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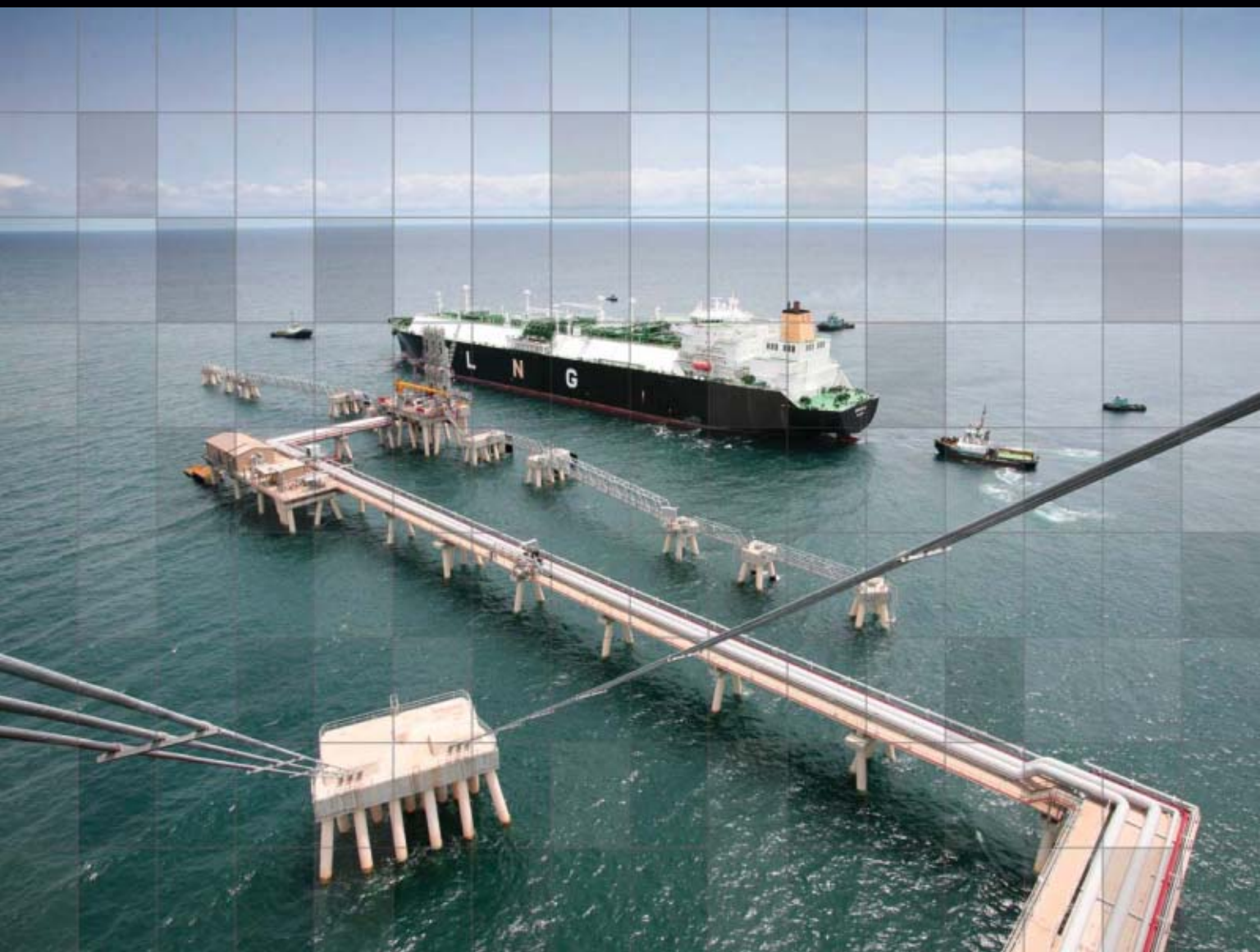

Worldwide Construction Update

US gas reserves climb as oil declines again
New method measures shaker screen performance
US gasoline supply deficit to more than halve by 2010
Corrosivity modeling helps determine pipeline conditions

safety

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OIL&GAS JOURNAL®

Nov. 19, 2007
Volume 105.43

WORLDWIDE CONSTRUCTION UPDATE

REGULAR FEATURES

COVER

In late May 2007, Marathon Oil Corp. and its partners in Equatorial Guinea LNG Co. Ltd. shipped their first cargo aboard the 138,000-cu m Gracilis. The $1.5 billion project was completed 6 months ahead of schedule. The FEED work for Train 2 was recently completed and final investment decision will be made in 2008, according to the companies. Details of other projects are in Oil & Gas Journal's Worldwide Construction Update starting on p. 18 and in the survey tables at www.ogjonline.com. Photo from Bechtel.

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General Interest

Exploration & Development

Drilling & Production

Processing

Transportation

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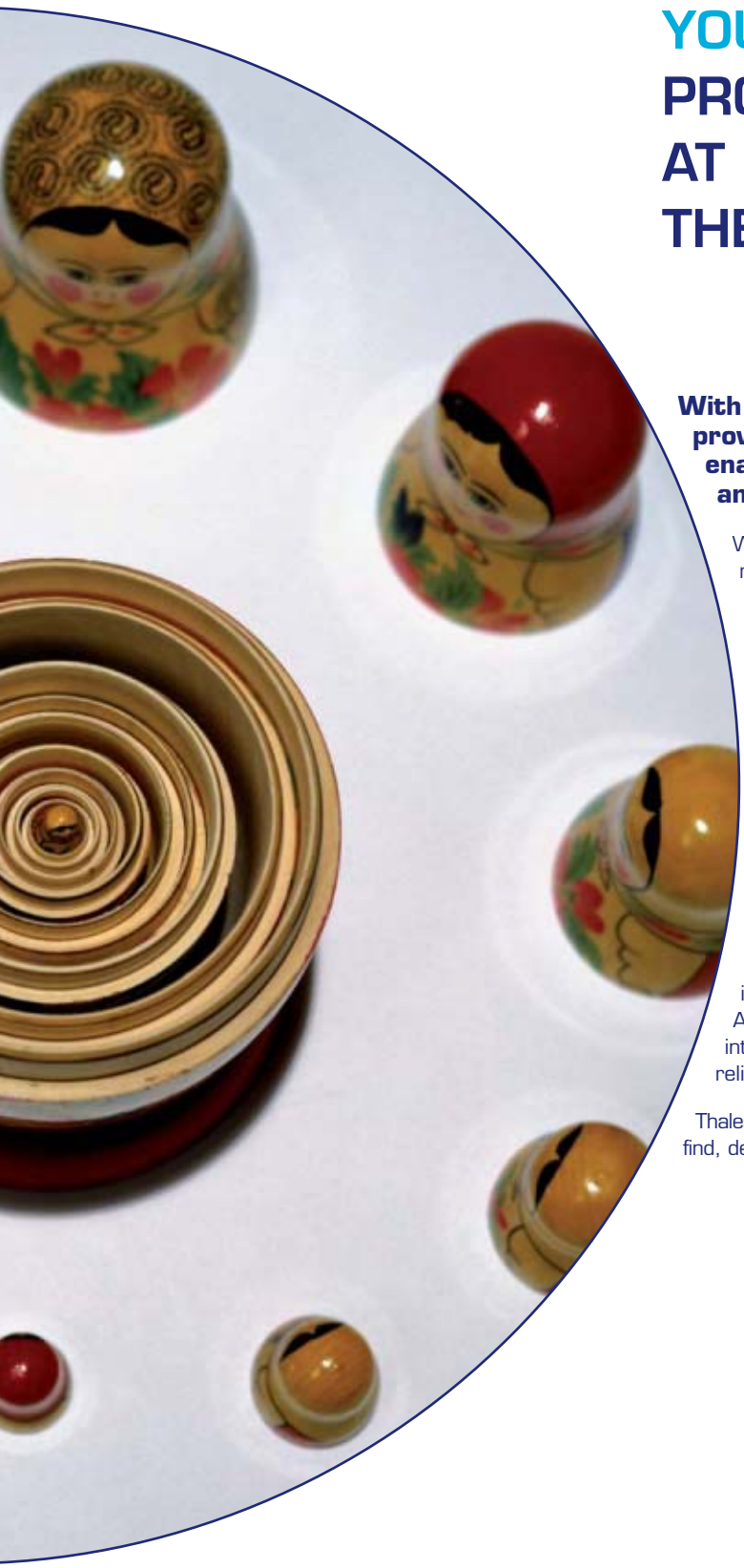

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OGJ Newsletter

Nov. 19, 2007

International news for oil and gas professionals
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General Interest — Quick Takes

US independents urge Congress to change

As oil prices approach $100/bbl, eight associations representing US independent oil and gas producers asked Congress to consider the consequences of passing legislation that would reduce domestic supplies further and increase prices even more.

"Increasing taxes on the industry by $16 billion to pay for renewable fuels, restricting development of federal lands (onshore and offshore), and implementing new and unnecessary environmental restrictions doesn't produce additional American oil or natural gas. As a matter of fact, these policies would be counterproductive and increase prices to consumers," the associations said in a Nov. 7 joint statement released Nov. 13 by the Independent Petroleum Association of America.

"The failed energy policies since the 1970s have been a major contributor to the decline in US oil production from 9 million b/d to 5 million b/d, and the rise in imported oil from 5 million b/d to 12 million b/d. If the bills being pushed by the [congressional] leadership pass, that trend will continue, and prices to consumers will rise and become even more volatile," they indicated.

The Texas Alliance of Energy Producers, Texas Independent Producers & Royalty Owners Association, Ohio Oil & Gas Association, Kansas Independent Oil & Gas Association, Oklahoma Independent Petroleum Association, Independent Oil & Gas Association of West Virginia, and the Independent Oil & Gas Association of Pennsylvania also signed the statement, which the groups developed during IPAA's 2007 annual meeting.

Analyst predicts oil-price decline next year

Oil prices will decline as demand for oil from the Organization of Petroleum Exporting Countries flattens or recedes in 2008, says Michael Lynch, president of Strategic Energy & Economic Research.

Lynch told the American Petroleum Institute's Houston Chapter that current oil prices are not sustainable. He predicts growth in non-OPEC oil production over the next 5 years and believes the US has seen a peak in gasoline demand, with car buyers now choosing smaller vehicles.

Although dependent on changes in OPEC output, the oil price Saudi Arabia wants to defend, and the condition of the global economy, price weakness will likely occur as soon as the second quarter of next year, when Lynch sees an oil price of about $70/bbl. He thinks inventory pressures will lead to a sustainable long-run oil price of $40-45/bbl.

The consequences of a price collapse will be that US onshore drilling stagnates, exploration and production in the shallow Gulf of Mexico declines, and a possible pause in oil sands development, Lynch said. High-cost producers will be most affected by a drop in prices, especially those with sunk costs. Also, alternative energies such as biofuels and hydrogen will feel a pinch from lower oil prices, as will exporting nations and refiners.

The entities that thrive despite lower prices will be producers with large cash reserves and governments friendly to foreign investment. But companies spending most of their cash flow now will suffer and become takeover targets.

Lynch also sees a near-term drop in US natural gas prices. A combination of record amounts of gas in storage, a predicted warm 2007-08 winter in the US, a slower economy, and new supplies coming online will depress prices over the next few months, he said.

WEC: China, India need huge energy investment

China will need $3.7 trillion worth of investment for energy projects by 2030, of which three fourths will be dedicated to electric power alone, India's secretary for power said Nov. 14 at the World Energy Congress in Rome. India, by contrast, will require $1.25 billion, with a similar share for power.

Anil Razdan said both countries need technology that will reduce emissions of coal used for power generation because oil and gas imports are too expensive. Market forces alone cannot develop technologies, he said. International cooperation is necessary to ensure that developing countries benefit from the best technologies if they are to meet their power requirements.

"We can't leave market forces alone for individual profit," he stressed, calling demand-cycle management and energy efficiency critical strategies.

Although India and China have plentiful coal reserves, Razdan warned that they might have to import coal. "India may have to import more than China whose reserves are on the coast," he said. "India's are in the interior, and this adds more pressure with transportation costs."

According to Razdan, India's coal demand is projected to grow twofold by 2030, and oil requirements are expected to increase by 2.5% and nuclear power by 5.8%.

"China's oil needs are forecasted to rise by 2.6% and nuclear by 10.5%," he said.

Economic growth in these countries with the world's largest populations is fuelling the huge demand for energy. Conservative estimates place their growth in gross domestic product at 8-9%/year and energy consumption at 7-8%/year, Razdan added. Chinese and Indians aspire to own cars and consumer goods, which will have serious implications for carbon emissions if left unchecked.

Razdan said efforts are being made to increase the use of renewable energy sources, but these are not always economic options or available in sufficient amounts.

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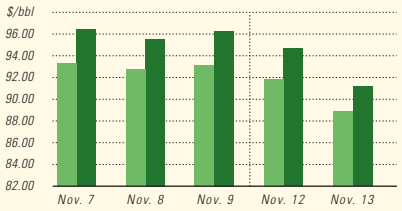
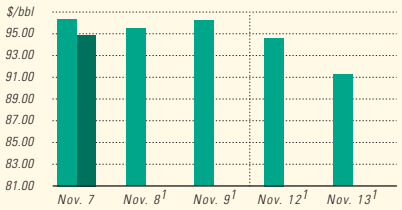
Industry Scoreboard

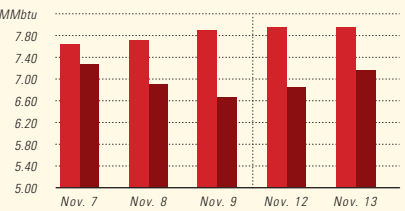
IPE BRENT / NYMEX LIGHT SWEET CRUDE



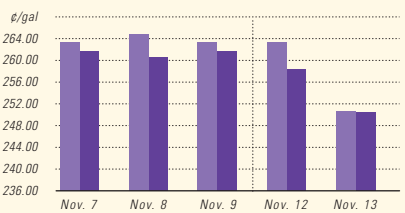
WTI CUSHING / BRENT SPOT



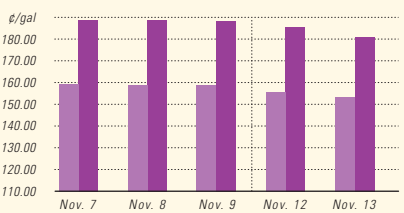
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



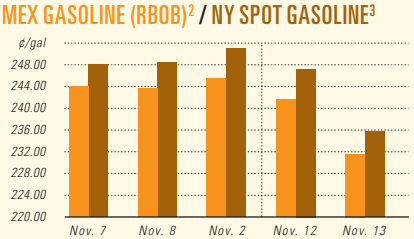
IPE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



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



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

US INDUSTRY SCOREBOARD — 11/19

Latest week 11/2	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	9,337	9,266	0.8	9,305	9,245	0.6
Distillate	4,208	4,310	–2.4	4,213	4,158	1.3
Jet fuel	1,586	1,605	–1.2	1,624	1,635	–0.7
Residual	697	609	14.4	751	700	7.3
Other products	4,861	4,976	–2.3	4,801	4,890	–1.8
TOTAL DEMAND	20,689	20,766	–0.4	20,694	20,678	0.1
Supply, 1,000 b/d						
Crude production	5,166	5,106	1.2	5,138	5,096	0.8
NGL production[2]	2,468	2,336	5.7	2,380	2,199	8.2
Crude imports	9,637	10,098	–4.6	9,997	10,187	–1.9
Product imports	3,606	3,208	12.4	3,523	3,677	–4.2
Other supply[3]	882	994	–11.3	989	1,080	–8.4
TOTAL SUPPLY	21,759	21,742	0.1	22,027	22,238	–0.9
Refining, 1,000 b/d						
Crude runs to stills	15,082	15,001	0.5	15,238	15,228	0.1
Input to crude stills	15,259	15,315	–0.4	15,475	15,586	–0.7
% utilization	87.5	88.0	—	88.8	89.7	—

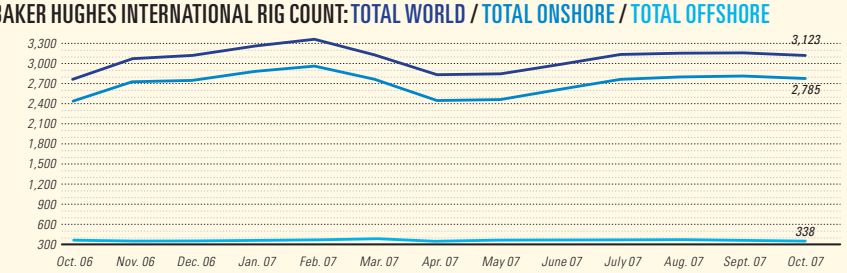
Latest week 11/2	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	311,862	312,683	–821	334,255	–22,393	–6.7
Motor gasoline	194,313	195,132	–819	204,617	–10,304	–5.0
Distillate	135,377	135,279	98	141,258	–5,881	–4.2
Jet fuel-kerosine	41,505	41,543	–36	42,143	–638	–1.5
Residual	38,471	36,958	1,513	42,398	–3,927	–9.3
Stock cover (days)[4]			Change, %		Change, %	
Crude	20.8	20.8	—	22.2	–6.3	
Motor gasoline	20.8	21.0	–1.0	21.8	–4.6	
Distillate	32.2	31.7	1.6	31.9	0.9	
Propane	51.2	55.7	–8.1	63.4	–19.2	

Futures prices[5] 11/9			Change		Change	%
Light sweet crude, $/bbl	96.21	93.58	2.63	58.62	37.59	64.1
Natural gas, $/MMbtu	7.82	8.14	–0.32	7.67	0.15	1.9

[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.

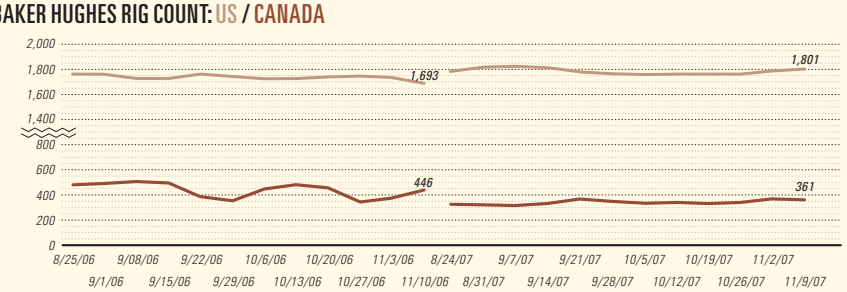
Sources: Energy Information Administration, Wall Street Journal

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

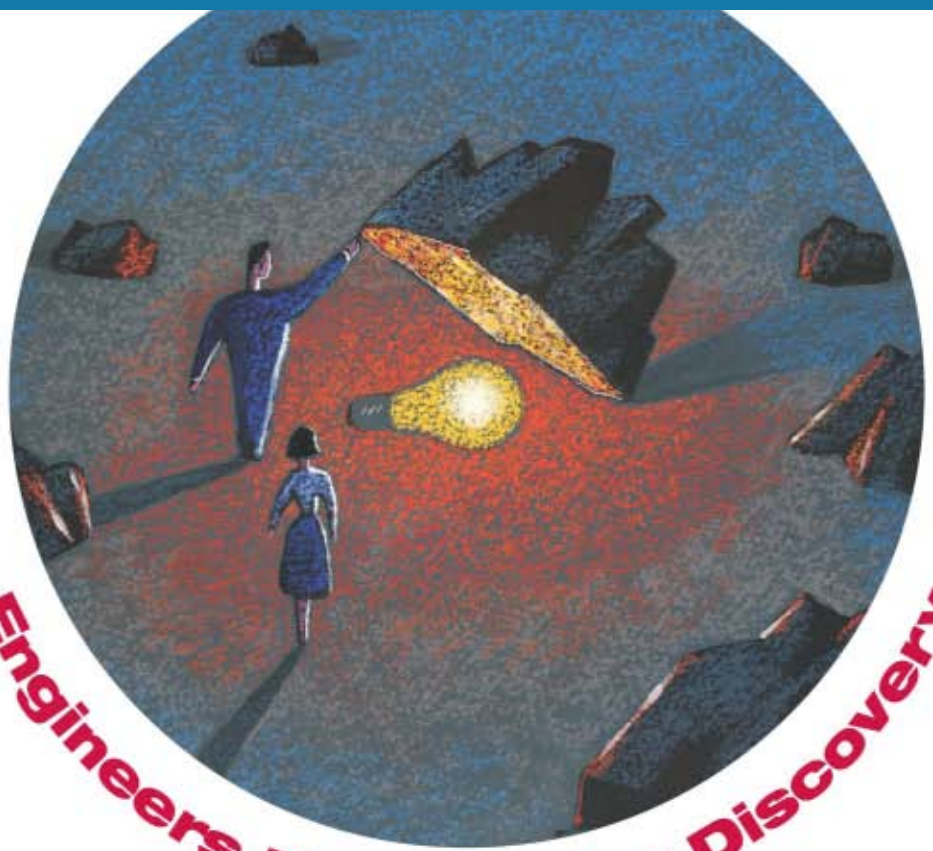


Note: Monthly average count

BAKER HUGHES RIG COUNT: US / CANADA



Note: End of week average count



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EU discusses new European gas sources

Representatives from the European Union, Africa, and the Middle East discussed new sources of natural gas for European consumers at a Nov. 1 energy conference at Sharm El Sheikh, Egypt.

