 billion in infrastructure in the Yamal peninsula. About a third of the investments were in non-Yamal exploration and production activities, and another third on transportation and storage facilities outside Yamal. Current Yamal investments remain at roughly $5.5 billion for the time being but will likely be reduced.

Gazprom's total 2009 investment plans have already been reduced by 10%, to about $27 billion, two thirds of which is capital expenditures. The final

RUSSIAN NATURAL GAS CONSUMPTION Fig. 1



Source: Center for Energy Economics, http://www.beg.utexas.edu.energyecon/documents/RUSSIAN_NATURAL_GAS_FINAL.pdf

effect of these new budget numbers on major projects remains unclear. Part of the 10% decrease in dollar terms can be explained by the large devaluation of the ruble in recent months. But at the same time, materials and services for infrastructure projects have become cheaper.

The combination of low energy prices and shrinking sales revenues, however, could greatly affect Gazprom over the next 2 years. With prices for Urals at $35-45/bbl, Gazprom will have to increase borrowing from the $2.5 billion budgeted for 2009 to continue its investment program. Company officials have already visited Asian and Middle Eastern financial centers seeking funds.

Gazprom's reaction to increased excitement about Nabucco has been to emphasize South Stream and Nord Stream, but these are extremely capital intensive projects. Gazprom recently estimated South Stream's cost as high as $32.5 billion, while North Stream would cost as much as $11.6 billion, including $2.6 billion in 2009. South Stream can be effective for the time being simply as a counter to Nabucco, but Nord Stream construction has started and needs continuous funding.

Gazprom may have no choice but to ask the Russian government for support. But the government's ability to do so may be limited. The latest (Jan. 19, 2009) official budget forecast for 2009 stipulates an average Urals price of $41/bbl, an exchange rate of 35.1 rubles/$, and a 6-8% federal budget deficit in 2009 followed by 4-5% deficits in 2010 and 2011. These deficits would be covered by reserve funds, but would likely drain them by 2012.[4] ✦

References

1. "The Concept of Long-Term Socio-Economic Development of the Russian Federation," Ministry for Economic Development of the Russian Federation, August 2008 (in Russian).

2. "Natural Gas Demand and Supply, Long Term Outlook to 2030," EuroGas, 2007.

3. "The main parameters of socio-economic development for 2009," Ministry for Economic Development and Trade of the Russian Federation, December 2008. Available at: http://www.economy.gov.ru/wps/wcm/myconnect/economylib/mert/welcome/economy/macro-economy/administmanagementdirect/doc1229698624942.

4. "Novii Kurs" ("New Deal"), Vedomosti, Jan. 20, 2009.

The authors

Dmitry Volkov (dmitry.volkov@beg.utexas.edu) joined the CEE in October 2003. Volkov is involved in various research projects, including LNG and carbon sequestration value chains, as well as studies of FSU energy sector development and international energy data systems. He is an active member of the Association of International Petroleum Negotiators (AIPN). Volkov holds degrees from University of Houston (MBA, accounting and finance) and Moscow State University, Institute of Asian and African studies (BS, Arabic studies and history).

Gurcan Gulen (gurcan.gulen@beg.utexas.edu) is a senior energy economist at the CEE. Gülen comanages a 5-year cooperative agreement with the USAID, focusing on capacity building in energy sectors of emerging economies in Africa. He also directs content development for the New Era in Oil, Gas & Power Value Creation, CEE's international capacity building program. He served as an officer in both the Houston and national chapters of the International Association for Energy Economics. He received a PhD in economics from Boston College and a BA in economics from Bosphorus University, Istanbul.

Michelle Foss (michelle.foss@beg.utexas.edu) is chief energy economist and head of the CEE. She directs and conducts research on energy fuels, markets, infrastructure, and associated investment frameworks; advises US and international energy companies; publishes and speaks widely on energy issues; and provides public commentary and government testimonies. Previously, she was a director of research at the investment bank Simmons & Co.; director of research at Rice Center, an urban regional economics, energy, and transportation research group; and was engaged in Denver-based energy and environmental research and consulting. Foss is a member of the Council on Foreign Relations, AIPN, USAEE/IAEE, Women's Energy Network, and a partner in Harvest Gas Management, a Texas-based exploration company. Foss holds a PhD in political science from the University of Houston, an MS in economics from the Colorado School of Mines, and a BS in biology, with a geology minor, from the University of Louisiana-Lafayette.

Ruzanna Makaryan (ruzanna.makaryan@beg.utexas.edu) is a senior energy analyst at CEE-UT. She has been with the Center since 2002. She previously worked in Turkmenistan with PA Consulting Group, implementing USAID-sponsored technical assistance programs for Turkmen government agencies in the oil and gas sector. Ms. Makaryan holds an MBA from the University of Houston's Bauer School of Business and a BA in linguistics from Turkmen State University. She is a member of the Project Management Institute, World Affairs Council of Houston, and American Institute of Chemical Engineers.

Equipment/Software/Literature

Gas processing software redesigned, upgraded

The redesigned and upgraded eSimEvaluator business modeling and optimization software platform is now available.

The company's suite of applications helps enable midstream natural gas processing businesses to better plan, forecast, and optimize margin positions.

eSimEvaluator 2.0 leverages existing measurement, accounting, supervisory control and data acquisition, and control infrastructure to populate predictive models that answer the question "what actions should be taken to maximize profits on a go-forward basis?" Offering enhancements over prior versions, eSimEvaluator 2.0 helps midstream natural gas processors to more easily and accurately:

- Accrue, forecast, and budget asset performance.
- Manage processing elections, fuel-shrink balances, net residue-liquids position, supersystem interactions, and gross margins on a daily basis.
- Analyze what-if case scenarios to quickly assess the business impact of economic-operational fluctuations.
- Develop pro-forma economics for new gas coming onto the system.
- Run price-volume sensitivity analyses in support of the long term planning and budgeting process to improve financial reporting accuracy.
- Conduct business and operational variance analyses to describe estimates to performance variations.

Source: **eSimulation Inc.,** 1322 Space Park Drive, Suite A190, Houston, TX 77058.

New line of motors offers aluminum rotors

A new line of NEMA Premium efficient motors comes with aluminum rotors.

These new motors help users meet the 2010 mandatory efficiency requirements of the 2007 Energy Independence & Security Act and provide higher efficiency at a lower cost, the company says.

The new line of motors with aluminum rotors offers the same horsepower and housing as the firm's copper rotor-based NEMA Premium motors. They also meet the efficiency requirements of many states' utility rebate programs, such as the Sacramento Utility District Motors and Process Improvement Incentives and the New York State Energy Research and Development Authority Motor Drives Incentives programs.

This aluminum rotor NEMA motor also represents the company's expansion of its industrial line of motors, offering users a choice between aluminum and copper rotors.

These new aluminum rotor motors provide what the firm calls another energy efficient choice for customers who do not require the extraordinary efficiency of copper rotors. They are available in general purpose, severe duty, IEEE 841, modified, and custom-built motor configurations.

Source: **Siemens Energy & Automation Inc.,** 3333 Old Milton Parkway, Alpharetta, GA 30005.

Services/Suppliers

Fluor Corp.,

Irving, Tex., has named Peter Oosterveer president of its energy and chemicals group. A 20-year Fluor veteran, Oosterveer previously served as senior vice-president of the company's global chemicals and petrochemicals business from its Haarlem, The Netherlands, office. He has a BS in electronics from HTS Leeuwarden, The Netherlands, and is a graduate of the Thunderbird University International Management Program, Stanford's Executive Business School, and the Fluor Daniel Management Institute. Fluor provides engineering, procurement, construction, commissioning, operations, maintenance, and project management services.

Oosterveer

Baker Hughes Inc.,

Houston, has reorganized its global operations by geography, effective May 4, 2009. The company named John A. O'Donnell president, Western Hemisphere operations. Eastern Hemisphere operations will report to the new president of Eastern Hemisphere operations, who will be appointed later. In addition, the company appointed Derek Mathieson president, products and technology. Both will retain their current Baker Hughes Inc. vice-president titles. O'Donnell currently serves as president of Baker Petrolite. Previously, he was president of Baker Hughes Drilling Fluids and vice-president of the company's process segment, divested in early 2004. O'Donnell also served as vice-president, manufacturing, for Baker Oil Tools. He joined Hughes Tool Co. in 1975. O'Donnell served as a pilot in the US Marine Corps and holds a BS in business management from the University of California and an MBA from Pepperdine University. Mathieson currently serves as chief technology and marketing officer. Prior to joining Baker Hughes in December 2008, Mathieson served as CEO of WellDynamics. Previously, he was employed by Shell UK Exploration & Production and Wood Group in the UK. Mathieson holds a PhD in micro-electromechanical systems from Heriot-Watt University.

Baker Hughes provides reservoir consulting, drilling, formation evaluation, completion, and production products and services to oil and gas customers worldwide.

Spectraseis

Zurich, has elected Jean Chevaillier to its board as non-executive director. He recently retired as vice-president, industry affairs, of Schlumberger Ltd., where he held a variety of senior management positions during a 36-year career.

Spectraseis is a leading provider of low-frequency passive seismic geophysical solutions to the upstream oil and gas industry.

Imports of crude and products

	Districts 1–4		District 5		Total US		
	4–10 2009	4-3 2009	4–10 2009	4-3 2009	4-10 2009	4-3 2009	*4-11 2008
	1,000 b/d						
Total motor gasoline	1,014	989	60	17	1,074	1,006	950
Mo. gas. blending comp.	706	775	11	14	717	789	682
Distillate	144	161	0	0	144	161	260
Residual	437	317	9	5	446	322	316
Jet fuel–kerosine	26	19	50	10	76	29	318
Propane–propylene	108	153	4	132	112	285	147
Other	188	330	113	69	301	399	477
Total products	**2,623**	**2,744**	**247**	**247**	**2,870**	**2,991**	**3,150**
Total crude	**8,425**	**8,065**	**966**	**1,267**	**9,391**	**9,332**	**8,879**
Total imports	**11,048**	**10,809**	**1,213**	**1,514**	**12,261**	**12,323**	**12,029**

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

Purvin & Gertz LNG netbacks—Apr. 17, 2009

Receiving terminal	Liquefaction plant					
	Algeria	Malaysia	Nigeria	Austr. NW Shelf	Qatar	Trinidad
	$/MMbtu					
Barcelona	8.14	6.23	7.40	6.13	6.75	7.33
Everett	2.94	1.26	2.64	1.38	1.63	3.17
Isle of Grain	3.12	1.40	2.61	1.32	1.82	2.63
Lake Charles	1.46	0.04	1.28	0.17	0.27	1.95
Sodegaura	4.00	5.92	4.26	5.66	5.06	3.24
Zeebrugge	5.29	2.83	4.65	2.70	3.55	4.73

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	15,983	56,659	39,173	9,824	52,098	14,590	2,819
PADD 2	84,907	53,104	22,768	6,962	33,707	1,289	13,595
PADD 3	190,272	71,607	40,214	12,619	38,827	15,479	23,780
PADD 4	16,728	5,957	2,233	561	3,220	204	[1]705
PADD 5	58,853	29,178	23,518	9,372	11,777	4,608	—
Apr. 10, 2009	**366,743**	**216,505**	**127,906**	**39,338**	**139,629**	**36,170**	**40,899**
Apr. 3, 2009	**361,072**	**217,449**	**130,118**	**39,061**	**140,799**	**36,235**	**39,736**
Apr. 11, 2008[2]	**313,660**	**215,751**	**107,795**	**39,709**	**106,079**	**38,339**	**25,416**