Europe wants to reduce its dependence on Russia, Norway, and Algeria by developing other supplies in the Middle East and West Africa. The meeting also was intended to highlight Egypt's potential role as a transregional "bridge" between the Middle East and Africa.

Benita Ferrero-Waldner of Austria, EU commissioner for external relations and neighborhood policy, co-chaired the meeting with Ahmed Aboul Gheit, Egypt's foreign affairs minister. In her opening speech, Ferrero-Waldner said, "We are working to promote the access of Middle East and West African natural gas to the EU market via pipelines such as the Arab Gas Pipeline originating in Egypt and the planned connection in Iraq, as well as the important Trans-Saharan pipeline from Nigeria to the EU via Algeria"

EU Energy Commissioner Andris Piebalgs of Latvia said a comprehensive Africa-Europe energy partnership is one of the priorities for a "real European foreign policy."

High-level representatives from all three regions discussed cooperation to enhance regional energy security, address climate change, and improve access to energy sources.

Results of the conference will be considered by the EU-Africa Energy Partnership to be launched at the EU-Africa Summit in Lisbon in December. ✦

Exploration & Development — *Quick Takes*

Gulf Lower Tertiary deep wildcats drilling

Anadarko Petroleum Corp. said it expects to spud two Miocene tests and one Lower Tertiary test in the Gulf of Mexico between November 2007 and January 2008.

Green Bay is a proposed 32,000 ft Lower Tertiary test in Walker Ridge Block 372. Anadarko is operator with 35% working interest.

The Chevron Corp.-operated Sturgis North prospect is a planned 31,500-ft Miocene test in Atwater Valley Block 138 in which Anadarko has 25% working interest. Woodside Energy (USA) Inc. will operate a proposed 26,000-ft Miocene test on the Terrebonne prospect in Green Canyon Block 452 in which Anadarko has 33% working interest.

An Anadarko-operated well to test Middle Miocene objectives on the West Tonga prospect in Green Canyon is drilling toward 27,400 ft in 4,700 ft of water and is expected to reach TD in the fourth quarter. Interests are Anadarko 38%, Statoil 25%, Chevron 20%, and Shell 17%.

Anadarko spud the Atlas Deep-1 prospect at Walker Ridge 155 as a Middle to Lower Miocene test. The well, in 5,740 ft of water, is to reach TD of 32,000 ft in the fourth quarter. Interests are Anadarko 68%, Repsol E&P USA Inc. 20%, and Ridgewood Energy Corp. 12%.

BP PLC abandoned due to mechanical problems a planned 33,000-ft well in 5,562 ft of water on the Cortez Bank Lower Tertiary prospect in Keathley Canyon 244, 12 miles west of the Kaskida discovery. The well had not reached its target. Interests are BP 55%, Anadarko 25%, and Devon Energy Corp. 20%.

KRG signs five more PSCs for northern Iraq

Iraq's Kurdistan Regional Government (KRG) has signed five production-sharing contracts (PSC) previously approved by its Regional Oil and Gas Council.

The PSCs cover areas near Irbil, Al-Sulaymaniyah, and Dahuk in northern Iraq. They are with TNK-BP affiliate Norbest Ltd.; subsidiaries of Sterling Energy LLC and Aspect Energy LLC of Denver; a Korean consortium headed by Korea National Oil Co.; and HKN Energy, an affiliate of Hillwood International Energy, Dallas.

PSCs the KRG signed earlier have come under question from US and Iraqi authorities (OGJ, Oct. 1, 2007, p. 36; Oct. 22, p. 30). Most recently, KRG signed a PSC with OMV Petroleum Exploration (OGJ Online, Nov. 7, 2007).

In conjunction with the five new contracts, KRG Minister for Natural Resources Ashti Hawrami said, "In Kurdistan, we are setting an example: This is the first post-Saddam framework for oil investment in Iraq which follows the democratic, federal, and free market principles mandated by the Iraq constitution."

He said he hopes for a similar framework for all of Iraq.

"Without such a framework, investors cannot have confidence in contracts issued by authorities in other parts of Iraq," he said.

Northeastern Spain's Ebro basin due search

Beach Petroleum Ltd., Adelaide, plans to spend $3 million to fund a seismic survey to earn 25% interest in four gas-prospective permits held 75% by Serica Energy PLC in the Ebro basin between Madrid and Barcelona.

A 15-km test line was shot in July, and a 330 line-km 2D seismic program is under way. Three large targets, Torres, Fabregas, and Casillas, have been identified.

The basin has large structures and seeps. The Abiego, Barbastro, Binefar, and Peraltilla permits total 275,000 acres 40 km southeast of Serrablo gas field. Gas demand is strong and the price is above $8/gigajoule in northeastern Spain, Beach noted, and a gas trunkline crosses the permits.

Beach decided a year ago to expand exploration outside Australia and New Zealand and expects to announce more international transactions soon. ✦

Drilling & Production — *Quick Takes*

Storm shuts in production in Norwegian North Sea

Major operators in the Norwegian North Sea shut in production of 540,000 boe/d on their platforms in early November because of a major storm.

A BP PLC spokesman told OGJ it shut in 80,000 boe/d of gross production from its Valhall oil field on Nov. 6 as the storm was

looming, saying, "We hope to come back on stream tomorrow afternoon [Nov. 7], but there is always a degree of uncertainty." BP began evacuating the platform, because the storm was expected to be in full force at 9 p.m. GMT time that evening.

ConocoPhillips shut down 5 of the 16 platforms in Ekofisk oil field, which produce 140,000 boe/d. The field is between Norway and the UK in the North Sea, about 360 km from the UK coast.

StatoilHydro halted production of 320,000 boe/d from Grane, Visund, Oseberg South, and Heimdal fields.

Production from Veslefrikk, Huldra, and Troll C fields were not affected, although StatoilHydro also reduced staff by 114 people on the Veslefrikk platform and by 11 workers on the Huldra platform. Staffing at the Troll C platform also was reduced by about 20 people.

Nexen Inc. temporarily shut down the Buzzard platform after the storms damaged the upper section of one of the three power generation turbine exhaust stacks. The company said it did not expect production to be down for an extended period of time since the platform can operate at full rates with two turbines.

Gas plant boosting East Texas field flow

Madisonville Gas Processing LP started up a gas treatment plant expansion at Madisonville field in Madison County 100 miles north of Houston to handle sour gas from the Cretaceous Rodessa formation at 12,000 ft.

The expansion is accepting 20 MMcfd of gas and is expected to reach its 50 MMcfd capacity by the end of November, said GeoPetro Resources Co., San Francisco. MGP purchased the field's existing 18 MMcfd treatment plant from Hanover Compression LP in July 2005.

Upon completion of the plant expansion, GeoPetro plans to produce the Fannin and Magness wells at rates higher than when plant capacity was 18 MMcfd. It also plans to produce the Mitchell well, shut-in awaiting a workover and the plant expansion, and in early 2008 the Wilson well if a frac job is successful.

Madisonville oil and gas field was discovered in 1945 and was developed with 125 wells in shallow zones, but the Rodessa was left undeveloped because the gas contained hydrogen sulfide.

The Magness well, drilled n 1994, had 139 ft of net pay in Rodessa and flowed sour gas with 28% of impurities. It flowed 12 MMcfd from 10 ft of perforations on a 22/64-in. choke with 3,915-19 psi flowing wellhead pressure. It flowed at 20.8 MMcfd on recompletion in October 2001, and CAOF was 176 MMcfd. Deliveries began in May 2003.

The Fannin well has 146 ft of Rodessa pay and went on line in early 2006, after which GeoPetro drilled the Wilson and Mitchell wells. ✦

Processing — *Quick Takes*

Shell to design Mariisky refinery upgrades

Under a two-phase, $1.3 billion investment program, Mariisky NPZ LLC, Mari El, Russia, will upgrade its Mariisky refinery with the support of Shell Global Solutions International BV to increase refining capacity and meet stricter European specifications.

The 1.3-million-tonne/year Mariisky refinery produces naphtha, vacuum gas oil, diesel fuels, and kerosine from crude delivered via the strategic Surgut-Polozk pipeline, which is 150 m from the refinery. The refinery's capacity will be increased to more than 4 million tonnes/year following the expansion.

Under the Phase 1 expansion, expected to cost about $1billion, Mariisky plans to expand crude distillation capacity by adding a crude distillation unit (CDU), a high vacuum unit (HVU), a solvent deasphalting unit (SDA), and a hydrocracker (HCU), which will maximize kerosene and diesel production.

A Mariisky spokesman told OGJ that Shell's feasibility study for the proposal indicates that capacities of the new units would be: CDU, 7,060 tonnes/stream day; HVU, 4,670 t/sd; HCU, 7,560 t/sd; and SDA, 1,750 t/sd. "Some changes may be introduced during [the front-end engineering and design] phase," he added.

The parties agreed that Shell will supply the basic design packages and licenses for the CDU, HVU, and HCU units. Design work is expected to be finished in September 2008.

Shell said the diesel produced at Mariisky would meet Euro V specifications, while the kerosine would comply with Russian fuels specifications and, if required, international kerosine A1 specifications, with minor modifications.

Once the first phase is finished, Mariisky plans to invest another $300 million in upgrading light-end fuels via aromatics production of benzene, toluene, and mixed xylene. The refinery is expected to become a fuel-oil-free refinery, manufacturing light, high-value products.

The Mariisky spokesman said major unit capacities would be: continuous catalyst regeneration unit (platformer), 2,360 t/sd; naphtha hydrotreating unit, 3,660 t/sd; and sulfolane extraction unit, 2,020 t/sd.

The company will evaluate laying another pipeline to the refinery from the large-volume Surgut-Polozk pipeline.

Work proceeds on Khalifa Point refinery

A survey and geotechnical investigation have been completed for the $5 billion Khalifa Coastal Refinery project planned by International Petroleum Investment Co. (IPIC) of Abu Dhabi and Pakistan's Pak-Arab Refinery Ltd. (Parco) near Hub in Baluchistan Province (OGJ, Oct. 15, 2007, Newsletter).

A detailed feasibility study for the 300,000 b/d refinery will be completed by January 2008, with the front-end engineering and design expected by November 2008.

A construction contract is expected to be awarded by March 2009, with completion of the facility due by December 2012.

IPIC will hold 74% of the project, with Parco holding the remaining 26%.

Shell, Codexis to advance next-generation biofuels

Royal Dutch Shell PLC and Codexis Inc., a specialist in clean biocatalytic process technologies, have teamed to find ways of converting biomass to clean, renewable liquid transportation fuels

through "super enzymes" in the next generation of biofuels. This partnership builds on earlier collaboration that began in November 2006.

The companies will conduct research together over the next 5 years, with Shell making an equity investment in Codexis and becoming a member of the company's board. "Research will focus on adapting enzymes to improve the conversion of a range of raw materials into high-performance fuels. It will assist Shell in developing the next generation of biofuels as it explores a number of nonfood bio materials, new conversion processes, and alternative fuel products," Shell said.

Codexis scientists say they have developed super enzymes that can outperform naturally occurring varieties. This pioneering technology has been used to improve manufacturing processes for leading pharmaceutical companies, including Pfizer and Merck. ✦

Transportation — *Quick Takes*

Crew detained after oil spill off San Francisco

US authorities have detained the all-Chinese crew of the Cosco Busan, a containership that spilled some 58,000 gal of heavy bunker oil into San Francisco Bay after it rammed a section of the San Francisco-Oakland Bay Bridge.

The Cosco Busan's entire crew is being detained aboard the ship for questioning, according to Capt. William Uberti, head of the US Coast Guard for Northern California. The ship was departing from the Port of Oakland for South Korea when the accident occurred.

The crew's detention came after Uberti notified the US attorney's office on Nov. 10 about issues involving management and communication among members of the bridge crew: the helmsman, the watch officer, the ship's master, and the pilot.

After ruling out mechanical failures as a cause of the accident, investigators were reportedly focusing on possible communication problems between the ship's crew, the pilot guiding the vessel, and the Vessel Traffic Service, the USCG station that monitors the bay's shipping traffic.

The accident left a gash nearly 100 ft long on the side of the 926-ft vessel and ruptured two of its fuel tanks. Spillage from the ship's oil tanks has killed dozens of sea birds and spurred the closure of nearly two dozen beaches and piers.

Tangguh field on schedule to export LNG

Indonesia's Tangguh gas field will begin exporting LNG to South Korea or China by early 2009 as scheduled, according to a senior government official.

Kardaya Warnika, chairman of government oil and gas agency BP Migas, said preparations at the Tangguh gas field are 80% complete, and production of LNG is expected to start in late 2008.

"The first delivery will go to either South Korea or China," he said, adding that, "South Korea is more prepared because it already has a gas storing terminal."

Current buyers for Tangguh's output include China's Fujian (2.6 million tonnes/year), South Korean K-Power and Posco (1.11 million tpy), and Sempra Energy on the western coast of Mexico (3.6 million tpy).

However, the Indonesian announcement coincided with reports that Mexico's gas regulator Comision Reguladora de Energia approved the modification of the permit for the Costa Azul LNG regasification terminal and storage facility to allow its expansion.

According to the statement, the regasification capacity of the Costa Azul project will be expanded to 2.6 bcfd from 1 bcfd, and its storage capacity will be increased to 320,000 cu m through the construction of two additional tanks.

Owned by Sempra LNG, the Costa Azul plant in Ensenada, Baja California, is due to start operations in 2008. Sempra LNG and Royal Dutch Shell PLC equally split the terminal's capacity under a 20-year agreement.

Last month, BP Berau Ltd., operator of the Tangguh LNG project, announced it is considering construction of as many as eight additional LNG trains at the company's existing site in Papua (OGJ Online, Oct. 26, 2007).

TransCanada to start Keystone line construction

TransCanada Corp. is preparing to begin construction in spring 2008 on the 1,845-mile US portion of its Keystone oil pipeline project, which will transport oil from Canada to the US Midwest.

Keystone will total 3,456-km, including additions to existing Canadian pipelines and mainline flow reversals. It is expected to start up in late 2009 with the capacity to deliver 435,000 b/d of crude oil from Hardisty, Alta., to the US at Wood River and Patoka, Ill.

The company has entered into contracts or conditionally awarded about $3 billion for major materials and pipeline construction contractors and is continuing to secure land access agreements.

TransCanada intends to apply to Canada's National Energy Board in November for additional pumping facilities to expand Keystone's capacity to 590,000 b/d and extend the line to Cushing, Okla., starting in 2010.

Based on the increased size and scope of the project and the executed material and service construction contracts, the Keystone project cost is now estimated at $5.2 billion.

Plans to expand Keystone were announced earlier this year following the successful completion of an open season that secured an additional 155,000 b/d of firm contracts for oil delivery from Hardisty to Cushing (OGJ, July 16, 2007, p. 10).

The project has secured firm long-term contracts totaling 495,000 b/d for an average of 18 years. And producers and refiners continue to express interest in contracting for additional volumes. In response, Keystone intends to hold another binding open season by yearend.

Keystone received NEB approval this year for two major applications to construct and operate the Canadian portion of the project. Applications for US regulatory approvals at federal and state levels are proceeding. ✦

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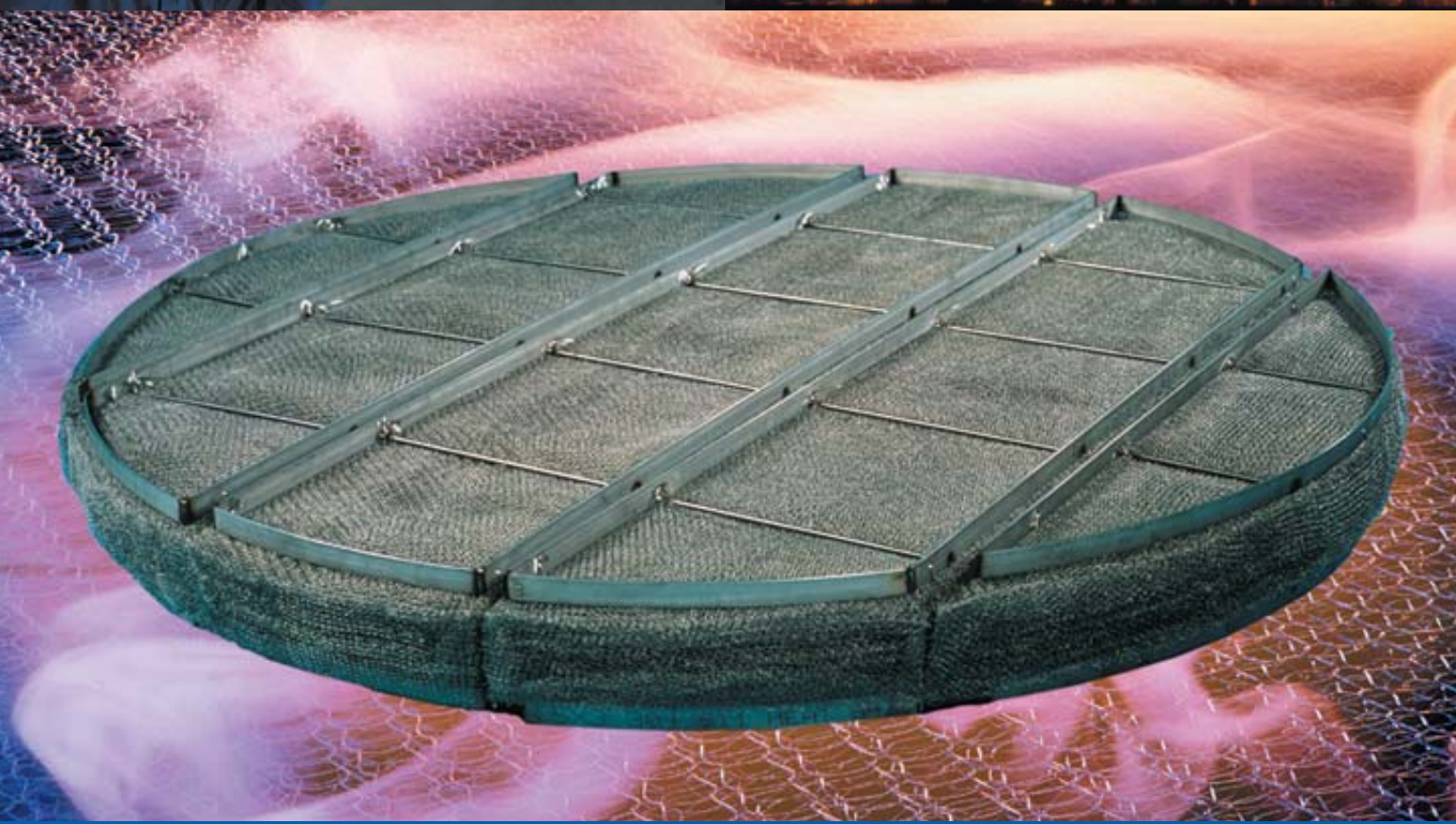

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Letters

Warming response

In a letter in the Oct. 15 issue, Andrew Palmer took you to task for your attack of Rep. John Dingell's suggestion that government should take action to reduce consumption as part of a climate change policy (OGJ, Oct. 15, 2007, p. 12).