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

Refinery report—Apr. 10, 2009

District	Refinery operations		Refinery output				
	Gross inputs	Crude oil inputs	Total motor gasoline	Jet fuel, kerosine	Fuel oils		Propane–propylene
					Distillate	Residual	
	1,000 b/d						
PADD 1	965	970	2,156	62	254	113	36
PADD 2	2,984	2,969	2,081	218	907	37	235
PADD 3	7,367	7,275	2,873	725	2,155	175	666
PADD 4	447	437	274	23	142	11	[1]51
PADD 5	2,442	2,336	1,529	372	493	143	—
Apr. 10, 2009	**14,205**	**13,987**	**8,913**	**1,400**	**3,951**	**479**	**988**
Apr. 3, 2009	**14,465**	**14,287**	**8,966**	**1,345**	**3,918**	**582**	**1,016**
Apr. 11, 2008[2]	**14,316**	**14,236**	**8,841**	**1,403**	**4,029**	**646**	**1,002**
	17,675 Operable capacity		**80.4% 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

	*4–17–09	*4–18–08	Change	Change, %
	$/bbl			
SPOT PRICES				
Product value	59.26	126.40	–67.15	–53.1
Brent crude	51.85	112.08	–60.23	–53.7
Crack spread	7.41	14.32	–6.92	–48.3
FUTURES MARKET PRICES				
One month				
Product value	60.64	128.36	–67.72	–52.8
Light sweet crude	49.80	114.41	–64.61	–56.5
Crack spread	10.84	13.96	–3.12	–22.4
Six month				
Product value	62.09	123.14	–61.05	–49.6
Light sweet crude	58.16	111.21	–53.05	–47.7
Crack spread	3.93	11.92	–7.99	–67.0

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

OGJ GASOLINE PRICES

	Price ex tax 4-15-09	Pump price* 4-15-09	Pump price 4-17-08
	¢/gal		
(Approx. prices for self-service unleaded gasoline)			
Atlanta	153.2	199.7	341.8
Baltimore	154.9	196.8	330.4
Boston	152.9	194.8	325.4
Buffalo	140.3	201.2	346.8
Miami	146.2	197.8	353.1
Newark	205.3	237.9	317.8
New York	124.8	185.7	328.8
Norfolk	150.9	189.3	323.7
Philadelphia	152.6	203.3	335.0
Pittsburgh	159.2	209.9	333.3
Wash., DC	173.9	212.3	338.1
PAD I avg	155.8	202.6	334.0
Chicago	156.4	220.8	370.9
Cleveland	158.2	204.6	334.4
Des Moines	160.2	200.6	332.3
Detroit	147.2	206.6	336.2
Indianapolis	140.3	199.7	338.6
Kansas City	158.7	194.7	326.7
Louisville	159.7	200.6	345.8
Memphis	158.8	198.6	332.9
Milwaukee	153.3	204.6	340.2
Minn.-St. Paul	159.5	203.5	328.6
Oklahoma City	154.2	189.6	325.4
Omaha	152.5	197.8	335.6
St. Louis	154.7	190.7	327.6
Tulsa	154.2	189.6	320.0
Wichita	152.2	195.6	323.2
PAD II avg	154.7	199.9	334.5
Albuquerque	161.1	197.5	328.2
Birmingham	156.2	195.5	336.5
Dallas-Fort Worth	154.2	192.6	332.9
Houston	154.0	192.4	331.2
Little Rock	155.4	195.6	334.5
New Orleans	153.3	191.7	332.4
San Antonio	152.2	190.6	324.8
PAD III avg	155.2	193.7	331.5
Cheyenne	158.8	191.2	320.5
Denver	156.4	196.8	336.8
Salt Lake City	148.9	191.8	329.6
PAD IV avg	154.7	193.2	329.0
Los Angeles	144.7	211.8	364.2
Phoenix	163.3	200.7	319.1
Portland	178.4	221.8	352.8
San Diego	162.2	229.3	374.8
San Francisco	167.2	234.3	387.5
Seattle	165.9	221.8	361.2
PAD V avg	163.6	219.9	359.9
Week's avg.	**156.4**	**202.0**	**337.1**
Mar. avg.	**147.6**	**193.2**	**319.7**
Feb. avg.	**144.0**	**189.6**	**303.1**
2009 to date	**143.9**	**189.5**	—
2008 to date	**269.3**	**312.9**	—

*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

	4-10-09 ¢/gal		4-10-09 ¢/gal
Spot market product prices			
Motor gasoline (Conventional-regular)		Heating oil No. 2	
New York Harbor	139.90	New York Harbor	140.65
Gulf Coast	137.90	Gulf Coast	135.65
Los Angeles	147.90	Gas oil	
Amsterdam-Rotterdam-Antwerp (ARA)	136.68	ARA	142.89
Singapore	151.55	Singapore	143.43
Motor gasoline (Reformulated-regular)		Residual fuel oil	
New York Harbor	136.40	New York Harbor	111.62
Gulf Coast	141.90	Gulf Coast	108.74
Los Angeles	159.90	Los Angeles	110.25
		ARA	108.36
		Singapore	108.24

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

BAKER HUGHES RIG COUNT

	4-17-09	4-18-08
Alabama	4	5
Alaska	7	6
Arkansas	45	43
California	19	39
Land	18	38
Offshore	1	1
Colorado	52	122
Florida	0	0
Illinois	1	0
Indiana	0	2
Kansas	16	12
Kentucky	8	12
Louisiana	136	142
N. Land	75	51
S. Inland waters	5	19
S. Land	15	19
Offshore	41	53
Maryland	0	0
Michigan	0	0
Mississippi	10	10
Montana	0	12
Nebraska	0	0
New Mexico	31	82
New York	1	7
North Dakota	43	56
Ohio	7	12
Oklahoma	91	214
Pennsylvania	31	22
South Dakota	0	2
Texas	384	883
Offshore	3	8
Inland waters	1	2
Dist. 1	11	23
Dist. 2	13	35
Dist. 3	30	55
Dist. 4	37	93
Dist. 5	99	187
Dist. 6	66	120
Dist. 7B	11	32
Dist. 7C	14	68
Dist. 8	37	130
Dist. 8A	10	22
Dist. 9	21	35
Dist. 10	31	73
Utah	17	41
West Virginia	21	23
Wyoming	37	68
Others—NV-5; TN-3; VA-4; WA-2	14	12
Total US	**975**	**1,827**
Total Canada	**74**	**96**
Grand total	**1,049**	**1,923**
US Oil rigs	205	355
US Gas rigs	760	1,461
Total US offshore	47	63
Total US cum. avg. YTD	**1,281**	**1,780**

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	Rig count	4-17-09 Percent footage*	Rig count	4-18-08 Percent footage*
0-2,500	49	8.1	71	5.6
2,501-5,000	61	62.2	123	51.2
5,001-7,500	118	22.0	204	17.6
7,501-10,000	228	2.1	420	2.3
10,001-12,500	177	2.8	469	4.0
12,501-15,000	202	—	292	—
15,001-17,500	113	—	118	—
17,501-20,000	53	—	73	—
20,001-over	36	—	36	—
Total	**1,037**	**7.5**	**1,806**	**7.3**
INLAND	9		29	
LAND	985		1,719	
OFFSHORE	44		58	

*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]4-17-09	[2]4-18-08
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	22	21
Alaska	735	707
California	661	653
Colorado	65	65
Florida	6	6
Illinois	29	27
Kansas	109	106
Louisiana	1,480	1,290
Michigan	16	16
Mississippi	63	59
Montana	92	87
New Mexico	169	160
North Dakota	203	149
Oklahoma	179	170
Texas	1,380	1,138
Utah	60	56
Wyoming	152	149
All others	69	71
Total	**5,490**	**4,930**

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

US CRUDE PRICES

	4-17-09 $/bbl*
Alaska-North Slope 27°	39.60
South Louisiana Sweet	50.75
California-Kern River 13°	42.95
Lost Hills 30°	51.10
Wyoming Sweet	38.83
East Texas Sweet	46.25
West Texas Sour 34°	40.75
West Texas Intermediate	46.75
Oklahoma Sweet	46.75
Texas Upper Gulf Coast	39.75
Michigan Sour	38.75
Kansas Common	45.75
North Dakota Sweet	40.25

*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]	4-10-09
United Kingdom-Brent 38°	51.40
Russia-Urals 32°	49.51
Saudi Light 34°	49.61
Dubai Fateh 32°	51.19
Algeria Saharan 44°	51.27
Nigeria-Bonny Light 37°	52.25
Indonesia-Minas 34°	55.17
Venezuela-Tia Juana Light 31°	51.38
Mexico-Isthmus 33°	51.27
OPEC basket	51.14
Total OPEC[2]	50.65
Total non-OPEC[2]	49.78
Total world[2]	50.27
US imports[3]	48.85

[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]

	4-10-09	4-3-09	4-10-08	Change, %
	bcf			
Producing region	756	744	502	**50.6**
Consuming region east	651	647	579	**12.4**
Consuming region west	288	283	176	**63.6**
Total US	**1,695**	**1,674**	**1,257**	**34.8**
	Jan. 09	**Jan. 08**	**Change, %**	
Total US[2]	**2,141**	**2,055**	**4.2**	

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

Statistics

World oil balance

	2008 4th qtr.	2008 3rd qtr.	2008 2nd qtr.	2008 1st qtr.	2007 4th qtr.	2007 3rd qtr.
	Million b/d					
DEMAND						
OECD						
US & Territories	19.51	19.13	19.96	20.15	20.90	21.06
Canada	2.34	2.34	2.25	2.37	2.38	2.40
Mexico	2.04	2.11	2.16	2.10	2.16	2.06
Japan	4.67	4.30	4.59	5.41	5.25	4.70
South Korea	2.12	2.07	2.09	2.33	2.31	2.06
France	2.01	1.92	1.92	1.98	2.02	1.94
Italy	1.64	1.65	1.61	1.62	1.75	1.65
United Kingdom	1.71	1.64	1.72	1.72	1.73	1.73
Germany	2.64	2.72	2.41	2.47	2.54	2.55
Other OECD Europe	7.31	7.46	7.24	7.41	7.62	7.55
Australia & New Zealand	1.14	1.12	1.14	1.13	1.15	1.12
Total OECD	**47.13**	**46.46**	**47.09**	**48.69**	**49.81**	**48.82**
NON–OECD						
China	8.16	8.05	7.99	7.74	7.61	7.54
FSU	4.41	4.31	4.30	4.35	4.36	4.25
Non–OECD Europe	0.80	0.76	0.79	0.83	0.78	0.73
Other Asia	9.35	9.14	9.26	9.22	9.25	8.93
Other non–OECD	15.89	15.99	15.80	15.57	16.20	16.36
Total non–OECD	**38.61**	**38.25**	**38.14**	**37.71**	**38.20**	**37.81**
TOTAL DEMAND	**85.74**	**84.71**	**85.23**	**86.40**	**88.01**	**86.63**
SUPPLY						
OECD						
US	8.43	8.18	8.75	8.64	8.58	8.36
Canada	3.40	3.40	3.23	3.38	3.40	3.48
Mexico	3.12	3.15	3.19	3.29	3.33	3.46
North Sea	4.38	4.07	4.33	4.46	4.57	4.28
Other OECD	1.60	1.59	1.58	1.54	1.57	1.57
Total OECD	**20.93**	**20.39**	**21.08**	**21.31**	**21.45**	**21.15**
NON–OECD						
FSU	12.46	12.42	12.60	12.59	12.65	12.55
China	3.99	3.97	4.00	3.94	3.87	3.88
Other non–OECD	12.66	12.69	12.10	11.86	12.17	12.24
Total non–OECD, non–OPEC	**29.11**	**29.08**	**28.70**	**28.39**	**28.69**	**28.67**
OPEC*	**35.11**	**36.24**	**35.83**	**35.66**	**35.15**	**34.42**
TOTAL SUPPLY	**85.15**	**85.71**	**85.61**	**85.36**	**85.29**	**84.24**
Stock change	**–0.59**	**1.00**	**0.38**	**–1.04**	**–2.72**	**–2.39**