I would like to ask Mr. Palmer to answer two questions: How much in volume of greenhouse gases (GHGs) are put into the air in a year? And how much in volume of GHGs are emitted through natural causes: i.e., volcanoes, fires, earthquakes, hurricane, evaporation, life other than humans, etc.? The balance is the contribution of humans. I haven't seen any global-warming extremists come up with these numbers. I have seen an estimate that it is less than 4%.

Of course, we should conserve as much as practicable—but not to the detriment of our way of life and economy.

And how about the fact that the Southern Hemisphere has been in a cooling stage? Oh, I forgot, that is climate change. What are we going to do about that?

Wayne Blankenship Jr., CPL
Kenner, La.

Calendar

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

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Australian Society of Exploration Geophysicists International Geophysical Conference & Exhibition, Perth, (08) 9427 0838, (08) 9427 0839 (fax), e-mail: secretary@aseg.org.au, website: www.aseg.org.au. 18-22.

ERTC Annual Meeting, Barcelona, 44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 19-21.

Asia Pacific Natural Gas Vehicle Conference & Exhibition, Bangkok, +66 0 2617 1475, +66 0 2271 3223 (fax), e-mail: angva@besallworld.com, website: www.angvaevents.com. 27-29.

Dry Tree & Riser Forum, Houston, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.drytreeforum.com. 28.

IADC International Well Control Conference & Exhibition, Singapore, (713) 292-1945, (713) 292-1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 28-29.

DECEMBER

International Oil and Gas Industry Exhibition & Conference, Suntec, +44 (0)20 7840 2100, +44 (0)20 7840 2111 (fax), e-mail: osea@oesallworld.com, website: www.allworldexhibitions.com. 2-5.

Middle East Nondestructive Testing Conference & Exhibition, Bahrain, +973 17 729819, +973 17 729819 (fax), e-mail: bseng@batelco.com.bh, website: www.mohandis.org. 2-5.

International Petroleum Technology Conference, Dubai, +971 4 390 3540, +971 4 366 4648 (fax), e-mail: iptc@iptcnet.org, website: www.iptcnet.org. 4-6.

IADC Drilling Gulf of Mexico Conference & Exhibition, Galveston, Tex., (713) 292-1945, (713) 292-1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 5-6.

Oil & Gas Maintenance & Technology Conference & Exhibition, Manama, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.oilandgasmaintenance.com. 9-13.

Pipeline Rehabilitation & Maintenance Conference & Exhibition, Manama, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.oilandgasmaintenance.com. 9-13.

PIRA Understanding Global Oil Markets Conference, New York, 212-686-6808, 212-686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 10-11.

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JANUARY

Middle East Petrotech Conference and Exhibition, Bahrain, +60 3 4041 0311, +60 3 4043 7241 (fax), e-mail: mep@oesallworld.com, website: www.allworldexhibitions.com/oil. 14-16.

World Future Energy Summit, Abu Dhabi, +971 2 444 6011, +971 2 444 3987 (fax), website: www.wfes08.com. 21-23.

API Exploration & Production Winter Standards Meeting, Ft. Worth, Tex., (202) 682-8000, (202) 682-8222 (fax), website: www.api.org/events. 21-25.

API/AGA Oil & Gas Pipeline Welding Practices Meeting, Ft. Worth, Tex., (202) 682-8000, (202) 682-8222 (fax), website: www.api.org/events. 23-25.

International Forum Process Analytical Technology (IFPAC), Baltimore, (847) 543-6800, (847) 548-1811 (fax), e-mail: info@ifpacnet.org, website: www.ifpac.com. 27-30.

SPE/IADC Managed Pressure Drilling & Underbalanced Operations Conference & Exhibition, Abu Dhabi, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 28-29.

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Petroleum Exploration Society of Great Britain Geophysical Seminar, London, +44 (0)20 7408 2000, +44 (0)20 7408 2050 (fax), e-mail: pesgb@pesgb.org.co.uk, website: www.pesgb.org.uk. 30-31.

SIHGAZ International Hydrocarbon and Gas Fair, Hassi Messaoud, Algeria, website: www.sihgaz2008.com. Jan. 30-Feb. 3.

FEBRUARY

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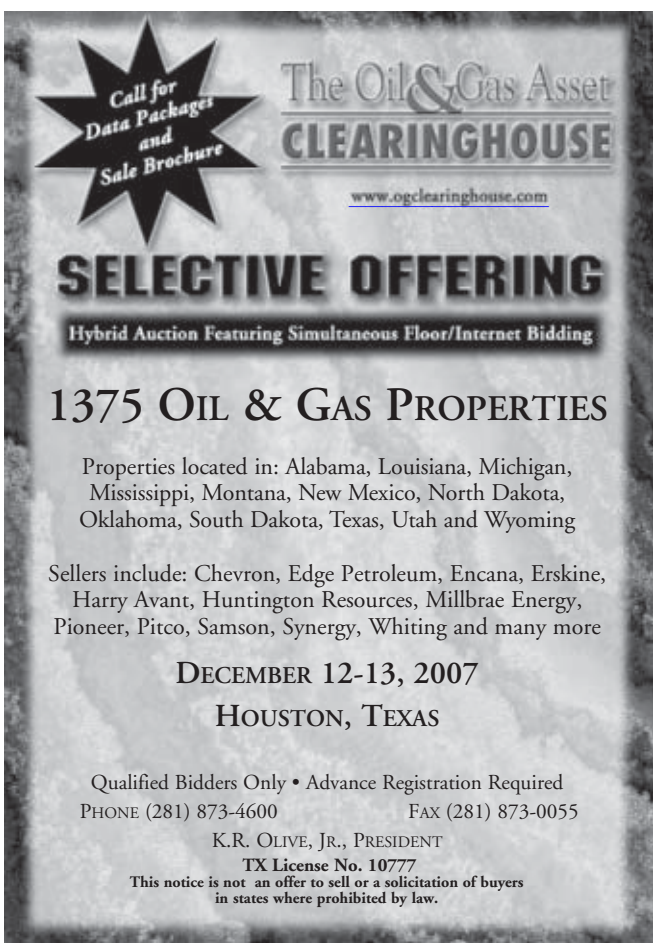
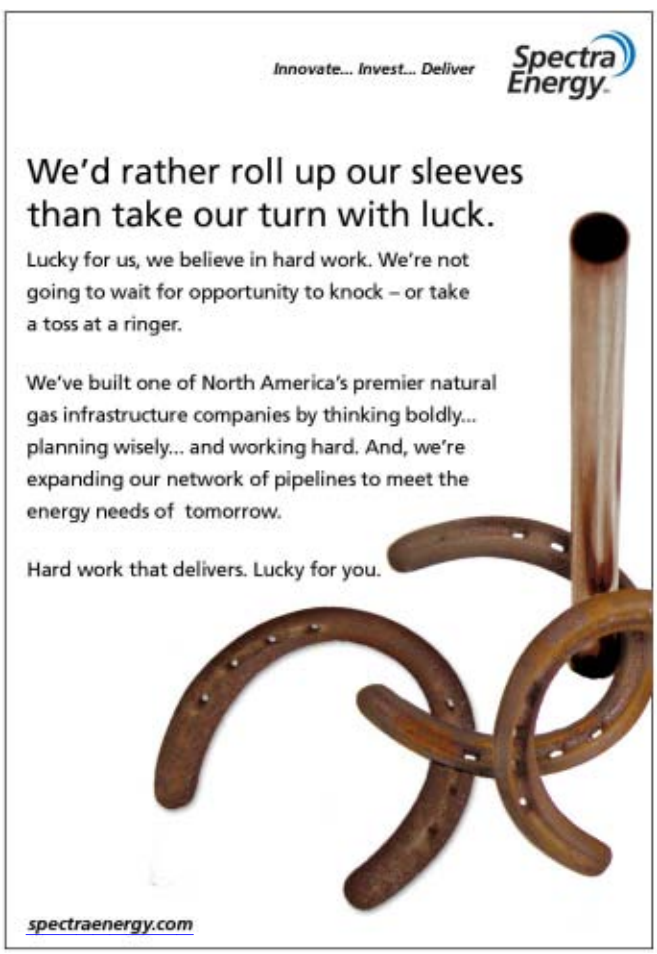
ADC Health, Safety, Environment & Training Conference & Exhibition, Houston, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 5-6.

SPE Heavy Oil Challenge: Completion Design and Production Management Forum, Sharm El Sheikh, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 9-13.

SPE Unconventional Reservoirs Conference, Keystone, Colo., (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 10-12.





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Help wanted: construction

Leena Koottungal
Survey Editor

Demand for skilled construction workers is great in the processing industries along the US Gulf Coast, especially in Port Arthur, Tex., where Motiva Enterprises LLC is proceeding with a major refinery expansion (see the special report beginning on p. 18).

Increasingly, the industry is encouraging area young people to learn the skills it needs and is helping them with the training.

For example, Becon Construction Co. Inc., an affiliate of Bechtel and a principal construction contractor on the project, received a grant in September to develop skills and job training in partnership with Lamar State College-Port Arthur, a 2-year college.

"Here in the Golden Triangle [Port Arthur, Beaumont, and Orange, Tex.], we are blessed with a boom in construction," said Bob Deatherage, manager of industrial relations. "But construction employment growth will be curtailed unless we can develop local workforce skills."

Broader concern

The oil business isn't alone in its concern about a shortage of construction professionals—or in its recognition of the importance of a youth-oriented response.

For every five people who leave the general construction industry, only one enters, according to Charles H. Thornton, who founded a partnership of architects, construction managers, engineers, and other industry professionals who cooperate to attract high school students to their professions. The ACE Mentor Program of America Inc. started in New York City in 1994, when 17 firms came together and recruited 90 local high school students.

The companies formed three groups that modeled a design and construction team to teach students about architecture, construction, and engineering. ACE is the construction industry's fastest-growing high school mentoring program, with 30,500 students participating.

The program is free to students and sponsored by architectural, construction, and engineering firms and suppliers and equipment manufacturers. It consists of affiliates that serve youth within a certain city or region. Each affiliate has a board of directors, a local coordinator, and a number of teams.

Teams involve 15-25 students and 8-10 industry mentors. Several companies are assigned to each team, each providing one or two mentors. The teams are set up like actual design groups where each student takes on the role of the architect, contractor, or engineer. Mentors guide students through a mock engineering or architectural project and introduce them to vocabulary, tools, and roles companies play in the construction industry.

The teams meet for 2 hr after school for 15 sessions beginning in late September and ending in late April. Meeting locations rotate among the firms on each team in order for students to see a variety of work locations. Meetings are also held at the schools. In addition to the sessions, there are field trips to construction sites, videos, office tours, and other activities.

At the end of the year, the teams gather for banquets to unveil their mock projects. They present solutions to the problems they were assigned through models, drawings, electronic graphics, or other materials. School staff, prospective mentors, affiliate administrators, and families of the students attend the banquets.

The events serve as graduation ceremonies and honor students receiving scholarships.

Many disciplines

Through the ACE Mentor Program, students are exposed to many disciplines in the industry. This helps them decide on a trade to pursue. They also learn business relationship and communication skills and receive training in 3D modeling, drawing, computer graphics, and other software.

Sessions at mentors' locations help students understand industry work environments and prepare to move into the field. The career guidance students receive and the contacts they develop with dedicated professionals help them find internships and employment after college. Many students remain active alumni of the program and encourage others to get involved in the construction industry.

Most affiliates host a college night, and all teams in the area attend. This event provides information on financing and curriculum.

Selected individuals receive scholarships for further education if they decide to pursue one of the disciplines. Since 1995, ACE has awarded $6.6 million in scholarships through their sponsors.

The program lets mentors help their communities while inspiring youth and promoting their companies public images. It also links companies to talented and ambitious part-time help and potential employees. ✦

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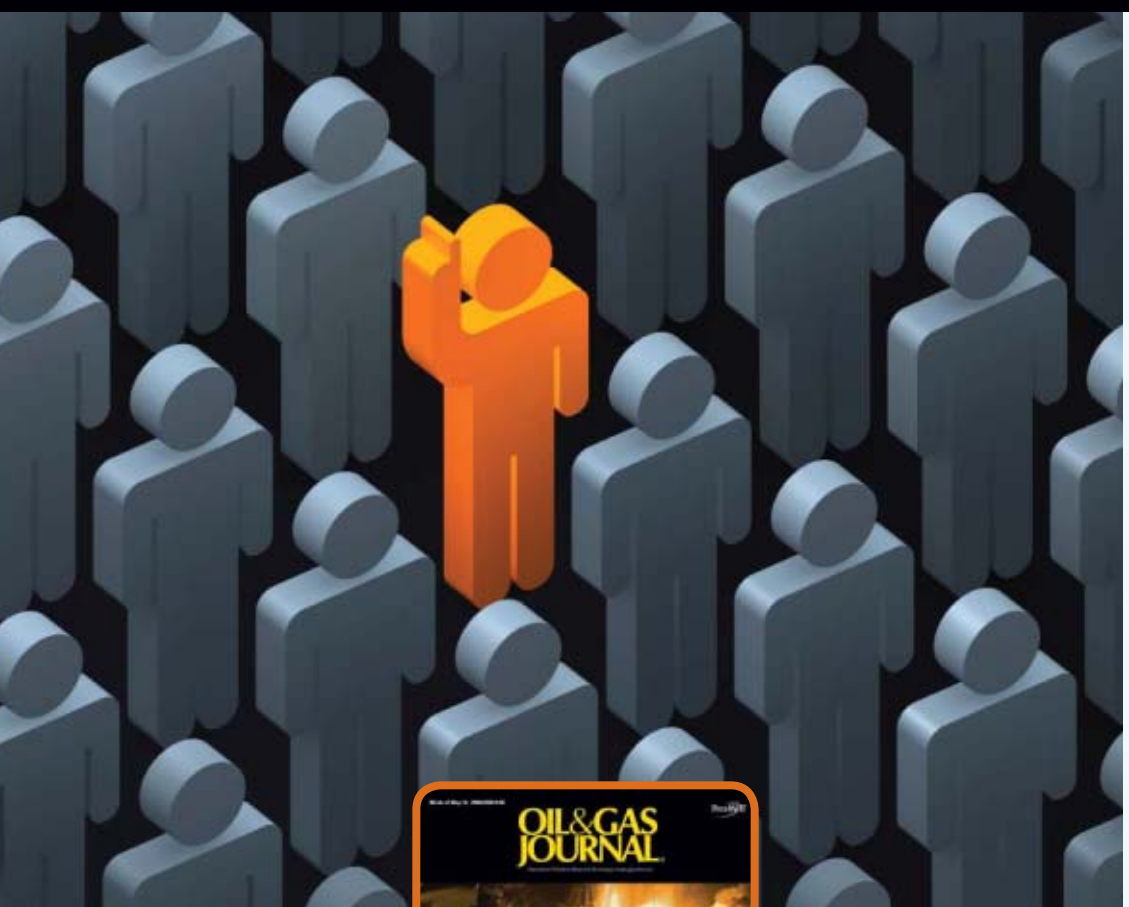

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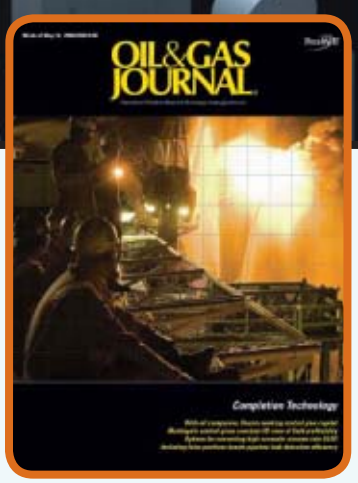

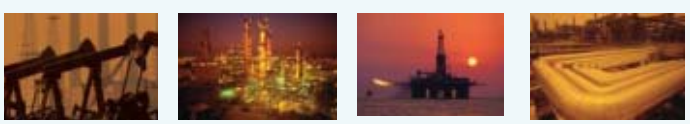

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[1] *Signet Readership Survey (February 2007)*

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Clinton's energy plan—2

The energy plan that US Sen. Hillary Clinton (D-NY) recently made part of her presidential campaign requires perspective available from a national biofuels program already in place, which she would expand. Like the biofuels program, her plan makes promises it can't fulfill and would create problems no one should ignore.

Problems that shouldn't have been ignored when Congress enacted sales mandates for lavishly subsidized biofuels are now painfully evident. Dominated by ethanol from corn as a gasoline additive, the program is raising the price of food. Incredibly, ethanol supporters deny this. But the US Department of Agriculture is clear on the subject.

"As the ethanol industry absorbs a larger share of the corn crop, higher prices will affect domestic use and exports, providing for more intense demand competition between domestic industries and foreign buyers of feed grains," notes a September article in the USDA publication Amber Wave. Expansion of corn-growing acreage reduces land available for other crops, including soybeans, demand for which is being lifted by biodiesel production. So prices of those crops rise, along with prices of eggs and meat—especially pork and poultry. "While the ethanol boom can be expected to bring higher incomes to farmers and reduce government outlays for farm programs, it will also most likely mean higher food prices for consumers," says the USDA article.

Water threats

The push to burn food for fuel also is raising the need for water for irrigation and threatening water quality through increased use of fertilizer and pesticide. "If projected future increases in use of corn for ethanol production do occur, the increase in harm to water quality could be considerable," said an October report by the National Academy of Sciences. "In addition, expansion of corn production on fragile soils can increase loads of both nutrients and sediments. It is vitally important to pursue policies that prevent an increase in total loadings of nutrients, pesticides, and sediments to waterways."

Meanwhile, biofuels sap the national treasury with subsidies of 51¢/gal for ethanol and $1/gal for biodiesel, costs that grow as mandates expand. Rising food prices, environmental and supply threats to water resources, and a growing fiscal burden are a lot to pay for a program that can't—no matter what its supporters say—meaningfully extend energy supply or improve air quality.

Yet Clinton proposes more of the same with a hugely expanded biofuels mandate—and worse. As she has done before, she proposes to raise taxes on the oil and gas industry to create a $50 billion "strategic energy fund" (OGJ, June 12, 2006, p. 19). She thus would start by limiting investment in economic energy to pay for energy that can't otherwise compete. Then she'd raise vehicle fuel efficiency standards to 55 mpg by 2030, helping automakers meet the goal by issuing $20 billion in "green vehicle bonds." Her plan includes a number of other manipulations, but that $70 billion is what should raise alarm.

The Clinton program would create a slush fund for political favors, subject to the type of parochial influences that bred the biofuels swindle. And, like biofuels, it's grounded in ludicrous promises, including cutting oil imports in 2030 by two-thirds and slashing emissions of greenhouse gases in 2050 by 80%. Those are formulas for hardship. Displacing imported oil with costlier domestic alternatives is, by definition, expensive. And cutting greenhouse gases by as much as Clinton proposes would be even more so.

Political opportunity

Yet Clinton calls climate change "one of the greatest economic opportunities in the history of our country." The opportunities would be for political friends with exotic energy to peddle and no one else; witness the wealth transfer now under way from taxpayers and food consumers to corn growers and distillers.

Politicians will say anything. The hard fact is that their energy errors hurt people by imposing unnecessary costs. And they always err when they make energy choices best left to markets because they, unlike markets, base decisions on political expediency instead of economics and physics.

The biofuels fiasco is just the latest example. ✦

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Project numbers up in pipeline, US gas processing categories

Leena Koottungal
Survey Editor

Oil & Gas Journal's semiannual Worldwide Construction Update shows a slight increase in the number of planned pipeline projects as well as new and expanded gas processing plants in the US compared to the previous edition of the update (OGJ, Apr. 16, 2007, p. 18).

Following are details of projects selected from the complete list available online (see box).

Refining

Plans have been announced for refinery expansions and upgrades in the US.

In September, Motiva Enterprises LLC made a final investment decision to proceed with a 325,000-b/d expansion of its refinery in Port Arthur, Tex. (OGJ Online, Sept. 21, 2007). The expansion will increase the refinery's oil throughput capacity to 600,000 b/d, making it the largest refinery in the US and one of the largest in the world. The additional production capacity will be online in 2010. The Bechtel Jacobs joint venture is the project's engineering, procurement, and construction contractor.

Sinclair Tulsa Refining Co. plans a major expansion of its 70,000-b/d Tulsa refinery. The expansion project will increase the facility's output of ultralow-sulfur gasoline and diesel. The project will raise distillation capacity to 115,000 b/d, add a delayed coker unit, and include other modifications to enable the facility to handle low-quality feedstock.

Placid Refining Co. LLC began a $200-million upgrade of its 55,000-b/cd refinery in Port Allen, La. (OGJ Online, July 23, 2007). The upgrade will increase the facility's gasoline production by 30% to about 1.3 million gpd while reducing total air emissions by about 50%. The upgrade is being implemented in two phases.

The project's first phase involves an 18,000-b/d gasoline desulfurization unit, a flue-gas scrubber for the facility's fluid catalytic cracker to reduce emissions of sulfur, and other infrastructure improvements. Construction began in June and will be completed in second-quarter 2008.

Phase two includes the upgrade and expansion of the FCC to 24,500 b/d from 20,000 b/d. The majority of the construction for the second phase is scheduled for third-quarter 2008, during a 30-day turnaround. Placid said it is considering expansion of the refinery to 80,000 b/d later this decade.

In July, Venezuelan President Hugo Chavez and his Nicaraguan counterpart Daniel Ortega ceremoniously launched

OGJ subscribers can download free of charge the 2007 Worldwide Construction Update tables at www.ogjonline.com: Click on OGJ Online Research Center, OGJ Subscriber Surveys, then Worldwide Construction. This link also includes previous editions of the update. To purchase survey data in spreadsheet format, go to www.ogj.com/resourcecenter/orc_survey.cfm, or e-mail orcinfo@pennwell.com.

Marathon's $3.2 billion Garyville, La., refinery expansion project will increase crude oil capacity by 180,000 b/d. Start-up is scheduled for fourth-quarter 2009. Photo from Marathon.

construction of a 150,000-b/d refinery in Piedras Blancas, Nicaragua. Total investment in the project could reach $4 billion.

Meanwhile, Petrogal SA is in engineering stages of a project to construct a 39,000-b/d vacuum distillation unit at its 91,000-b/d refinery in Porto, Portugal. The unit will begin operating in January 2011.

Petrochemicals

Sinopec Zhenhai Refinery & Chemical established a joint venture with Lyondell Chemical Co. to construct a propylene oxide-styrene monomer manufacturing facility in Ningbo, China (OGJ Online, Apr. 23, 2007). It will be the largest such facility in the world. The plant will produce 274,000 tonnes/year (tpy) of propylene oxide and 602,000 tpy of styrene. It is due for completion in 2009.

In Singapore, ExxonMobil Chemical Co. plans to build a second world-scale steam cracker complex at its site in Jurong. The plant will be fully integrated with the company's 605,000-b/cd refinery and chemical plant. The new plant will have a 1 million-tpy ethylene steam cracker, two 650,000-tpy polyethylene units, a 450,000-tpy polypropylene unit, and an aromatics extraction unit to produce 340,000 tpy of benzene. Start-up is due early in 2011.

TPL India Singapore Pte. Ltd. plans a 100,000-tpy normal-paraffin petrochemical plant on Jurong Island. The plant is Singapore's first-ever joint venture with India and Kuwait. It will begin operating in 2009. Project cost is $110 million.

Bechtel is working with several new and expanded petrochemical projects in Thailand. Currently under construction are paraxylene, toluene, and xylene units in Sriracha. Completion is scheduled for 2008. Similar projects are being completed for PTT Polyethylene Co. Ltd. in Map Ta Phut.

LNG

Statoil ASA commenced production at the 4.1 million-tpy Hammerfest LNG plant in northern Norway in September. The plant is the biggest of its kind in Europe and the most energy-efficient in the world, says the company. It exported its first cargo of 145,000 cu m of LNG at the end of October.

Meanwhile, Gulf Coast LNG Partners LP received approval from the US Federal Energy Regulatory Commission for the siting, construction, and operation of the Calhoun LNG facility at Port Lavaca-Point Comfort, Tex. The project consists of an LNG terminal with two 160,000 cu m storage tanks and 1 bcfd of gas vaporization and liquid separation capacity. The project is scheduled for completion in 2009-10.

Construction progresses on tanks for Cheniere Energy's Sabine Pass LNG terminal. Each tank is capable of storing 160,000 cu m of LNG. The terminal will be completed in second-quarter 2008. Photo from Cheniere.

LNG projects are under construction in the US, Qatar, and China.

Gas processing

Enterprise Products Partners LP (EPP) recently completed the first phase of its Meeker gas processing complex in the Piceance basin of northwestern Colorado. The plant has a capacity of 750 MMcfd of natural gas and is capable of extracting up to 35,000 b/d of NGLs. The second phase of the complex is under construction and will be completed in third-quarter 2008, doubling capacities.

In August, EPP started up its 75,000-b/d NGL fractionator in Gaines County, Tex. The facility is located at the interconnect of the Mid-America Pipeline and Seminole Pipeline systems and can supply NGL hubs at Mont Belvieu, Tex., and Conway, Kan. The company also started up a propylene fractionator at Mont Belvieu.

Danagaz Bahrain will build, own, and operate the 55 bcf/year Gulf of Suez NGL recovery plant near Ras Shukheir, Egypt. The plant will produce 120,000 tpy of propane and butane. It will be operational by late 2009.

GTL, other gas

Sinopec Yangzi Petrochemical Co. Ltd. awarded Technip a basic design and engineering package for a synthesis gas plant in Nanjing, China. It will be based on Technip's proprietary reformer technology and Air Products proprietary cryogenic carbon monoxide purification technology. The plant, to be operational in 2009, will be able to produce 25,000 cu m/hr of CO, 16,000 cu m/hr of oxygas, and 59,000 cu m/hr of hydrogen.

Sulfur

Saudi Aramco let a basic design package contract to Jacobs Engineering Group Inc. for a 900 tonne/day sulfur recovery unit for its Khursaniyah gas plant in Saudi Arabia. The unit will be designed to achieve 99% sulfur recovery at the end of a 2-year run.

More sulfur projects are in engineering stages in the UAE and other locations.

Pipeline

A long pipeline project currently under construction is the 4,350-mile pipeline that will deliver 30 billion cu m/year of gas from Turkmenistan to China starting in 2009. About 117 miles of the pipeline will be laid in Turkmenistan, 329 miles in Uzbekistan, 808 miles in Kazakhstan, and over 2,796 miles in China.

In North America, Kinder Morgan Canada began construction on the Anchor Loop project, the second phase of expansion of the Trans Mountain crude and products pipeline system. The expansion will increase Trans Mountain's capacity to 300,000 b/d from 260,000 b/d. The project entails looping 98 miles of the Trans Mountain system through rugged terrain in Jasper National Park in Alberta and Mount Robson Provincial Park in British Columbia. It will be completed in November 2008.

In the US, Enterprise Products Partners placed into service the final phase of its 50,000 b/d expansion of the Rocky Mountain portion of its 2,500-mile Mid-America Pipeline system, increasing the system's capacity to 275,000 b/d from 225,000 b/d of products (OGJ Online, Oct. 10, 2007). This portion of the project involved the installation of pumps and modification of existing equipment at 20 pump stations. The initial 30,000 b/d of additional capacity, created by looping more than 160 miles of pipe, went online in April.

The expansion can move products north or south.

Crosstex Energy LP will invest $80 million to construct a 29-mile natural gas pipeline in Texas' north Johnson County to provide greater takeaway capacity to producers in the Barnett shale region of the western US.

The project will include 20-in. and 24-in. pipelines and three compressor stations totaling 36,000 hp. The low-pressure and high-pressure gathering system will have an ultimate capacity of about 400 MMcfd when all phases of construction are completed in second-quarter 2008. Initially, the pipeline will transport 80 MMcfd of gas and is scheduled to begin deliveries in the third quarter. It will reach full capacity by 2009. ✦

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Resource nationalism among hot topics at WEC

Uchenna Izundu
International Editor

Resource nationalism is threatening the world's economy and energy security in the long term, Rex Tillerson, ExxonMobil Corp. chairman and chief executive officer, told the World Energy Congress last week in Rome. "The key to innovation and creativity needed to address global energy challenges lies in free markets and strong international partnerships," he said.

Tillerson said ExxonMobil is on track to eliminate gas-flaring in Nigeria, which the Nigerian government wants all operators to stop in 2008. The government has signaled that it wants to revise contracts with international oil companies (IOCs), but Tillerson said ExxonMobil has not received any statements on changing its position.

Resource nationalism was one topic among many discussed by oil and gas industry executives at WEC, organized every 3 years by the World Energy Council.

Some other topics included:

• A reduction of natural gas in Europe's energy mix will be needed to ensure that Europe does not suffer a shortage, said Paolo Scaroni, chief executive of Eni SPA.

• Italy was mistaken to move away from nuclear power, a move that has resulted in tremendous cost to electricity users, Scaroni also said.

• Italy's Prime Minister Romano Prodi called for producer-consumer cooperation and attention to climate change.

• Russian gas supplies to Europe face a serious risk because of the European Commission's proposals to separate ownership of gas and power production from distribution, said Alexander Medvedev, deputy chairman of OAO Gazprom's management committee.

• The global oil industry should aim to produce at least 3 trillion bbl from conventional recoverable resources in known fields and discoveries over the next several decades, said Saudi Aramco Pres. and Chief Executive Abdallah Jum'ah. This would be achievable from proved reserves, growth in existing fields, and discoveries. Usual estimates of recoverable resources are about 1.7 trillion bbl.

• The world will have to double its energy supplies by 2050 to meet global demand, according to a new study published by WEC. The key challenge is whether stakeholders can successfully align resources and skills with where they are most needed.

Europe's gas shortage risk

Eni Chief Scaroni's recommendation to reduce gas in Europe's energy mix, made during a formal address at WEC, would mean building nuclear capacity of about 115 Gw by 2020 and a push for renewable energy sources, especially solar power.

> "Europe's total gas demand in 2020 could be 40% higher than it is today."—*Eni SPA Chief Executive Paolo Scaroni*

Gas accounts for a quarter of all the energy used in Europe, and 60% of that is imported. Scaroni said cutting Europe's reliance on gas combined with energy efficiency and gas supply diversity would position Europe to compete with other countries for energy supplies. "These are not alternative options. We need to do all three to avoid a gas shortage."

Scaroni said use of Europe's plentiful coal resources requires technologies to avoid increasing carbon emissions.

Gas imports in Europe are expected to double by 2030, but European gas production is expected to halve by 2020. With power generation set to be the key driver behind the growth of gas, "Europe's total gas demand in 2020 could be 40% higher than it is today," Scaroni said.

As international competition for gas supplies intensifies, pipeline gas and LNG supplies are crucial for diversity in Europe. Scaroni said a variety of transit routes would reduce transit risks. "Here, new pipeline projects such as South Stream and Nord Stream can help by making it possible to deliver Russian gas directly into the European Union."

Scaroni proposed investment in interconnections across Europe to bring gas to where it is needed as well as more gas storage infrastructure to cope with variability of demand and temporary drops in throughput.

According to Scaroni, Europe is vulnerable to a shortage because it has a small number of gas suppliers, namely Algeria and Russia. It is important to develop "good and cooperative relationships" with suppliers, he said, calling for European Union member states to give Andris Pielbags, the EU energy commissioner, and Javier Solana, Europe's representative for Common Foreign and Security Policy, "the right tools" to carry out a European foreign energy policy.

Europe could save as much as 100 billion cu m/year of gas in the housing consumption sector alone though energy efficiency, he said.

Scaroni admitted that the outlook for renewable sources is "bleak" because Europe would have to install up to 15,000 wind turbines and solar panels covering the space of 50,000 football fields every year if it is to meet incremental electricity demand. "It seems clear that alternative energy sources will not really be able to cover even

just Europe's incremental electricity demand from here to 2020. Much of this growth will inevitably be satisfied by gas."

Scaroni said Europe had been "sleepwalking" on its previous approach to gas policy because it had focused on "fine-tuning the internal gas market" without realizing that it had limited suppliers and faced transit route risks. Europe was shocked into a "rude awakening" when it suffered a shortfall in deliveries in 2006 when Russia cut off gas supplies to Ukraine, Scaroni said.

Italy's move from nuclear

Italy voted against expanding nuclear power in a referendum in 1987 and has imposed a moratorium on building new capacity. High oil and gas prices and Italy's reliance on imported energy have sparked political debate on resurrecting nuclear power in Italy's energy mix.

"Nuclear power is the only system where we're in full control and we don't produce any emissions," Scaroni said.

He told delegates that Europe needs to increase nuclear capacity to reduce its reliance on gas and avoid a gas shortage by 2020. Russia and Algeria, which together account for 70% of Europe's imports, should be "closely monitored" in the strategic alliance for their state-owned companies, Gazprom and Sonatrach, Scaroni added.

"We have got to mitigate this [peaking Russian gas]. Gazprom cannot produce more from existing fields, but it does have large, untapped reserves in eastern Siberia, and this needs investment and infrastructure to get it to market."

Gas waste is rife in Russia because prices are a quarter of those on international markets. "Gas is so cheap there is no measure of energy savings," he said.

Scaroni denied recent press reports that Eni plans to take a stake in Gazprom. "Our relations (with Gazprom) are excellent."

The consortium that Eni is leading to develop Kashagan oil field in Kazakhstan remains unified, Scaroni said, stressing that the operator's role had transformed Eni because the project was the most difficult in the world. "We think we can carry on with operatorship and do other projects in the world," he said.

The consortium is in discussions with the Kazakh government, which has complained about delays and rising costs to develop the field (OGJ, Oct. 22, 2007, Newsletter). The government is reportedly seeking a bigger state for its state owned company KazMunaiGaz and a $10 billion fine for cost overruns. Eni's stake in Kashagan is 18.5%. Other members are ExxonMobil, Royal Dutch Shell, Total, ConocoPhillips, Inpex, and KazMunaiGaz.

Eni would welcome cooperation with the Venezuelan government over Dacion oil field, which has been renationalized. "If there's no room for cooperation we'll go ahead with the arbitrage," he said.

At the beginning of this year, Eni launched a damages claim against Venezuela as compensation for its loss of profits from the field. Resource nationalism is unsurprising considering high oil and gas prices, according to Scaroni, who noted this trend is not prevalent when prices are low. "Contracts were renegotiated in 1991 or 1992 when prices were low."

Producer-consumer cooperation

In a speech disrupted by Greenpeace activists protesting nuclear power, Prime Minister Prodi said, "The markets alone cannot guarantee success, and a global effort is needed. Strong-willed governments and multilateral agreements are needed so that mankind can have a future."

He blamed speculation in financial markets for driving up the price of oil, adding that "this speculation must be contained in the future."

But Chicco Testa, president of the WEC organizing committee, offered a different view.

"A stable high oil price is not necessarily a calamity," he said. Improved energy efficiency will help curb demand and increase supplies of renewable energy.

The energy industry needs to increase its investment, said Andre Caille, WEC chairman.

"We must keep all of our options open, and the price of energy must stay high to encourage innovation and investment," he said. "We need to triple or even quadruple the current level of investment."

> "Discovering sources of alternative and renewable energy has become a serious priority if we are to ensure that the planet has a fair chance of progress."
> —*Italian President Giorgio Napolitano*

Russian President Vladimir Putin sent a message to the congress calling for dialogue and transparency in energy markets to establish trade rules based on the principles of justice and mutual respect. Russia's Minister of Industry and Energy Viktor Khristenko led the Russian delegation to the congress.

Italian President Giorgio Napolitano said, "Discovering sources of alternative and renewable energy has become a serious priority if we are to ensure that the planet has a fair chance of progress. The role of research is therefore essential if we are to meet the challenge of sustainable energy use and to safeguard the global environment and ecosystem."

Russia's gas supplies

Gazprom's Medvedev sought "clarification" of the issue of separating

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ownership of gas and power production from distribution from Europe's Energy Commissioner Andris Piebalgs. "At this stage I leave aside the question [of] whether the forced disposal of assets, which the Commission's proposals would require, is compatible with the protection of private property in a market economy."

Gazprom, which provides 25% of Europe's gas needs, has repeatedly said it wants to move into gas transportation. It also is interested in building or buying power plants in Italy and is evaluating projects in the UK.

However, the EC's proposals would limit its ability to buy European Union energy assets. To foster competition, companies would be forced to either sell their transportation networks or hand them over to independent operators.

Medvedev stressed that Gazprom has an incentive to deliver gas to the market and used the proposed 27.5 billion cu m/year Nord Stream gas pipeline as an example of a long-term project that would bring reliable gas supplies to Europe via the Baltic Sea. "This is an example of a real pan-European project in a turbulent environment."

By 2015, Russian gas is expected to account for 33% of the European market, Medvedev said. He assured delegates that Europe remains an important market despite Russia's plans to expand gas supplies to China. Talks with China are well advanced to supply as much as 80 billion cu m/year via two pipelines. Medvedev said he hopes the parties can reach an agreement soon. He also defended the company as a reliable supplier to Europe.

Gazprom is determined to step up involvement in liquefaction projects supplying North America and the Atlantic Basin. "We are looking at the possibility of exchanging LNG for pipeline gas in the medium term, but in the longer term we intend to export LNG from our own projects," he said.

Peak oil fears

Aramco's Jum'ah said the world "seems to have over 3 trillion bbl of recoverable conventional and nonconventional liquid fuel resources if we opt for extra-conservative assumptions and about 6 trillion bbl if we adopt the target scenario."

Research and development will be crucial for improved oil recovery, and more technological work needs to be done to boost economic efficiency and use of oil in an environmentally sensitive manner, he said. Oil recovery stands at an average of 35% of oil in place around the world. Around 1 trillion bbl of additional reserves from known fields could be produced with pioneering technology and aggressive targets. At the conservative end, at least 200 billion bbl could be produced from conventionally recoverable oil resources in known fields, he said.

Jum'ah said past theories of peaking oil production had failed as more reserves had been found over time, and evolving technology meant that companies had tapped fields previously thought to be unworkable.

"Based on total global reserves of both conventional and nonconventional oil and the world's current demand for oil of some 86 million b/d, we still have almost a century's worth of oil under the conservative scenario... and nearly 200 years' worth under the target scenario," he stressed.