*Includes Angola.
Source: DOE International Petroleum Monthly
Data available in OGJ Online Research Center.

US petroleum imports from source country

	Dec. 2008	Nov. 2008	Average YTD 2008	Average YTD 2007	Chg. vs. previous year Volume	Chg. vs. previous year %
	1,000 b/d					
Algeria	484	677	547	670	–123	–18.4
Angola	562	450	513	508	5	1.0
Kuwait	219	292	210	181	29	16.0
Nigeria	939	827	990	1,134	–144	–12.7
Saudi Arabia	1,471	1,514	1,532	1,485	47	3.2
Venezuela	1,159	1,236	1,191	1,361	–170	–12.5
Other OPEC	845	803	975	641	334	52.1
Total OPEC	**5,679**	**5,799**	**5,958**	**5,980**	**–22**	**–0.4**
Canada	2,600	2,532	2,459	2,455	4	0.2
Mexico	1,228	1,406	1,299	1,532	–233	–15.2
Norway	80	114	102	142	–40	–28.2
United Kingdom	176	224	233	277	–44	–15.9
Virgin Islands	289	338	320	346	–26	–7.5
Other non–OPEC	2,548	2,440	2,501	2,737	–236	–8.6
Total non–OPEC	**6,921**	**7,054**	**6,914**	**7,489**	**–575**	**–7.7**
TOTAL IMPORTS	**12,600**	**12,853**	**12,872**	**13,469**	**–597**	**–4.4**

Source: DOE Monthly Energy Review
Data available in OGJ Online Research Center.

OECD total net oil imports

	Dec. 2008	Nov. 2008	Oct. 2008	Dec. 2007	Chg. vs. previous year Volume	Chg. vs. previous year %
	Million b/d					
Canada	–1,491	–1,439	–1,080	–1,254	–237	18.9
US	10,736	11,123	11,548	11,327	–591	–5.2
Mexico	–1,228	–1,309	–1,242	–1,258	30	–2.4
France	1,876	1,730	1,911	1,941	–65	–3.3
Germany	2,267	2,454	2,509	2,310	–43	–1.9
Italy	1,531	1,422	1,412	1,701	–170	–10.0
Netherlands	1,116	1,127	861	1,215	–99	–8.1
Spain	1,618	1,509	1,437	1,627	–9	–0.6
Other importers	4,072	3,825	4,140	3,911	161	4.1
Norway	–2,247	–2,372	–1,724	–2,297	50	–2.2
United Kingdom	193	152	99	–86	279	–324.4
Total OECD Europe	**10,426**	**9,847**	**10,645**	**10,322**	**104**	**1.0**
Japan	4,839	4,527	4,465	5,727	–888	–15.5
South Korea	1,954	2,058	1,819	2,281	–327	–14.3
Other OECD	928	741	984	681	247	36.3
Total OECD	**26,164**	**25,548**	**27,139**	**27,826**	**–1,662**	**–6.0**

Source: DOE International Petroleum Monthly
Data available in OGJ Online Research Center.

OECD* total gross imports from OPEC

	Dec. 2008	Nov. 2008	Oct. 2008	Dec 2007	Chg. vs. previous year Volume	Chg. vs. previous year %
	Million b/d					
Canada	422	401	605	397	25	6.3
US	5,652	5,779	5,872	6,312	–660	–10.5
Mexico	22	41	27	40	–18	–45.0
France	906	930	1,046	925	–19	–2.1
Germany	539	508	477	484	55	11.4
Italy	1,172	1,083	1,139	1,306	–134	–10.3
Netherlands	572	591	542	774	–202	–26.1
Spain	908	827	817	691	217	31.4
Other importers	1,095	1,149	1,271	1,230	–135	–11.0
United Kingdom	392	322	340	266	126	47.4
Total OECD Europe	**5,584**	**5,410**	**5,632**	**5,676**	**–92**	**–1.6**
Japan	4,116	3,797	3,887	4,442	–326	–7.3
South Korea	2,348	2,302	2,334	2,490	–142	–5.7
Other OECD	410	446	531	740	–330	–44.6
Total OECD	**18,554**	**18,176**	**18,888**	**20,097**	**–1,543**	**–7.7**

*Organization for Economic Cooperation and Development.
Source: DOE International Petroleum Monthly
Data available in OGJ Online Research Center.

Oil stocks in OECD countries*

	Dec. 2008	Nov. 2008	Oct. 2008	Dec. 2007	Chg. vs. previous year Volume	Chg. vs. previous year %
	Million bbl					
France	179	179	179	180	–1	–0.6
Germany	277	273	269	275	2	0.7
Italy	128	127	129	133	–5	–3.8
United Kingdom	99	96	93	90	9	10.0
Other OECD Europe	723	701	690	675	48	7.1
Total OECD Europe	**1,406**	**1,376**	**1,360**	**1,353**	**53**	**3.9**
Canada	199	203	202	196	3	1.5
US	1,735	1,733	1,712	1,665	70	4.2
Japan	630	641	648	621	9	1.4
South Korea	135	139	138	143	–8	–5.6
Other OECD	114	115	120	108	6	5.6
Total OECD	**4,219**	**4,207**	**4,180**	**4,086**	**133**	**3.3**

*End of period.
Source: DOE International Petroleum Monthly Report
Data available in OGJ Online Research Center.

Classified Advertising

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

RESEARCH SCIENTIST

Chevron seeks Research Scientist in Houston, TX. PhD in Chemical Eng. or Chemistry. Reqd skills: Fluid systems for well drilling, completion & workovers; Formation damage & productivity impairment for rock/fluids & fluid interactions; Flow assurance & well construction materials; Colloids & surface science; Nanotechnology & analytical reasoning. Mail resume: Chevron, 1400 Smith St., Houston, TX 77002 attn Y. Vasquez. Ref job 115

CLASTIC STRATIGRAPHER

Chevron seeks Clastic Stratigrapher in Houston, TX. MS in Geology + 1 yr exp in the job offered or as a Petroleum Geologist. Reqd skills: fluvial & shallow marine-deltaic stratigraphy & sedimentology; reservoir to basin scale, depositional facies & sequence stratigraphic analysis; reservoir characterization; geophysical subsurface interpretation. Mail resume: Chevron, 1400 Smith St., Houston, TX 77002 attn Y. Vasquez. Ref job 93.

ConocoPhillips in California seeks experienced professionals for the following positions:

Location: Wilmington
Reliability Engineer – Job Code 006OO
Mechanical Maintenance Supervisor – Job Code 006OC
Inspection Engineer – Job Code 006OM

Location: Carson
Reliability Engineer – Job Code 006OO
Unit Engineer – Job Code 006ON

For education and experience requirements and to submit resume, please visit www.conocophillips.com/careers. Must put job code on resume.

CGGVeritas Services in Houston, TX seeks International Tax Analyst. Qualified applicants will possess a Master's degree in business, accounting or finance plus two years of corporate international tax experience. Qualified applicants send resume to CGGVeritas, Attn: Eve Stoddard, 10300 Park Town Drive, Houston, Texas 77072. Must list job code TUM501278 on resume.

CONSULTANT

Brazil: EXPETRO can be your guide into this new investment frontier.

Effective strategic analysis, quality technical services, compelling economic/regulatory advice, and realistic approach regarding Brazilian business environment-120 specialists upstream, downstream gas and biofuels.
Email: contato@expetro.com.br
Web: www.expetro.com.br-Rio de Janeiro, Brazil

EQUIPMENT FOR SALE

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

OGJ Classifieds Get Results

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

EQUIPMENT FOR SALE

For Sale
(9) GE 3002J 14000HP Mechanical Drive Gas Turbines
Three turbines installed but never commissioned. Balance 6k to 95k fired hours.
Scheduled availability beginning July 2009
Japan Inc
Ardsley New York 10502
sales@japan-power.com
phone 914 693 0400 fax 914 693 3824

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

SITUATION WANTED

Degreed Engineer with 30 years experience in the design, construction, operations and refit of offshore drilling rigs is seeking a contract position in Houston, or rotating position anywhere in the world. Reply to petroleumclassifieds@pennwell.com with Box 042709A in the Subject line.

BUSINESS OPPORTUNITY

Want to purchase minerals and other oil/gas interests. Send details to: P.O. Box 13557, Denver, CO 80201.

INVESTMENT OPPORTUNITIES

WANTED
Oil Drilling prospects. Less than 3,000 ft.
Southwest Minerals, Inc.
Harvey Estes, Pres.
813-376-4075
Harveylv@aol.com

PennWell Classifieds
Contact: Glenda Harp
Email: glendah@pennwell.com

Classified Advertising

STRUCTURES

ClearSpan™
A DIVISION OF TEKSUPPLY

When you need a quality building fast, ClearSpan™ is the only choice.

Buildings available up to 250' wide. Natural daytime lighting.

Easy to relocate. Expandable. Low in cost per square foot.

Call today...
...for your free catalog 1.800.835.7877
or shop online at www.TekSupply.com.
Please mention code CST0943.

Why just tell them you're an expert when you can show them?

Article reprints are a low-cost, credible way to promote your business or technology.

For more information contact Sherry Humphrey at 918.832.9379 or sherryh@pennwell.com.

DEEP OFFSHORE TECHNOLOGY™ INTERNATIONAL
Conference & Exhibition

knowledge is YOUR EDGE

For Exhibit & Sponsorship Information
visit www.dotinternational.net

February 2–4, 2010
Houston, Texas USA
George R. Brown Convention Center

Owned & Produced by: PennWell, Offshore
Flagship Media Sponsors: Oil, Gas & Petrochem Equipment, Oil&Gas Journal, Oil&Gas Financial Journal
Supporting Organization: GEP
Sponsored By: ABS, INTECSEA WorleyParsons Group

Advertising Sales / Advertisers Index

Houston
Director of Sales, Tripp Wiggins; Tel: (713) 963-6244, Email: trippw@pennwell.com. Special Consultant, Strategic Accounts, Bill Wageneck; Tel: (713) 397-3068; Email: billw@pennwell.com. Regional Sales Manager, Marlene Breedlove; Tel: (713) 963-6293, E-mail: marleneb@pennwell.com. Regional Sales Manager, Mike Moss; Tel: (713) 963-6221, E-mail: mikem@pennwell.com. PennWell - Houston, 1455 West Loop South, Suite 400, Houston, TX 77027. Fax: (713) 963-6228.