He is confident that global reserves will be increased under accommodating policies, favorable economics, and sufficient investment in research and development.

Under Aramco's analysis, the Middle East is expected to be the major source of future oil finds. "Depending on just how conservative their assumptions are, analysts believe there are between 250 billion and 1 trillion bbl of conventional oil reserves still waiting to be found. Again, I urge our scientists to accept the challenge of a trillion barrels in new discoveries," he said.

"Based on total global reserves of both conventional and nonconventional oil and the world's current demand for oil of some 86 million b/d, we still have almost a century's worth of oil under the conservative scenario...and nearly 200 years' worth under the target scenario."—*Saudi Aramco Pres. and Chief Executive Abdallah Jum'ah*

Estimates of conventional oil in place around the world vary between 6 trillion bbl and 8 trillion bbl depending on whether figures are conservative or at the higher end of the spectrum.

Nonconventional sources of oil, found mainly in Canada, Venezuela, and the US West, will become increasingly important. Nonproducing regions have a huge stake in the future of petroleum.

Jum'ah said a conservative estimate for nonconventional resources is 7 trillion bbl, and a target scenario is 8 trillion bbl or higher. "A key area of contention is oil shales, since the characteristics of their accumulations, especially the degrees of resource richness, vary so much and their development has been perennially impacted by overwhelming challenges involving technology, economics, water and land impacts, and environmental concerns."

His analysis suggested that ultimate recovery from nonconventional resources could range from 1 trillion bbl to more than 2 trillion bbl, depending on whether the figure is a conservative or target one. There is great scope for improved recovery, Jum'ah stressed. "I believe that recovery rates for oil shale will fluctuate over time but that the world's need for liquid fuel supplies over the very long term, coupled with continued advances in technology, mean oil shales will eventually be viable for future generations," he said.

National oil companies (NOCs) control 50% of the world's proved conventional reserves. According to the International Energy Agency, IOCs have rights to about 30% of global reserves.

In contrast, Jum'ah said, nonconventional oil reserves are shared by multinational firms. "NOCs are generally more focused on the discovery and recovery of conventional oil, which accounts for virtually all of their reserve bases, while IOCs are targeting nonconventional resources to a larger extent." He called on IOCs, NOCs, service companies, technology developers, and research institutions to cooperate in research and development.

"There are huge uncertainties associated with biofuels," Jum'ah added. It is "difficult to predict their contribution to the energy mix."

Biofuels' growth depends on government policies and incentives rather than market fundamentatals, he said, adding that some biofuels demand a choice of using crops for food or fuel.

Jum'ah recommended that energy efficiency and using technology to make fossil fuels more environmentally friendly were the best ways to cut environmental impact of energy usage and consumption.

World energy supplies

Brian Statham, chair of the WEC Energy Scenarios Study, said an "unprecedented level" of cooperation would be needed to address the world's energy problems. "Almost one third of the world's population doesn't have access to energy and they don't care about the environment," he said.

WEC has proposed that governments and companies should aim to halve the number of people without access to a minimum level of commercial energy to 1 billion by 2035, and halve that again to 500 million by 2050. Greenhouse gas emissions should be stabilized by 2035, and manmade emissions should be reduced by 2050, according to the report, Deciding the Future: Energy Policy Scenarios to 2050. The study focuses on policies needed for a sustainable energy future rather than using economic modeling to construct scenarios.

Statham said there are sufficient resources to meet demand. However, major investment is needed in research and development on energy sources and technologies, Robert Schock, WEC director of studies, told WEC Today. He said $10 billion is currently spent worldwide, but this figure is miniscule considering the importance of energy to the world economy which is estimated to be $50 trillion. "We need all energy options on the table. It's up to countries to decide whether they want to use nuclear or not. Energy efficiency is important for [research and development]."

The report concluded that new concepts for public and private partnerships would need to be developed and that governments need to provide consistent long-term signals for companies to make investments in the energy sector. ✦

Energy bills would cost $1 trillion, study says

Nick Snow
Washington Editor

Energy legislation currently before the 110th Congress would cost nearly 5 million jobs and drain $1 trillion from the US economy, a study commissioned by the American Petroleum Institute concluded on Nov. 13.

Seven legislative proposals in bills passed earlier this year by the House and Senate would restrict available energy supplies and likely increase their costs, the study by CRA International found.

It examined the potential economic impacts of requiring a 10 million b/d reduction from projected 2030 US oil consumption, the use of 36 billion gal/year of renewable transportation fuels by 2022, and more than $15 billion in increased oil and gas industry taxes over 10 years. It also studied potential consequences of proposals aimed at stopping alleged oil product price gouging and additional access restrictions and expenses in domestic oil and gas exploration and production.

The study estimated the economic impact of establishing a renewable portfolio standard for electric utilities and raising motor vehicle fuel efficiency standards to an average 35 mpg, both by 2020.

"This legislation would put consumers in a squeeze," said W. David Montgomery, a vice-president and cohead of CRA's energy and environmental practice in Washington. It would reduce domestic oil production by roughly 4% and gas production by 2% during 2010-20, reduce petroleum demand by 18% in 2020 and one-third in 2030 from projected levels because of high prices, and cut the average US household's purchasing power by $1,700 and the nation's aggregate business investment by $219 billion by 2030, he said.

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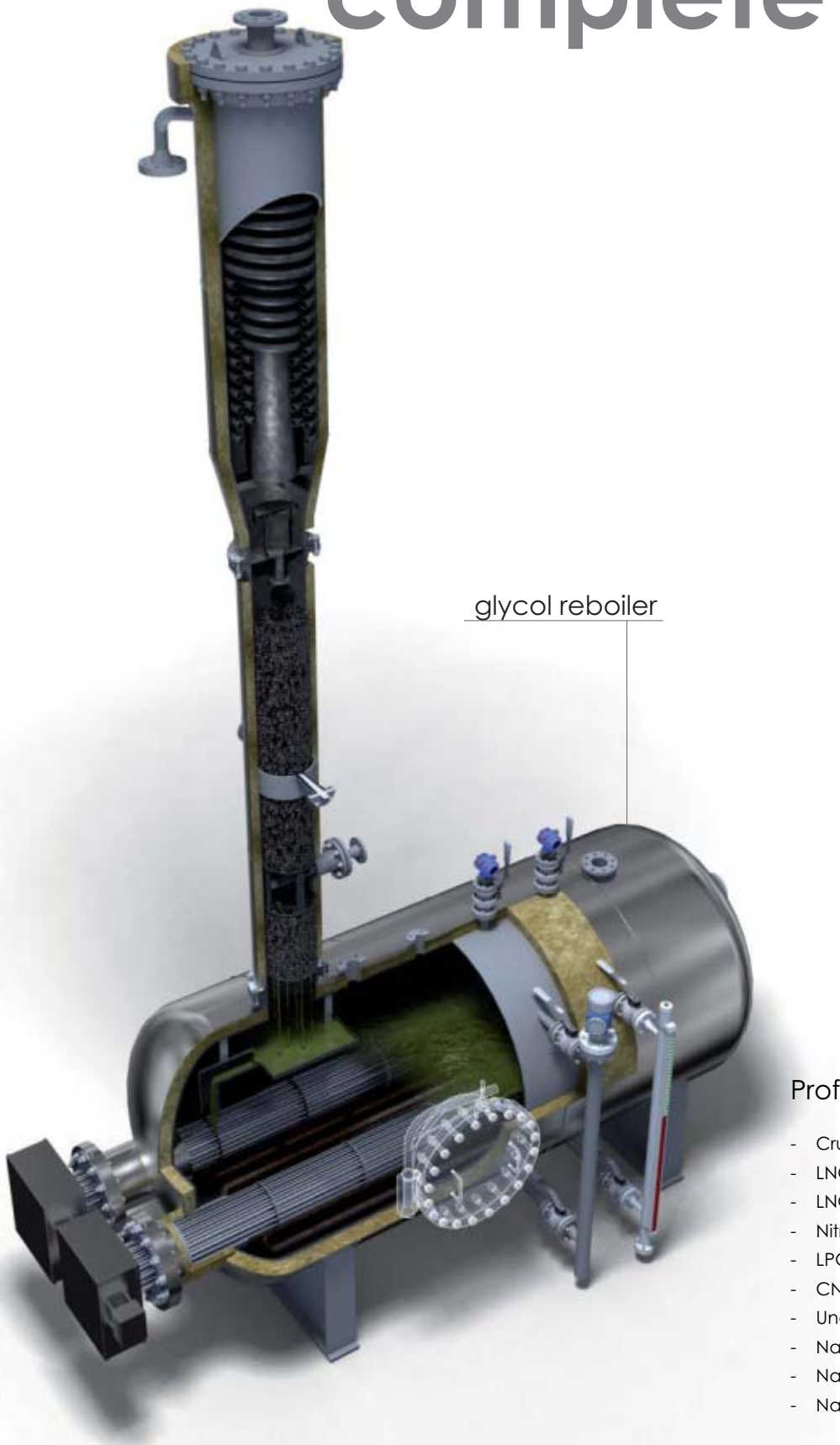

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House GOP members demand energy bill with 'energy in it'

Nick Snow
Washington Editor

Having been excluded from energy bill discussions, US House Republicans said they are counting on "fossil fuel Democrats" to safeguard 2005 Energy Policy Act provisions designed to increase domestic oil and gas production.

Otherwise, the bill almost certainly will accelerate already climbing crude oil prices and increase US reliance on imports, House GOP members said at a Nov. 9 briefing at the Capitol.

"We want an energy bill that has energy in it," said Minority Whip Roy Blunt (R-Mo.). "Gasoline prices are an average 85¢/gal higher since the Democrats took control of Congress in January. Markets react to what they think Congress will do. Every proposal the Democrats put on the table reduces energy supplies instead of increasing them," he said.

Asked if he would support a bill without tax components, Blunt said that would not be enough to win support from House Republicans. "We essentially embrace the principles President Bush outlined in his letter to Speaker [Nancy] Pelosi [(D-Calif.)]," he said.

Oil shale off table

Joe Barton (R-Tex.), the Energy and Commerce Committee's ranking minority member, said that the energy bill which the House passed in August took 2 trillion bbl of shale oil off the table by rolling back EPACT provisions. If Democrats truly want to reverse soaring oil prices, they should insert Alaska National Wildlife Refuge leasing authorization, a US Outer Continental Shelf inventory, and oil shale provisions into their legislation, he suggested.

"If ANWR had gone on line 10 years ago, it would have been producing 3 million b/d by now. If an OCS inventory had been conducted and prospects drilled, that would have given us another 1 million or 2 million b/d, and oil prices wouldn't be approaching $100/bbl," Barton said.

"If the Democrats want an energy bill, we'll help them. If they simply want higher prices to discourage consumption, they're already getting that," he added.

John M. Shimkus (R-Ill.), an 11-year member of the Energy and Commerce Committee, mentioned the "fossil fuel Democrats" and said that several have told him they would like to see more supply issues in the legislation.

"This price increase is different from others. There's no supply interruption such as Hurricane Katrina behind it. This simply is a demand-driven upward push in the price of a barrel of crude oil," he said, noting that prices have climbed from $58.31/bbl when the Democrats assumed control of Congress in January to $98.62/bbl on Nov. 8.

Do more with carbon

Geoff Davis (R-Ky.) said that Democrats appear determined to leave coal-to-liquids out of energy alternatives because of a mistaken impression that the fuel would pollute the atmosphere. "If we're going to have a proactive policy, let's give entrepreneurs a chance to do something with carbon besides bury it. It could play a critical part in producing biomass, for example," he said.

John E. Peterson (R-Pa.) said that the energy bill which cleared the House extends offshore natural gas leasing bans onshore to areas such as Colorado's Roan Plateau. "Any attempt to deal with climate change will increase pressure on gas. We should be increasing, not reducing, our domestic supplies," he said.

"You can't move forward with an energy bill that produces less energy. If it produces more energy, it will also produce Republican votes," Blunt maintained.

Governments vs. supplies

"There are large supplies of oil for the world to continue using economically for some time," Montgomery said. "There simply isn't a more efficient or economic source of transportation fuel. The problem is with governments, both among politically unstable foreign suppliers and in restricted access to domestic supplies."

R. Bruce Josten, executive vice-president for government affairs at the US Chamber of Commerce, who attended the briefing at API headquarters, said: "Congress doesn't seem to understand it's not an either-or proposition. We need energy from all available sources. This legislation pushes us exactly in the opposite direction. We're already seeing impacts as consumers cut back on purchases of other goods to pay higher prices for gasoline and heating oil."

Montgomery said CRA's study used the US Energy Information Administration's 2007 Annual Energy Outlook as a starting point and did not assume higher oil prices. "We've done pretty well in the US with short-term oil shocks since we got rid of price controls in the early 1980s. That might be more difficult with price gouging legislation," Montgomery said. Bills that passed the House and Senate would affect available product supplies and possibly lead to lines similar to those of the late 1970s, he added.

A report he prepared with two other CRA analysts, Robert E. Baron and Mary K. Weisskopf, for Oxford University's September 2007 Journal of Competition Law & Economics found that the price gouging provisions in the bills

would cost an estimated $380 million/year, assuming that a gasoline supply disruption comparable to the one following Hurricanes Katrina and Rita in 2005 occurs every 5 years.

The current legislation would require a 112-billion-gal (2.67 billion bbl) reduction in US petroleum consumption in 2030 to 190.5 billion gal (4.54 billion bbl) from 302.5 billion gal (7.2 billion bbl), the latest CRA study indicated. This would be offset partially by increases of 5.7 billion gal (135.7 million bbl) in corn-based ethanol consumption to 20.1 billion gal (478.6 million bbl) and increases of 29.9 billion gal (711.9 million bbl) in cellulosic ethanol consumption to 30.2 billion gal (719 million bbl).

Limited ethanol offsets

However, the offsetting effects of increased ethanol consumption would be reduced by the energy necessary to produce it and by its having only 70% of gasoline's efficiency, according to Montgomery. "It would require a substantial amount of demand destruction to comply with the Senate bill's mandate. By implication, it also would involve some form of rationing," he said.

Reliance initially would be heavier on corn-based ethanol, with its attendant food supply impacts, as ethanol processes for cellulose are researched and developed, he continued. While ethanol mandate proponents say there would be environmental benefits, "it's hard to find a worse carbon reduction starting point," he said.

Jobs lost as a result of the current legislation would be heaviest in chemicals and oil refining, Montgomery said. He conceded that reducing demand and creating an ethanol fuel infrastructure would result in new jobs but suggested they would not pay as well. "Replacing an $80,000/year refining job with one that pays $25,000/year for caulking windows to make buildings more energy-efficient is not the same," he said.

Additional restrictions on access to domestic oil and gas also would limit the benefits gained from reduced consumption, Montgomery said. The study assumes 50% cuts in supplies on Colorado's Roan Plateau and from federal split estates resulting from provisions passed by the House. US split estates hold undiscovered resources totaling an estimated 593 million bbl of liquids and 6,947 bcf of gas, it said.

Provisions imposing a renewable fuels minimum for electric utilities and higher Corporate Average Fuel Economy standards for cars and light trucks are technology mandates, Montgomery said. "Both would interfere with the market and take away from consumers and businesses choices for meeting the goals," he said. ✦

TRENTONWORKS LTD.

CALL FOR PROPOSALS TO PURCHASE BUSINESS ASSETS

Ernst & Young Inc., in its capacity as financial advisor to TrentonWorks Limited ("TrentonWorks" or the "Company"), is inviting qualified prospective buyers to make a proposal for the purchase of the assets of TrentonWorks.

TrentonWorks, located in Trenton, Pictou County, Nova Scotia, Canada, is the largest industrial metal fabrication facility in Atlantic Canada. The facility comprises approximately 700,000 square feet (16 acres) of enclosed and heated floor space and is situated on a 160 acre site with access to major rail, road and sea routes, and less than 160 kilometres (100 miles) from Halifax, Nova Scotia, and 250 kilometres (155 miles) from Moncton, New Brunswick. Established over 135 years ago as a steel forge, including over 90 years as a railcar manufacturer, the facility now boasts the capability and experience to manufacture a diverse range of products, such as, but not limited to, general industrial fabrication products, storage tanks and pressure vessels, wind turbine towers, IMO tank containers, heavy mining equipment, bulk ore and heavy waste containers, storage and transportation containers, and military and defence equipment and vehicles.

TrentonWorks incorporates four main manufacturing and fabrication shops, one finishing shop, one wheel and axle shop, two warehouse and distribution centres, two maintenance buildings, one power plant building, and two administration buildings as its core facility. Included in the shops are a diverse range of fabrication and production equipment, including overhead, monorail and jib cranes, welding, rolling, shearing, brake, press, and cutting equipment. In addition, the Company has access to a 7,000-ton press as well as destructive testing, heat treating, CNC machining and laser cutting equipment and services on a contract basis. TrentonWorks is located next to a Nova Scotia Power generating station which supplies cost-efficient steam as a heating source for the facility. Tide water shipping is now available from the Port of Pictou.

A non-exhaustive summary of the facility's key shops, buildings, real property and equipment available for sale is listed below:

Key Shops and Buildings	**Physical Size**
Shop A – Fabrication	99,000 ft² (90' x 1,100')
Shop B – Fabrication	117,000 ft² (90' x 1,300')
Shop C – Fabrication	99,000 ft² (90' x 1,100')
Shop D – Fabrication	99,000 ft² (90' x 1,100')
Shop E – Finishing	110,000 ft² (110' x 1,000')
Wheel and Axle Shop	18,500 ft² (100' x 185')
Warehouse and Distribution Centres (x2)	54,300 ft² (70' x 240' & 100' x 375')
Maintenance Buildings	23,100 ft² (70' x 120' & 75' x 140')
Power Plant Building	4,200 ft² (60' x 70')
Administration and Training Buildings (x2)	19,740 ft² (11,340 ft² & 8,400 ft²)

Real Property

All shops and buildings sit on 160 acres of fully developed and serviced industrial-zoned land. The real property is capable of supporting future capacity growth and expansion of the facility.

Key Equipment and Capacities

Computerized plasma burning tables and gas burning tables, band saws, plate shears, bar shear, CNC punch and plasma torch (40 ton), copers/trimmers (up to 300 ton, 18" blade), press brakes (up to 1,000 ton x 24' bed), hydraulic presses (up to 1,000 ton), horizontal presses (up to 250 ton), multi-punch/presses (up to 600 ton), single punches (up to 120 ton), plate rolls (up to 10' wide), angle rolls (up to 3 x 3/8" angle), mechanical bevellers (up to 2" thick, 55-degree bevel), radial arm/multi-drills (up to 16 spindles), forging hammer (800 lbs), forging upsetter (2" stroke), eye bender (1" diameter), positioner rolls (up to 100 ton), weld positioners (up to 30 ton), 397 welding power sources (400 to 600 amp), 344 welding wire feeders, 49 SMAW/gouging machines, welding equipment (automatic, semi-automatic and robotic), 20 overhead cranes (7.5 to 25 ton), 117 jib cranes (500 to 6,000 lbs), 65 monorail cranes (500 to 60,000 lbs), portable hydraulic lifting unit (400 ton).

Next Steps

The Company will consider transaction proposals only from parties who meet certain qualifications. Prospective buyers will receive a detailed Confidential Information Memorandum upon execution of a Confidentiality Agreement to be provided by Ernst & Young Inc. Prospective buyers should direct all inquiries to Ernst & Young Inc., who will arrange all contacts for appropriate due diligence. **Prospective buyers are requested not to contact the Company other than as directed by Ernst & Young Inc.**

To be considered, proposals must be received by Ernst & Young Inc. by 4:00p.m. EST (5:00 p.m. AST), Friday, December 14, 2007

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WATCHING GOVERNMENT

Nick Snow, Washington Editor

CFTC, FERC 'conflict' noted

The US Commodity Futures Trading Commission isn't standing around, waiting to resolve market manipulation jurisdiction questions with the Federal Energy Regulatory Commission. It's still "the cop on the beat, protecting consumers," Commissioner Bart Chilton told the American Public Gas Association's board meeting Nov. 6 in Memphis.