South/Southwest /Texas/Northwest/Midwest/Alaska
Marlene Breedlove, 1455 West Loop South, Suite 400, Houston, TX 77027; Tel: (713) 963-6293, Fax: (713) 963-6228; E-mail: marleneb@pennwell.com.

Northeast/Texas/Southwest
Mike Moss, 1455 West Loop South, Suite 400, Houston, TX 77027; Tel: (713) 963-6221, Fax: (713) 963-6228; E-mail: mikem@pennwell.com

Louisiana/Canada
Bill Wageneck, 1455 West Loop S. Ste. 400, Houston, TX 77027; Tel: (713) 397-3068, Fax: (713) 963-6228; E-mail: billw@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
Stephen Wilding, 188 Gordon Avenue, Camberley, GU15 2NT, United Kingdom Tel: +44 7545 829 891; E-mail: stephenw@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

Germany/Austria/Northern/Switzerland/Eastern Europe/Russia/Former Soviet Union
Sicking Industrial Marketing, Kurt-Schumacher-Str. 16, 59872, Freienohl, Germany. Tel: 49 (0) 2903 3385 70, Fax: 49 (0) 2903 3385 82; E-mail: wilhelms@pennwell.com, www.sicking.de <http://www.sicking.de> Andreas Sicking

Japan
ICS Convention Design Inc., Plama Bldg. 2F, 2-13-8, Nihonbashi Kayabacho, Chuo-ku, Tokyo 103-0025, Japan, Tel: 81 3 5645 1271, Fax: 81 3 5645 1272; Manami Konishi; E-mail: manami.konishi@ex-press.jp; Masaki Mori; E-mail: masaki.mori@ex-press.jp.

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 6737-2356, Fax: (65) 6734-0655; yfyee@singnet.com.sg.

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.

A

Air France ..... Bellyband
www.airfrance.com

ASME/UH Cajun Crawfish Boil..... 20

B

Baker Hughes, Inc. 25
www.bakerhughes.com

Baker Hughes, Inc. ..... Back Cover
www.bakerhughes.com

Bal Seal Engineering .... Inside Back Cover
www.balseal.com/nametheseal

C

Cameron 6-7
www.c-a-m.com

I

Industrial Rubber, Inc. 16
www.iri-oiltool.com

K

Kronos 17
www.kronos.com/configure10

Kronos 19
www.kronos.com/effective10

Kronos 21
www.kronos.com/lean10

L

Lurgi GmbH. 15
www.lurgi.com

M

Marketforce Communications Ltd. 2
www.marketforce.eu.com/eugas

Mears Group 29
www.mears.net

Microsoft ..... Inside Front Cover
www.microsoft.com/oilandgas

N

Nexans 9
www.nexans.com

NPRA 23
www.npra.org/rmc

P

PennWell Corporation
OGMT North America 2009 35
www.ogmtna.com

Process Consulting Services, Inc..... 4
www.revamps.com

S

Society of Petroleum Engineers..... 13
www.spe.org/join

T

Tenaris..... 11
www.tenaris.com/tenarishydril

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

From the Subscribers Only area of OIL&GAS JOURNAL online www.ogjonline.com

EIA use of JODI data a step for oil transparency

An international effort to improve transparency of oil and gas markets advanced a step this month.

The International Energy Agency added to its April Oil Market Report discrete demand assessments for 14 countries based on data from the Joint Oil Data Initiative (JODI). IEA is one of six international organizations that launched JODI in 2000 in response to concerns about rising volatility

The Editor's Perspective

by Bob Tippee, Editor

of oil markets and prices. The other groups are Asia Pacific Energy Cooperation (APEC), the Statistical Office of the European Communities (Eurostat), Latin American Energy Organization (OLADE), Organization of Petroleum Exporting Countries, and United Nations Statistical Division.

JODI seeks monthly oil statistics from the 92 countries represented by those groups. The International Energy Forum Secretariat (IEFS) in Riyadh, which coordinates the work, opened the JODI database to public access in November 2005.

The data categories are production, closing stocks, stock changes, demand, refinery intake, and refinery output. The numbers cover crude oil, LPG, gasoline, kerosene, gas/diesel oil, heavy fuel, and total oil.

When JODI began, information like this wasn't routinely available on a monthly basis in all countries. Data quality was and remains anything but uniform.

IEFS applies a combination of training and persuasion to improve the product. It grades countries on reporting timeliness and data quality—and publishes the results.

Last December, JODI reported that for the first time more than 70 participating countries and economies were supplying monthly data, covering about 95% of world crude oil production in 2008 and 85% of global demand.

This month, acknowledging JODI's "tangible improvements," IEA began using numbers from the database to report demand for Algeria, Libya, Nigeria, Hong Kong, Philippines, Estonia, Chile, Colombia, Peru, Kuwait, Qatar, Yemen, Bulgaria, and Romania. IEA's adoption of JODI demand numbers represents progress in the effort to improve statistical assessment of the far-flung, ever-changing, and economically crucial oil market. And the progress itself is evidence of cooperation between producing and consuming countries. The world needs more of that. It also needs JODI to expand its coverage to natural gas and—this will be the ultimate achievement—reserves, consistently defined.

(Online Apr. 17, 2009; author's e-mail: bobt@ogjonline.com)

Market Journal

by Sam Fletcher, Senior Writer

Tight April crude prices

For 5 consecutive weeks through Apr. 17, the front-month contract for benchmark US light, sweet crudes finished each week "almost unchanged" from the close of the previous week within a narrow price range above $50/bbl, said Olivier Jakob at Petromatrix, Zug, Switzerland.

During the first months of 2009, crude prices increased 12%, trading in a tight range of $48-54/bbl through most of April, with the soon-to-expire May contract for benchmark US light, sweet crudes closing at $50.33/bbl Apr. 17, while the June contract finished at $52.47/bbl on the New York Mercantile Exchange. Jakob said, "Stronger equities are providing support to crude oil, but the commodity is starting to feel fatigued, pivoting around $50/bbl without any momentum."

At KBC Market Services, a division of KBC Process Technology Ltd. in Surrey, UK, analysts reported Apr. 20, "We remain confident that, although the US oil demand picture remains disappointing, as long as there is no significant deterioration [in demand] and the Organization of Petroleum Exporting Countries maintains production discipline oil prices will move gently upwards." They expect prices possibly to average $55/bbl in the second quarter, $60/bbl in the third quarter and $65/bbl in the last quarter of this year."

Meanwhile, they noted, "Once again [North Sea] Brent is lording it over WTI with a $3/bbl premium that has been gradually increasing for just over a week."

In mid-April, the Energy Information Administration reported imports of crude into the US inched up 59,000 b/d to 9.4 million b/d in the week ended Apr. 10. Input of crude into US refineries dropped 300,000 b/d to 14 million b/d, however, with units operating at 80.4% of capacity.

Although OPEC has curbed production, Jakob said, "The main US market is receiving more crude oil, not less, than last year." On the 4-week average through Apr. 10, crude imports into the US Gulf Coast were 500,000 b/d higher than a year ago, "despite the fact that OPEC production is supposed to have been 3.2 million b/d lower than a year ago in the first quarter," he said.

As of Apr. 10, commercial crude in storage on the US Gulf Coast was within 7 million bbl of a record high. With oil arriving steadily, refiners will need to push barrels up the pipeline to Cushing, Okla., to make room for more imports, Jakob said.

Pritchard Capital Partners analysts said, "Markets continue to ignore bearish fundamentals and appear to be taking cues from other factors like inflation fears, the weak dollar, or stock market strength." The oil market was supported in mid-April by an improvement in the US jobless rate, "indicating the pace of economic decline may be slowing," Pritchard Capital Partners said.

Repsol YPF said Apr. 15 it temporarily was shutting down its 100,000 b/d refinery in Cartagena, Spain, due to poor demand and margins. Jakob noted, "The US has been relying on Europe as an export pool and will probably need to shut more refinery units to clear the Atlantic Basin product overhang; that will in turn weigh on crude oil."

Natural gas outlook

Dissipating demand for natural gas indicates a strong injection season in an already oversupplied market, possibly reaching record levels by the end of summer, said analysts in the Houston office of Raymond James & Associates Inc. in early April.

In New Orleans, analysts at Pritchard Capital Partners LLC expect lower-priced natural gas to take market share from coal in the power generation sector over the next 2 quarters as refining and chemical sector demand "begins a gradual upturn."

However, they said, "The strong dollar (14% above a year ago) will likely lure incremental LNG imports in the spring and summer with imports rising from 1 bcfd to 1.7 bcfd by July. This will offset declining Canadian imports. Even adjusting for as much as 2 bcfd of switching from coal to gas in the power generation sector, industry will need to shut in as much as 1 bcfd" by Oct. 1.

Pritchard Capital Partners expect the rapidly falling North American rig count "will lead to balanced market in 2010 with net deliverability to decline 3 bcfd by yearend (assuming an average 900 rigs [drilling for gas] this year)." They said, "With gas unlikely to see pricing much above $3/Mcf before October at most points, we believe activity levels could be more severe than expected given marginal industry drilling economics. Costs have fallen far more quickly than was discussed on fourth-quarter conference calls. We believe costs are down nearly 20% since fourth quarter."

(Online Apr. 20, 2009; author's e-mail: samf@ogjonline.com)

Name the seal and win.

Our breakthrough oilfield sealing technology needs a name.

Enter your suggestion in our “Name The Seal” contest between May 1st and May 8th, 2009 and if we use it, you’ll win a brand new iPhone.

Participate online at www.balseal.com/nametheseal, or on-site at booth #4924 during the 2009 Offshore Technology Conference in Houston, TX.

Contest rules and restrictions apply. For complete details, visit www.balseal.com/nametheseal.

BAL SEAL ENGINEERING, INC.
Simply a better solution.

New Advanced Downhole Flowmeters Enhance Hydrocarbon Recovery

Baker Hughes' new SureFlo™ series of downhole flowmeters offers real-time flow data to help you optimize production and advance reservoir performance in a wide range of applications, including subsea wells.

- SureFlo 390 flowmeter is the industry's first downhole electronic multiphase flow meter.
- SureFlo 298 bulk rate, two-phase flowmeter provides the industry's highest accuracy measurements for specific applications including production allocation in offshore wells.
- SureFlo 298EX flowmeter is the industry's first fullbore-access, downhole electronic flowmeter, with no flow restrictions.
- SureFlo 290 flowmeter offers cost-effective flow measurement for marginal and heavy oil reservoirs.

BAKER HUGHES

Find out how our SureFlo series of flowmeters can optimize production and advance reservoir performance on your next field development. Contact your Baker Hughes representative today.

SureFlo downhole flowmeters – Advancing Reservoir Performance.

www.bakerhughes.com/sureflo

Visit the Baker Hughes OTC Booth 4241

©2009 Baker Hughes Incorporated. All Rights Reserved. 25207