Nov. 7 agreements under which five current and former Coral Energy traders agreed to pay $1 million in penalties in Houston and a former Mirant Americas Energy Marketing trader agreed to pay a $200,000 fine in Atlanta to settle charges of falsely reporting and attempted manipulation of natural gas prices seemed to emphasize his point.

An Oct. 31 CFTC complaint Alleged that Saxon Financial Services Inc., Atlanta, fraudulently solicited customers in Canada and Europe to trade in off-exchange oil, gas, and foreign currency options with affiliates purportedly based in Switzerland since July 2006.

In one case, CFTC said, a Saxon broker told a Canadian regulatory investigator posing as a prospective customer that he could expect a 300% return on recommended gasoline options in 3 months.

Jurisdiction question

The jurisdiction question began in July when CFTC and FERC both filed enforcement actions against Amaranth Advisors and its chief trader, Brian Hunter, alleging, respectively, violations of the Commodities Exchange Act and the 2005 Energy Policy Act for alleged manipulative activity on the New York Mercantile Exchange.

Amaranth asked a federal court in CFTC's proceeding to stay FERC's action on the ground that its jurisdiction does not extend to futures markets. Judge Denny Chin rejected the request on Nov. 1 and ordered Amaranth to pay a $291 million fine that FERC had imposed. He also urged the two agencies to coordinate their efforts more closely.

Three US Senate Democrats said CFTC and FERC should begin to resolve jurisdiction questions by Dec. 15. "It's now become clear that what started out as a cooperative and coordinated investigation and enforcement effort has become one of conflict, to the potential detriment of the natural gas customers our federal laws were designed to protect," said Maria Cantwell (Wash.), Dianne Feinstein (Calif.), and Ron Wyden (Ore.) on Nov 1.

Broaden arrangement

"A jurisdictional battle between FERC and CFTC is compromising both agencies' enforcement authorities," the senators said. Recent events suggest that the agencies' memorandum of understanding needs to be broadened, they said as they asked the regulators to begin talks soon and report on progress within 45 days.

In a Nov. 13 address to the Futures Industry Association's Law and Compliance Division in New York, CFTC Commissioner Jill Sommers observed that the jurisdiction question "has generated considerable interest from some members of Congress, but so far there has been no talk of a legislative response."

Acting CFTC Chairman Walter Lukken and FERC Chairman Joseph T. Kelliher have spoken several times, Sommers said, as she expressed hope that the agencies will cooperate to resolve the matter. ✦

Colonial CEO describes workforce recruitment, retention challenges

Nick Snow
Washington Editor

The nation's largest oil products pipeline system faces the impending retirement of a quarter of its workforce and competition from other industries for new employees as it prepares a large expansion of operations, its chief executive told a US Senate committee on Nov. 6.

Oil and gas industry consolidation sharply reduced employment by more than 500,000 jobs from 1982 through 2000, Colonial Pipeline Co. President and CEO Norm Szydlowski told the Senate Energy and Natural Resources Committee during a hearing on energy industry employment.

"While Colonial's employment remained relatively stable during those years, we have had to deal with the same shrinking pool of candidates applying for careers within the overall industry. We are competing hard for candidates who may have fewer skills than candidates 10 years ago," he said in his written testimony.

The products pipeline has responded by offering entry-level workers with high school diplomas starting base salaries around $42,000/year with shift differentials, overtime, bonuses and benefits, and geographic differentials in critical markets, Szydlowski said. Nonskilled employees potentially can increase their annual base pay to an average $70,000/year, while those who become lead operators receive $84,000, he indicated. "The competition for engineers and more highly skilled employees is more intense and the pay packages accordingly climb dramatically," he added.

Keeping qualified workers is difficult when the trend is for them to work 2-3 years to master skills before looking for

another job elsewhere, Szydlowski said. "But an even larger contributor is the graying of our workforce," he told the committee.

Close to retirement

"Industry-wide, the petroleum sector estimates 27% of its workforce is within 5 years of retirement. That figure is the same for Colonial's workforce. The problem is worse among the people who operate the pipeline, where nearly one in five employees is eligible to retire within 2 years," Szydlowski said.

Among Colonial's 4 most critical positions, he continued, 35% of its senior operators-lead operators and 29% of its inspectors are within 2 years of retiring, while controllers, who monitor pipeline operations, and maintenance technicians each have 15% of their complement eligible to retire within 2 years.

Szydlowski noted that the US Bureau of Labor Statistics puts the average US worker's age at 39 years. Colonial's average employee age is slightly less than 44, and more than half of its workforce is over 40, he said.

"Unfortunately, these workforce issues are striking just as the business demands on and opportunities for pipelines are accelerating. This is especially true for Colonial Pipeline," he said.

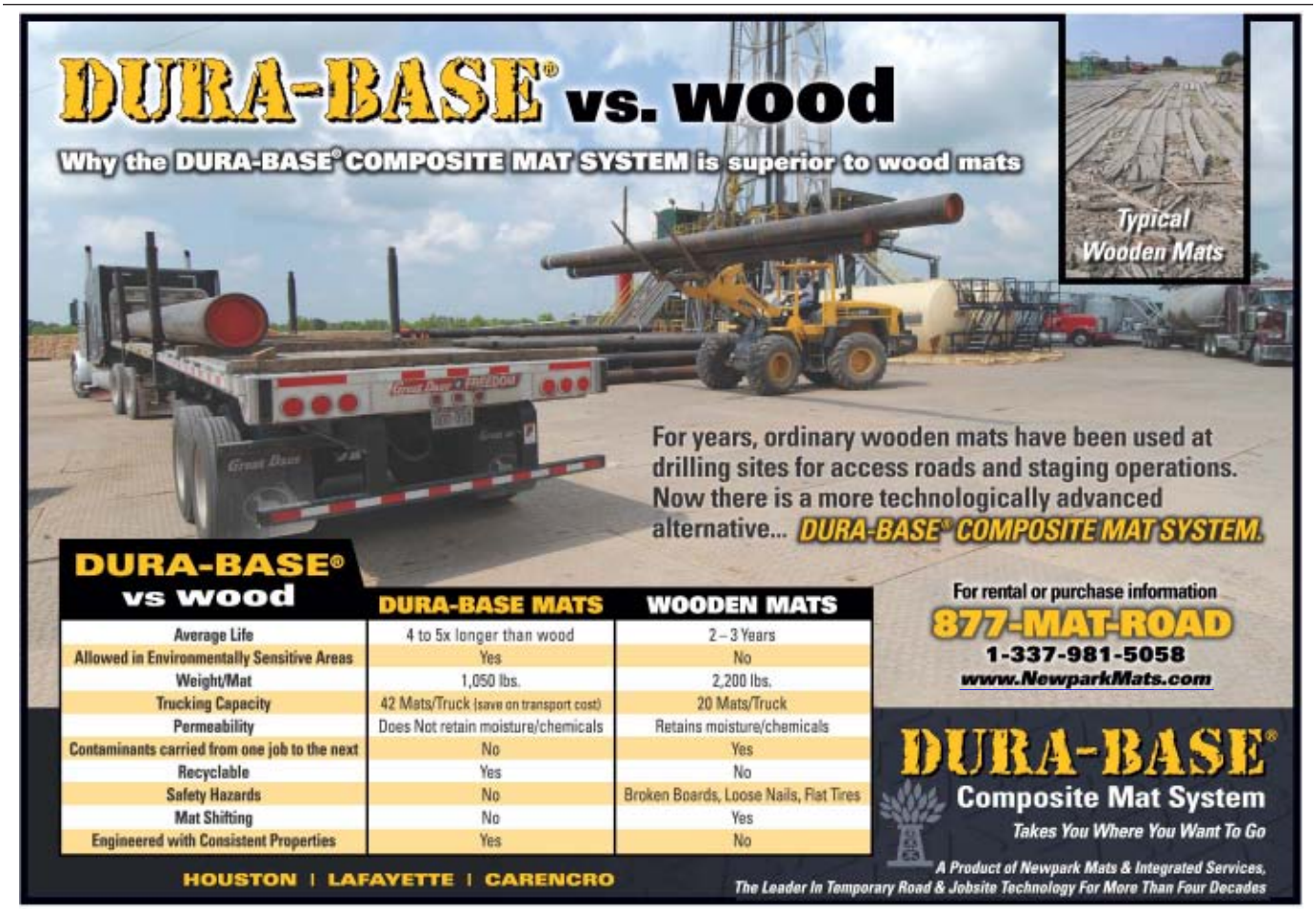
Expansions are under way for several Gulf Coast refineries that the system serves, Szydlowski said. As a large-volume pipeline capable of transporting oil products to major population centers in the South and on the East Coast, Colonial is in an excellent position to help the industry grow and increase available fuel supplies, he said.

He said that the company currently is developing a project that would add a third 36-in. pipeline along its existing corridor between Baton Rouge and Atlanta, which could add 800,000 bbl of additional daily capacity. The project still faces significant regulatory and engineering hurdles and awaits final approval of Colonial's owners.

Causes of increase

"When we initially proposed the project, we estimated the cost would be $1 billion for 465 miles of new pipeline. However, we now estimate the project will top $2 billion. Part of that may be our conservative estimates in the beginning, and part of it is the rising cost of steel. But a significant part of our higher estimate is due to the competition for qualified workers to build our project," Szydlowski said.

The refinery expansions which make Colonial's proposed project possible also are draining the labor pool for it, he explained. "Although construction



WATCHING THE WORLD

Eric Watkins, Senior Correspondent

Chavez seeks oil price charity

Venezuelan President Hugo Chavez last week said the Organization of Petroleum Exporting Countries should devise a plan to sell oil to poor countries at prices lower than those paid by wealthy nations.

"I would sell oil to a rich country at $100[/bbl] and to a poor country perhaps at $20[/bbl]," Chavez said in an interview on state television. "That breaks with the schemes of capitalism....OPEC could do it, although there are hard positions on it, but I'm taking the issue to discuss it."

Chavez said, "How are you going to sell oil to Haiti, one of the poorest countries in the world, at $100[/bbl], the same price that you sell it to the United States? It's not right ethically."

He added, "We're going to try to obtain the support, if not of all OPEC countries, of some of them, and of other major producers to design a formula thinking of the coming years."

Con su permiso?

Chavez said Venezuela is setting an example by selling oil under preferential credit terms to Latin American and Caribbean countries. As we have noted, he also is selling oil at low rates to western nations like the UK (OGJ, Feb. 26, 2007, p. 34).

But as we also have noted, Chavez is providing price breaks at the expense of his own people, who have no choice in his pricing schemes.

"Con su permiso?" is how the question is phrased in Spanish, the question he could easily ask his own people about the price their oil is sold at. But we have yet to hear Chavez utter it to the street urchins of Caracas.

As one report recently noted, "Food shortages are plaguing the country at the same time that oil revenues are driving a spending splurge on imported luxury goods." That's what Rory Carroll of Britain's Guardian newspaper reports these days.

Food for the barrios?

Milk has all but vanished from shops, Carroll says, while distraught mothers ask how they are supposed to feed their infants. Many cafes and restaurants serve only black coffee.

Families say eggs and sugar are also a memory. "The last time I had them was September," said Marisol Perez, 51, a housewife in Petare, a sprawling barrio in eastern Caracas. Barrio? That's another word for slums.

Up to a quarter of staple food supplies have been disrupted, according to Datanalisis, a public opinion and economic research group. To Chavez's detractors the scarcity shows that his revolutionary "21st century socialism" is driving South America's oil power towards ruin.

We are certain the OPEC members will give Chavez's proposals for cheaper oil a polite hearing. In our experience OPEC members are very polite.

They will probably not tell Chavez to shut up, as did Spain's King Juan Carlos recently. But they will doubtless not care to take his ideas much beyond the listening stage. ✦

on our proposed project would not begin before 2011, our forecast is that the labor market will be as tight, if not tighter, by that time," he said.

Szydlowski said Colonial also has been conducting research on possibly transporting ethanol and other biofuels. "As you may be aware, we are working with others to determine whether ethanol can be transported in a steel pipeline without inducing stress-cracking. While initial results are encouraging and there is much work to be done and questions to be answered, we hope to make test shipments in 2008," he said.

While such efforts aren't likely to add significantly to Colonial's long-term workforce needs, system modifications to handle these fuels could create additional demand for scarce design and construction expertise, he added.

He recommended that Congress and the administration encourage policies which improve technical schools and skilled trade training, and consider providing federal tax relief to companies offering phased retirement initiatives so employees won't retire solely for access to lump sum post-career benefits.

Also, said Szydlowski, "As Congress works on solutions to the immigration question, please keep in mind that foreign workers represent a potential pool of skilled workers that would address our workforce shortages." ✦

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OIL&GAS JOURNAL

US gas reserves climb as oil declines again

US proved reserves of gas were up 3.3% in 2006 compared with 2005, natural gas liquids reserves were up 3.8%, and crude oil reserves fell 3.6%, the Energy Information Administration reported.

Reserves at Dec. 31, 2006, totaled 20.97 billion bbl of crude oil, 211 tcf of gas, and 8.47 billion bbl of NGL.

Operators replaced 136% of the dry gas produced, 138% of the NGL produced, and 52% of the oil produced in 2006.

Gas reserves

EIA attributed the gas reserves increase, to the highest level since 1976, mainly to a 9% increase in dry gas proved reserves in Texas from rapid development of Barnett shale reservoirs in Newark East field.

US dry gas reserves stood at 164 tcf at the end of 1998 and have increased in each of the 8 years since.

Operators discovered 23.3 tcf of gas in all types of exploratory wells in 2006, 35% more than the prior 10-year average. Of that, 21.8 tcf came from field extensions, 1.2 tcf came from new reservoirs in existing fields, and only 409 bcf came from new field discoveries.

Coalbed gas reserves fell 1% to 19.6 tcf, and coalbed gas production climbed 2% to 1.76 tcf. Gulf of Mexico deepwater federal reserves dropped 14% to 14.9 tcf, and deepwater production fell 6% to 2.8 tcf.

Alaska and Utah were second and third for dry gas proved reserves additions in 2006.

Dry gas production increased to 18.545 tcf in 2006 on gains in the Barnett shale, Louisiana, and Colorado, Wyoming, Utah, and Montana. The Gulf of Mexico showed a 6% drop.

Deepwater gas represented 39.6% of US dry gas production, up from 36.1%, and CBM made up 9%.

Gas prices at the wellhead fell 12% to $6.42/Mcf, and gas well completions were up 17% in 2006.

Oil reserves

The Gulf of Mexico and Alaska oil reserves fell 10% and 7%, respectively, fueling the overall US oil reserves drop, EIA said.

Utah had the largest increase. It added 78 million bbl, most of which came from upward revisions and acquisitions, to end the year at 334 million bbl. Colorado and New Mexico had smaller oil reserves additions.

Montana's oil reserves fell 2% to 419 million bbl, but for the second year in a row the state had the largest annual oil production increase—6 million bbl—to 36 million bbl for the year, with continued Bakken shale development in difficult-to-produce Elm Coulee field.

Of the oil reserves added in 2006, 504 million bbl came from extensions, 43 million bbl from new reservoirs in existing fields, and 30 million bbl from new field discoveries. Seventy percent of the new field discoveries were in the gulf.

The average first-purchase price for crude oil was up 19% to $59.69/bbl, and oil well completions were 28% higher than in 2005. ✦

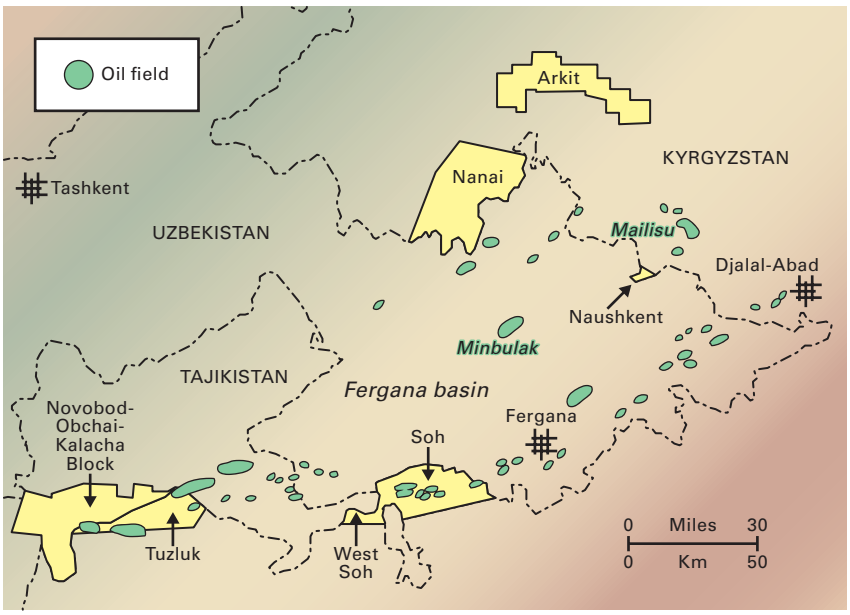
US RESERVES SCOREBOARD Table 1

12/31	Crude oil — Billion bbl	NGL — Billion bbl	Dry gas, bcf
2006	20,972	8,472	211,085
2005	21,757	8,165	204,385
2004	21,371	7,928	192,513
2003	21,891	7,459	189,044
2002	22,677	7,994	186,946
2001	22,446	7,993	183,460
2000	22,045	8,345	177,427
1999	21,765	7,906	167,406
1998	21,034	7,524	164,041
1997	22,546	7,973	167,223

Source: US Energy Information Administration

MANAS PETROLEUM BLOCKS IN EX-SOVIET REPUBLICS

Fig. 1



Source: Manas Petroleum

Fergana basin draws seismic surveys, drilling

Operators are shooting 1,500 line-km of 2D seismic surveys in the Fergana basin in Kyrgyzstan and starting some of the first drilling in the basin since Soviet times.

A seismic program operated by a unit of Santos Ltd. of Australia involves 849 km on licenses under tenure to CJSC South Petroleum Co. (SPC) and 689 km on licenses held by CJSC Textonic, both headquartered in Bishkek.

SPC is owned 70% by Santos International Holdings Pty. Ltd., 25% by DWM Petroleum AG, and 5% by Kyrgyzneftegas. Manas Petroleum Corp., Baar, Switzerland, owns DWM. Tectonic is legally owned by Caspian Oil & Gas Ltd., Balcatta, Western Australia, and beneficially owned 33% by Santos and funded by Santos as part of farmouts from SPC and Textonic.

Acquisition has begun in the Tuzluk (SPC) and Sulukta (Textonic) licenses and is to continue in SPC's West Soh, Soh, Naushkent, and Nanai licenses and Textonic's Katran, Akbura, Charvak, East Mailisu, and West Mailisu licenses.

The $10 million-plus program is likely to take 12 months. If results are positive, drilling could take place in 2008 or later. Acquisition contractors are OJSC Saratovneftegeofisica and OJSC Kyrgyzgeofisica.

Kyrgyz drilling

Separate from the joint venture with Santos, Caspian Oil & Gas appears to have extended Mailisu III oil field to the northwest at the first of 11 planned wells in the northern Fergana basin.

COG's Mailisu III-2 well was to spud on Nov. 9 toward a projected 1,500 m with oil targets in the Paleogene and gas targets in the Jurassic.

At Mailisu III-1, close to the southern boundary of the company's Ashvaz license, oil saturated cores and wireline logs suggest that the well cut as much as 2 m of net pay in the Bed V and VII intervals, which will be pump-tested.

The Mailisu III license has oil reserves of 6 million bbl, of which 1 million bbl have been produced, the US Geological Survey estimated in its 1994 report on the Fergana basin.

COG's drilling program has four focus areas: Mailisu III/Ashvaz, East Mailisu, North Charvak, and Charvak, all clustered northwest of Jalal-Abad. Reprocessing of seismic by Santos has identified further leads with potential at less than 1,000 m on the Charvak and East Mailisu blocks that will be followed up later.

COG is using a new rig purchased from China with a depth capacity of 2,500 m or more.

Fergana objectives

The Fergana basin has been producing oil and gas since 1902, Manas Petroleum noted.

Discovered reserves total 1.2 billion bbl and 5.5 tcf of gas, and cumulative production exceeds 600 million bbl.

The basin lies on an oil trend between the Precaspian basin in northwestern Kazakhstan and northwestern China's Tarim basin. Fergana and Tarim share the same geology.

Working with the Kyrgyz state oil company Kyrgyzneftegaz, a Manas shareholder, has acquired what it views as the best lands in the basin (see map).

Manas said the collapse of the Soviet Union in 1991 ended Soviet exploration and discovery of large oil fields in the basin's deeper underthrust structures, but China continued drilling the same types of deep structures, resulting in the discovery of more than 15 billion bbl of oil.

The USGS noted that the oil should be contained in structures similar to Minbulak, the type outlined on the Manas' concessions (OGJ, Aug. 6, 2007, p. 36). The primary reservoir is multiple layers of thick Paleogene and Neogene sandstones.

Minbulak field, 50 km from the Naushkent and Nanai licenses, produced thousands of barrels a day per well from Neogene sandstone under high pressure at 17,000 ft (OGJ, Apr. 27, 1992, p. 25). ✦

Egypt's Kom Ombo due more exploring

Groundstar Resources Ltd., Calgary, plans to shoot 2D seismic in early 2008 over five high-potential structures on the 42,291 sq km West Kom Ombo Block in southeastern Egypt.

Preliminary processing of 835 line-km of 2D seismic data acquired by Repsol YPF SA in 1997 shows several large Cretaceous structures, Groundstar said. The company noted that Centurion Energy International Inc., Calgary, has a $30 million plan to develop a discovery on Block 2 to the east that tested 37° gravity oil from a Cretaceous reservoir at 4,000 ft (OGJ Online, Sept. 6, 2007). It added that the Repsol KO-1 well and the Centurion KO-4 well had oil shows in potential sandstone reservoirs below 8,000 ft.

Groundstar, with 60% working interest, said its block has a thicker sedimentary section (see map, OGJ, Mar. 26, 2007, p. 34). Centurion is a subsidiary of Dana Gas PJSC, Sharjah.

Meanwhile, TransGlobe Energy Corp., Calgary, and its partners in Nuqra Block 1 east of the Nile River entered into the first 3-year extension that requires completion of two wells. ✦

Colombia

Kappa Energy Colombia Ltd. has spud the Kristie-1 wildcat on the 62,500-acre Abanico Block in the Upper Magdalena Valley in Colombia.

The well, on a structural-stratigraphic prospect in the Revancha Sur area, is projected to 6,300 ft.

This and a second exploratory well will be paid for through a farmout under which Loon Energy Inc., Calgary, agreed to assign a 25% interest in the Kristie prospect Prospero Hydrocarbons Inc. for funding 50% of the well cost and 25% interest to Prospero for funding 50% of the second prospect. The group has identified a number of other prospects on the block.

Indonesia

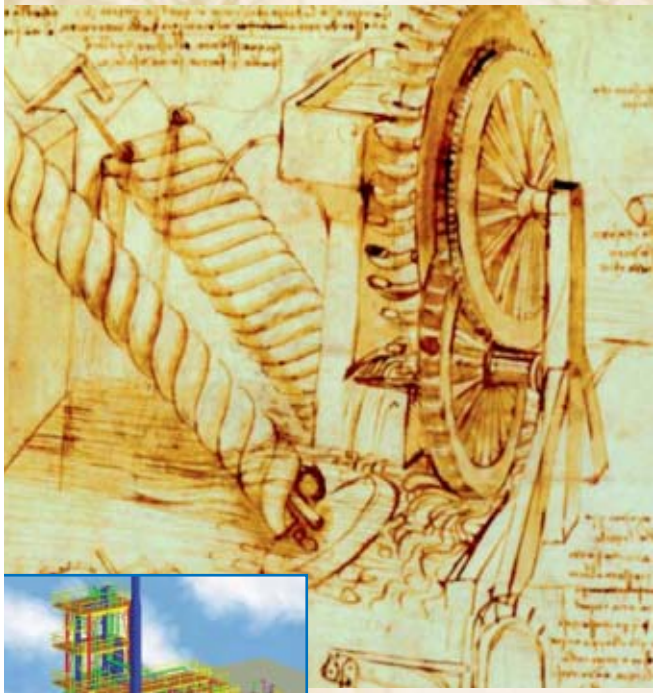
Vital Resources Corp., Calgary, will redevelop Ramok and Senabing oil fields west of Palembang, South Sumatra, Indonesia, under an agreement to buy the fields from private companies for $13.6 million. Redevelopment is to involve primary production, waterflooding, and 3D seismic surveys. Current production totals 85-100 b/d of low-gravity oil.

Ramok had 51 wells drilled in 1910-42 and peaked at 290,000 bbl/year in 1928. Senabing had 41 wells drilled in 1906-31 and peaked at 200,000 bbl/year in 1907.

Ivory Coast

Canadian Natural Resources Ltd., Calgary, said it secured a

Italian design
A masterpiece



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deepwater drilling rig for mobilization in the first quarter of 2008 at Baobab oil field off Ivory Coast.

The company intends to bring three of the five shut-in Baobab wells back on production in 2008 and 2009. Oil production has been off sharply since 2006 due to the failure of sand screens in the wells.

Morocco

TransAtlantic Petroleum Corp., Houston, and Stratic Energy Corp., Calgary, plan to convert part of the Guercif Beni Znassen reconnaissance license in northeastern Morocco into two exploration permits and each farm out half their former 40% working interests to Sphere Investments QSC, Doha, Qatar.

The conversion is subject to government approval.

The two new exploration permits will total 3,893 sq km out of the 13,750 sq km of the former reconnaissance license. Sphere will pay 100% of the costs of an initial 3-year exploration program on the new permits and contribute to costs to date.

Morocco's ONHYM is carried for 25% of costs but pays its share of development costs.

Initial 3-year work program on the 8-year permits is for reentry of an existing well and shooting 300 line-km of 2D seismic.

Russia

Volga Gas PLC, London, was awarded the Urozhainoye-2 license covering 354 sq km in Russia's Volga Region.

The license is near 30 gas-condensate and oil fields and 15 km north of the company's Karpenskiy license in the northwestern Precaspian basin.

The Urozhainoye-2 license contains the 1991 Sobolevsky field discovery well, TD 3,307 m, which flowed 1,213 b/d of 35.9° gravity oil and 2 MMcfd of gas on an 8-mm choke from four Bobrikovsky intervals at 2,647-59 m.

Volga Gas, which plans to shoot 2D seismic to identify other structures to drill, intends to work over the well and start production in 2008.

Indiana

Baseline Oil & Gas Corp., Houston, said no proved reserves are associated with its 171,000 gross acreage position in the Illinois basin New Albany shale play, but all six of the horizontal wells in which the company participated in 2007 tested gas.

Baseline said it is working with its partners to define optimal completion and stimulation techniques and preparing to install gas gathering, treatment, and compression to place the wells in Greene and Knox counties on line.

The company plans to drill and complete up to 20 wells and begin selling gas in 2008.

Norwegians develop new method to measure shaker screen performance

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Proper solids control is essential for optimum drilling fluid performance. This article presents a new technique to test shaker screens, complementary to API RP 13C.

The evolution of high-performance linear and elliptical motion vibratory shakers has culminated in shaker screens often being the only separation device employed on a drillsite. Designating and labelling screens has been historically controversial; screen labels do not always correctly define the separation potential of a particular mesh. In 1993, the American Petroleum Institute (API) issued Recommended Practice (RP) 13E for the drilling industry; it was a significant step forward in identifying screens with distributed aperture sizes.[1]

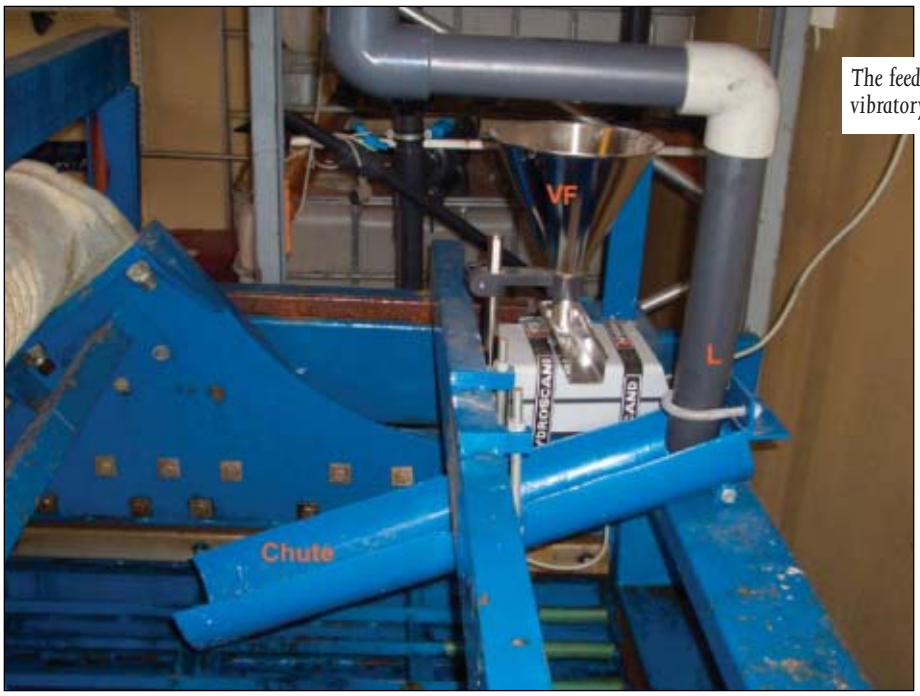
The last 10 years have seen the introduction of multilayer screens, screens with rectangular openings, and screens with wave-formed surfaces. Although these new screens offered improved conductance and blinding resistance, they also introduce complexities in determining the screens' separation capabilities.

For instance, a laboratory test sieve is made of a single-layer screen cloth. The openings are quadratic in shape and the cut size is marked onto the sieve, followed by a certification process. With screens used on a shale shaker, however, there are several different types of screen cloth, which may not have quadratic openings. It is not uncommon to find screens with oblong openings.

In multilayered screens, several layers of screen cloth, having different mesh sizes, are glued together. In this case, the mesh sizes no longer determine their separation capabilities.

Screens with different types of surface and openings are used in shale shakers. People tend to use a standard image analysis technique, as earlier recommended by API, for arriving at some numbers representing the separation capability of such screens. The experience of Norwegian operators Statoil ASA and Norsk Hydro AS (now Statoil-

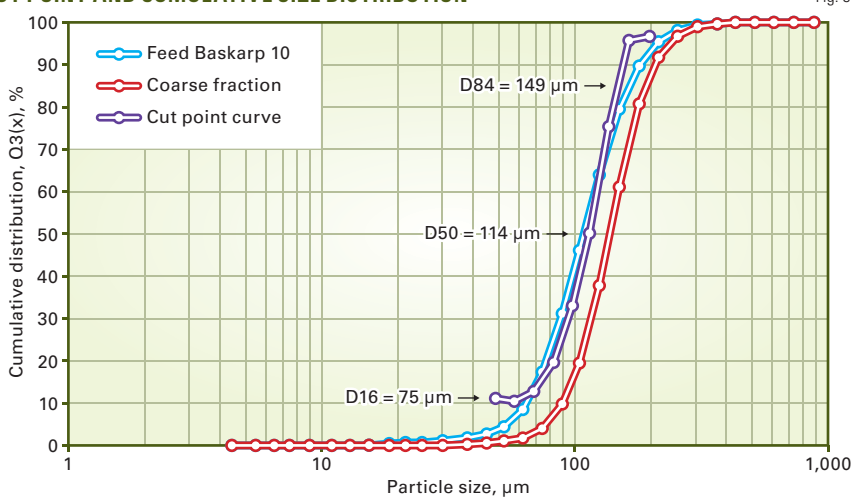
Test screens were mounted in a frame that was placed on a modified shale shaker (Fig. 1).



The feeding mechanism for liquids and solids includes a vibratory feeder (VF), pipe (L), and chute (Fig. 2).

CUT POINT AND CUMULATIVE SIZE DISTRIBUTION

Fig. 3



Hydro ASA), however, showed that this method of screen designation, using the image analysis technique, was inadequate for correctly defining separation capacity of complex screen configurations. There was a need to develop a standardized test procedure acceptable to both organizations.

Screen performance relies on several other properties, including screen conductance or flow capacity, dependent on the extensional viscosity of the drilling fluids. Shaker motion is another issue. Total blinded area will affect the flow capacity. Screen wear affects the life of the properties. Some screens vary in their separation performance because wires move during use, even though no obvious holes are generated in the screen. None of these extraneous effects is taken into consideration in the present study, however. Our focus is on the original separation performance of the screens, measured in realistic model drilling fluids.

Current drilling operations in depleted reservoirs often add particles to enhance formation strength.[2] In such cases, it is important to know the particle size distribution of the coarser particles in the drilling fluid. This makes it necessary to measure both the cut point and separation characteristics of the screens. The method outlined in this article was developed while keeping in mind the approach of API RP-13C and the needs of the oil companies that supported this development work.[3] This procedure is seen as complementary to the API procedure and will improve understanding of the screen performance.

Tests following API RP-13C are conducted by sieving the selected particles in air. Flow through a screen is predominantly extensional. Therefore, evaluating screening of particles for formation strengthening requires using a base fluid that has both a viscosity and an extensional viscosity that are realistic for drilling fluids.[4]

There is a strong connection between shaker motion and fluid viscosity. We selected a fluid that does not change properties with vibration[5] and should give a coarser and less sharp cut point than tests in air would provide. The coarser cut point will be more realistic than a cut point measured in air.

While we acknowledge that the present API RP-13C gives valuable information, as did the earlier recommended practices, it does not give all the relevant information necessary for oil well drilling operations. The new test procedure gives the industry some additional necessary information. This article describes the procedure and thoughts behind the test development and discusses the results obtained and the challenges researchers still face.

Test procedure

Although it is common to use alumina or glass balls as the solid medium

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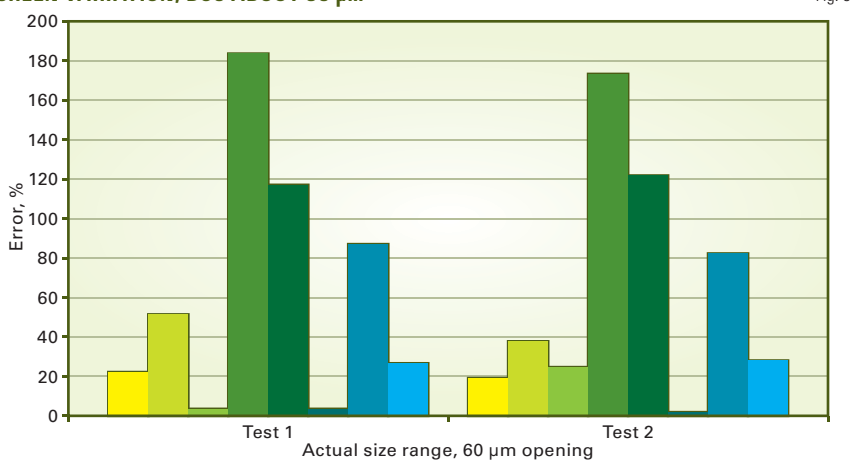
The screens deck (A) is mounted inside a modified shale shaker, shown set up for testing (Fig. 4).

SCREEN VARIATION, D50 ABOUT 60 µm*

Fig. 5



*Results from testing screens from eight different manufacturers.

for screen testing, this new procedure used sands of various size ranges for different screen separation ranges. In order to simulate the operating conditions, we used a blend of xanthan gum with water as the testing medium. The concentration of xanthan gum used yielded the power law viscosity parameter, K = 1.65 mPas^n, and the power law index, n(exponent) = 0.26.

We modified a Derrick Shaker FLC 2000 for the test procedure. The test screens were mounted in a frame (Fig. 1). The whole fixture is mounted on the shaker machine. Fig. 2 shows the liquid and solids feeding mechanisms. The particles are fed through a vibratory feeder, VF, at a controlled rate. The drilling fluid is pumped through the pipe, L, and discharged at the same point on the chute at which the particles get mixed with the liquid and travels on the screen surface.

A known amount of solid was added to the fluid before it passed through the screens. The solids remaining on top of the screens and the solids passing through the screens were collected and measured to check the mass balance. During the procedure development stage, several tests confirmed that collecting solids only from the top surface of the screen was sufficient to provide an accurate prediction of the screen's cut point.

Measuring particle distribution

Use of standard laboratory classification screens for analysis of particle size distributions would be optimum for such an operation. However, for particle sizes smaller than 70-80 µm, the use of such screens is difficult because the fine particles will adhere to the screens and lead to erroneous test results.

To avoid such errors, we used laser diffraction spectrometry. In order to generate compatible results for the whole range of screens, we chose to use laser diffraction spectrometry for the entire range of particle sizes, using a HELOS laser (helium-neon laser for optical spectrometry, manufactured by Sympatec GMBH, Clausthal-Zellerfeld, Germany.). HELOS measures the diffraction pattern caused by particles in the path of the laser beam.

Particle sizes were measured in dry conditions with a dry dispersion unit. This uses an ejector effect to blow dry powder across the path of the laser beam and then to a vacuum cleaner. We used a lens with a measuring range of 0.5-875 µm.

Test sands, cut points

We used Millisil and Baskarp quartz sands to simulate cuttings, delivered by Sibelco Scandinavia. A 50/50 wt % of Millisil and Baskarp 10 is used for sieve openings smaller than 100 µm. For openings larger than 100 µm, Baskarp 10, Baskarp 15, Baskarp 20, and Baskarp 35 are used.

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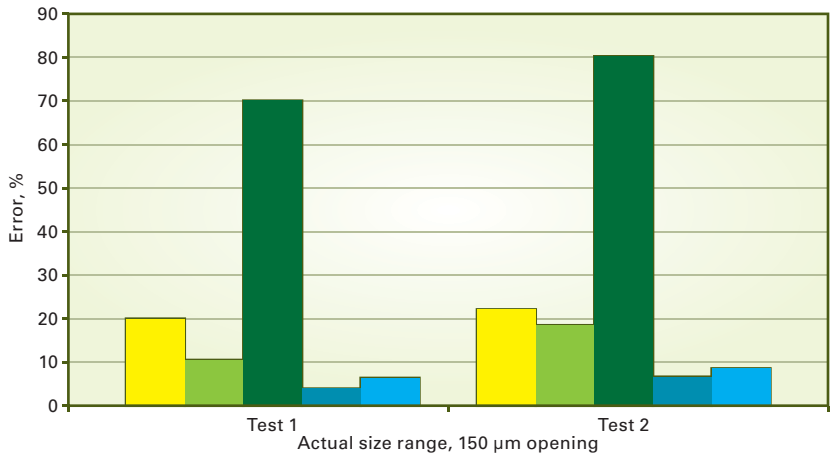
SCREEN VARIATION, D50 ABOUT 100 µm*

Fig. 6

*Results from testing screens from eight different manufacturers.

SCREEN VARIATION, D50 ABOUT 150 µm*

Fig. 7



*Results from testing screens from eight different manufacturers.

A cut point curve graphically displays the fraction of various size particles removed by the solids control equipment compared to the quantity of that size particle presented to the equipment. For example, a D50 cut point is the intersection of the 50% data point on the Y-axis and the corresponding micron size on the X-axis on the cut point graph.[6] This cut point indicates the size of the particle in the feed to the solids control equipment that will have a 50% chance of passing through the equipment and 50% chance of being retained by the screens.

The values reported are D50, D16, and D84. The values of D16 and D84 are selected because they are one standard deviation from a gaussian distribution mean. Fig. 3 shows the cut point curve and the cut point values, as well as the particle size distribution of the test sand (feed Baskarp 10) and the discard sand (coarse fraction).

Robinson and Morgan presented the results of the work committee establishing new API procedures on shaker screen designations.[7] The new API procedure uses the D100 values for aluminium oxide particles in air as screen designations. These values define a new type of cut point that is adequate for most drilling operations. Previously, shaker screens were designated by mesh number. Screen opening and mesh number is not uniquely defined, even for single cloth screens, as shown by Dahl et al.[8] Therefore, we follow one of the conclusions stated by Robinson and Morgan: Mesh number should not be used to designate screens.[7]

If particles are added for formation strengthening,[9] it is necessary to know both the cut point and the particle separation skewness. The skewness is defined as S = D84/D16, where these values are measured values and not values determined by image analysis or any other theoretical evaluation.

Since the D100 value does not reveal a practical limit for the content of large particles, a measured D50 value is more usable for screen selection if formation strengthening is the main focus. This is because it is no longer sufficient to know the maximum particle size in the fluid equal to the D100 cut point value. What is needed is information about the particles that are separated from the fluid and the particle-size distribution of the particles following the fluid through the shaker. It is the particle-size distribution that can prominently affect the formation and prevent further growth of fractures.

Test procedure

The shale shaker used for the tests is a Derrick shaker FLC 2000, modified to suit test requirements (Fig. 4). The screen's deck is mounted on the fixture as shown in Fig. 1, and this fixture is also identified as "A" in Fig. 4.

Real separation cut points (efficiencies) have been measured with predefined solids representing cuttings both larger and smaller than 100 µm. The test procedure is as follows:

1. Mount the screen deck on the fixture.
2. Attach the fixture and screen deck on the shale shaker.
3. Prepare the fluid and test viscosity; add xanthan gum to reach desired viscosity.
4. Start the shale shaker.

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11:30 – 12:30 pm	Lunch
12:30 – 2:00 pm	Session 3 (closed session)
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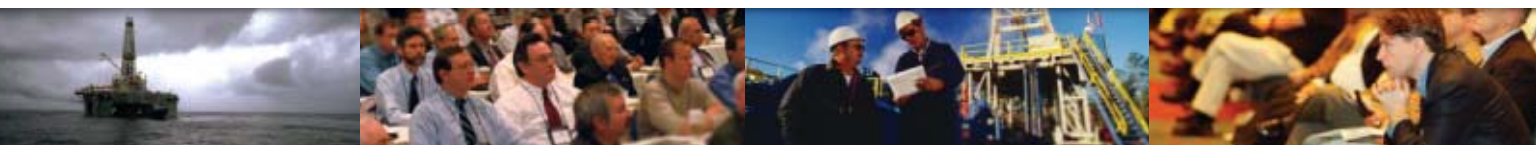
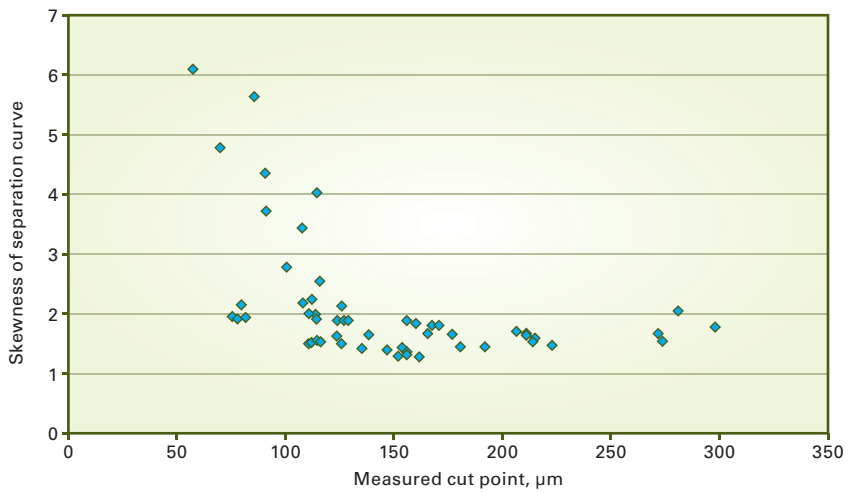


ERROR VARIATION IN CUT POINT

Fig. 8

SKEWNESS IN CUT POINT

Fig. 9



5. Start the slurry pump; pass fluid through screen for about 2 min, taking care to ensure that the fluid bed and layer are covering about 66% of the screen area and length).

6. Immediately after this, feed prepared sand from a vibration feeder above a half pipe, where the mixing takes place, while the pump keeps running. Continue feeding sand for about 3 min. Fig. 2 shows the feeding arrangement.

7. After the sand feeding is over, continue pumping for about 2-3 min.

8. Stop the pump and the shale shaker.

9. Remove particles from the top of the screen; wash with water to collect the sand sticking to the screen. Collect washed sand and water.

10. Dry particle slurry in a furnace.

11. Weigh solid dry particles.

12. Analyze size of solid particles to find out the separation efficiency of the screen.

This procedure is a tool to assess relative performance of different screens under simulated test conditions.

Test results

During the past year, we tested several screens with various screen cloth openings and specifications, from various suppliers. We now provide the test results for presumably similar size screens, as measured or predicted by eight different screen manufacturers. We have presented them in random order in the figures in order to protect commercial interests. The test results show that the screen sizes claimed by the manufacturers often do not give same results when tested under controlled conditions.

The claimed sizes of the screen openings tested were mostly in three size ranges—about 60 µm, 100 µm, and 150 µm. Fig. 5 shows the variation of percent error in measurement as compared to the value stated by the suppliers for the screens that had a D50 value of about 60 µm. Figs. 6 and 7 show the comparative performance of screens having D50 value of 100 µm and 150 µm, respectively.

It is evident that in the case of some manufactured screens, the percent error for 60-µm range is as high as 180%, while for 100 µm, this error was about 100%. For screen openings marked 150 µm, the maximum error was around 75%, while for most suppliers the error was below 20%. In case of 100 µm and 60 µm openings, an error value of 20% or less is an exception. Most screens had larger error values.

All the data from all the tests are plotted on Fig. 8, which shows the variation of percent error with respect to the measured D50 values. The measured cut point values are used to maintain anonymity of the screen suppliers. The figure clearly shows that in general, the percent error increases as the D50 values decreases. For screens claimed to be coarser than 150 µm, the error is relatively smaller.

There is more information from the tests than the cut point. A skewness value can be calculated as S = D84/D16. For an ideal screening process the skewness value approaches unity from the above relationship. In other applications, a positive known skewness may be beneficial if the fluid is going to be used for formation strengthening.

In Fig. 9, the skewness values of all the tests are shown as function of the measured D50 value. The sharpest cut is obtained for a screen with a D50 cut point equal to 162 µm. Here, the D84 value is only 26% larger than the D16 value, indicating a well-defined cut point. According to the manufacturer's analysis, however, this cut point should be slightly less than 60 µm.

In order to be able to account for such discrepancies, there is a need for a statistical parameter that can address both the skewness and the deviation from the expected cut point. We call this parameter the screen delivery performance number (SDPN) and define it as the length in a vector space, with the first vector being the skewness value as defined above and the second vector being the measured cut point divided by the claimed cut point by the producer.

Thus, the SDPN value is defined as:

$$SDPN = \frac{1}{\sqrt{2}}\sqrt{S_R^2 + D50_R^2}$$

$$\text{where } S_R = \text{Min}\left(\frac{D84}{D16}, \text{Max}\left(\frac{\frac{D84_{Claimed}}{D84_{Measured}}}{\frac{D16_{Claimed}}{D16_{Measured}}}, \frac{\frac{D16_{Claimed}}{D16_{Measured}}}{\frac{D84_{Claimed}}{D84_{Measured}}}\right)\right)$$

is the skewness ratio and

$$D50_R = \text{Max}\left(\frac{D50_{measured}}{D50_{claimed}}, \frac{D50_{claimed}}{D50_{measured}}\right) \text{is the cut point ratio.}$$

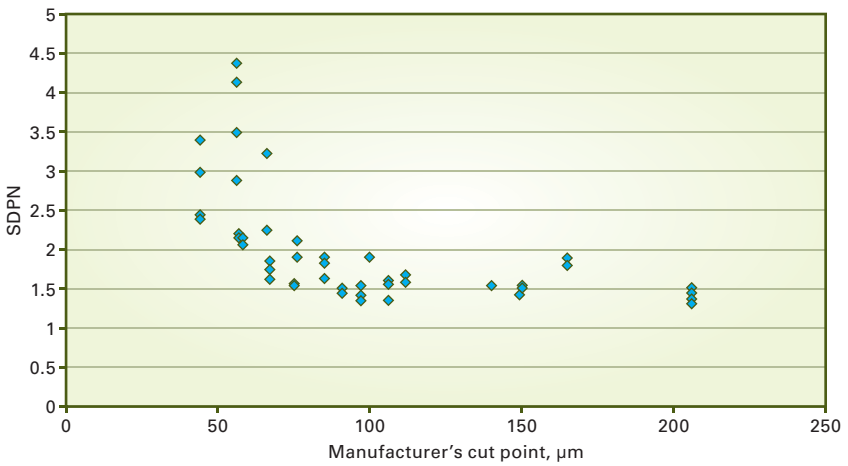
The skewness ratio is the maximum ratio between the claimed skewness and the skewness measured by the present method. In the absence of any claimed skewness values, the calculated skewness will be used.

The cut point ratio is the maximum ratio between claimed and measured cut point, defined such that any difference will give a value larger than unity, independent of whether the measured cut point is greater or smaller than the claimed cut point.

In the case of an ideal screen, the value of the skewness ratio will be one and the value of the cut point ratio will be one, hence the ideal value of SDPN = 1. In actual use, any screen with a SDPN value higher than but close to unity will be considered as a good screen.

PERFORMANCE RELIABILITY OF SHAKER SCREENS*

Fig. 10



*Assuming no skewness information is provided by supplier.

Fig. 10 presents the variation of SDPN values of the tested screens with respect to the measured cut point values. Since this is a statistical analysis we have assumed that no skewness information is known from the suppliers on any of the screens. However, several screen providers release skewness data. We do not use these in this statistical analysis in order to present a theoretical worst-case scenario. We have used only the measured cut point values.

Since it is more difficult to produce finer screens, the SDPN values are better for larger screen openings (Fig. 10). Statistically, we found that the SDPN value of screens with claimed cut points slightly less than 100 µm is less than 2, indicating that the performance of these larger screens should be acceptable. For the finer screens, however, the SDPN values are much larger and, hence, care needs to be taken to select the correct and most suitable screen for a given operation.

Results

The results from this study confirm the conclusion by Robinson and Morgan that cut point determined by using image analysis will not give adequate information about shaker screen separation performance.[7] For finer screens with D50 values of 100 µm or less, one should expect much larger values of D50 than claimed.

A skewness value defined as D84/D16 is necessary to describe the separation performance properly. Although some shaker screens demonstrated a claimed cut point being close to the measured, these screens had large skewness that was not documented by the supplier. Such unknown large skewness would, in practice, allow an unpredictably large volume of coarser material than the cut point through the screen, which is highly undesirable.

We introduced a statistical parameter that combines the effect of claimed vs. measured cut point and the skewness. This parameter illustrates the total screen performance in a single number, SDPN. In general, statistically it was found that most screens with a larger cut point than 100 µm, the SDPN had an acceptable value. For finer screens there was a significant scatter in this value.

Acknowledgment

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References

1. API Recommended Practice 13E, Third Ed., American Petroleum Institute, Washington, DC, May 1993.
2. Asston, M.S., Alberty, M.W., Mclean, M.R., de Jong, H.J., Armagost, K., "Drilling Fluids For Wellbore Strengthening," SPE 87130, SPE/IADC Drilling Conf., Dallas, Mar. 2-4, 2004.
3. API Recommended Practice 13C, Third Ed., American Petroleum Institute, Washington, DC, December 2004.
4. Barnes, H.A., Hutton, J.F., and Walters, K., An Introduction to Rheology, Rheology Series 3, Elsevier, 1989.
5. Fard, A.R., Omland, T.H., and Saasen, A., "Shale Shaker's Effect on Drilling Fluids Rheological Properties," Ann. Trans. Nordic Rheology Soc., Vol. 15 (2007), pp. 227-230.
6. Cutt, A.R., "Shaker Screen Characterization Through Image Analysis," SPE 22570, 66th Ann. Tech. Conf. and Exhibition, Dallas, Oct. 6-9, 1991.
7. Robinson, L., and Morgan, M., "The 2004 Solids Control API RP 13C," paper AADE-05-NTCE-75, AADE National Technical Conf. and Exhibition, Houston, Apr. 5-7, 2005.
8. Dahl, B., Saasen, A., and Omland, T.H., "Successful Drilling of Oil and Gas Wells by Optimal Drilling Fluids Solids Control—A Practical and Theoretical Evaluation," SPE 103934, IADC/SPE Asia Pacific Drilling Technology Conf. and Exhibition, Bangkok, Nov. 13-15, 2006.
9. Omland, T.H., Dahl, B., Saasen, A., Taugbøl, K., Zwaag, C.V.D., and Amundsen, P.A., "Optimisation of Solids Control Opens Up Opportunities for Drilling of Depleted Reservoirs," SPE 110544, SPE Asia Pacific Oil & Gas Conf. and Exhibition, Jakarta, Oct. 30-Nov. 1, 2007.

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UNCONVENTIONAL GAS—Conclusion

Outlook sees resource growth during next decade

Vello A. Kuuskraa
Michael Godec
Scott R. Reeves
Advanced Resources International
Arlington, Va.

Modeling and analyses indicate that as long as natural gas prices do not fall dramatically unconventional gas production will continue to expand, particularly as investment in improved recovery technology continues and as new plays and prospects are developed.

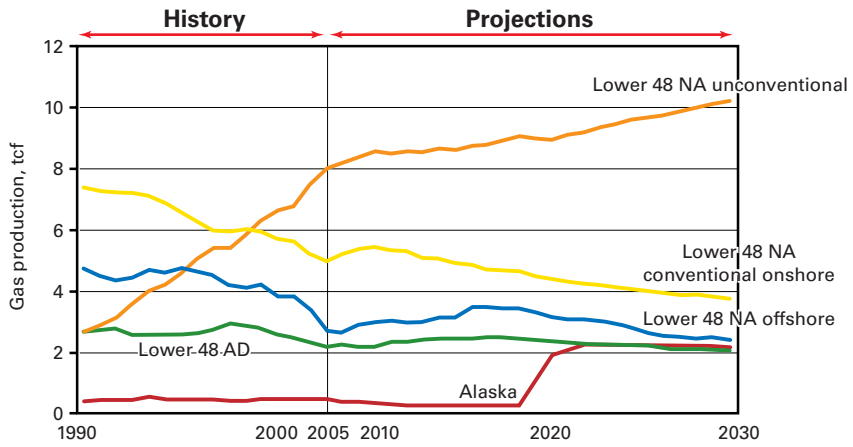
As summarized in the first article in this series (OGJ, Sept, 5, 2007, p. 35), the US has seen a decade of progress in unconventional gas. Annual production from all three unconventional gas resource plays—tight gas sands, coalbed methane, and gas shales—reached in 2006 a record 24 bcfd and proved reserves at the beginning of 2006 were a record 105 tcf.

Today, two out of three wells in the US target these three natural gas resource plays.

Contrary to views by some that unconventional gas is merely a playground for small producers, today 9 of the 12 largest US natural gas fields produce unconventional gas. At the top of this list is the 3.8 bcfd produced from the Cretaceous-age tight gas and coalbed methane of the San Juan basin. Next in line is the 1.4 bcfd produced from the

US NATURAL GAS PRODUCTION

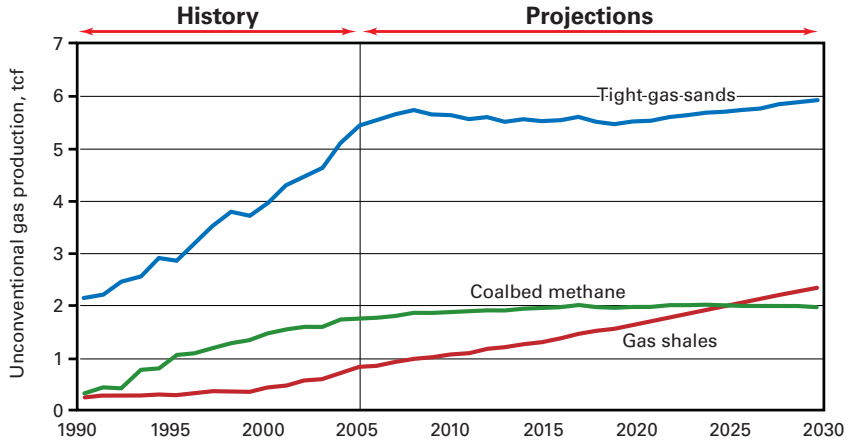
Fig. 1



NA - Nonassociated gas, AD - Associated-dissolved gas
Source: EIA 2007 Annual Energy Outlook

US UNCONVENTIONAL GAS PRODUCTION

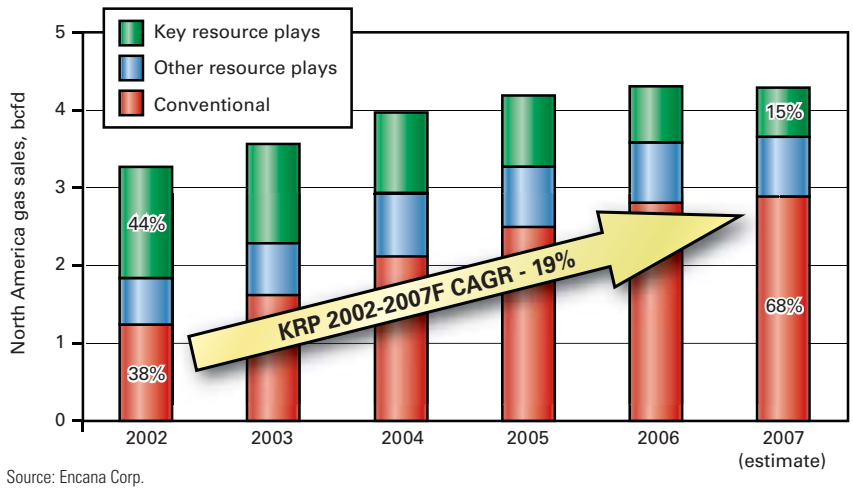
Fig. 2



Source: EIA 2007 Annual Energy Outlook

ENCANA'S RESOURCE PLAY GROWTH

Fig. 3



Source: Encana Corp.

Barnett gas shales of Newark East field. A decade ago, these unconventional gas fields were either undeveloped or much further down the list in terms of size (Table 1).

EIA outlook

The US Energy Information Agency provides the official scorecard and projections for US oil and gas production. In its 2007 Annual Energy Outlook, EIA projects that unconventional natural gas production will continue to grow, from about 8 tcf/year in 2005, to 8.8 tcf/year in 2015 and to 10.2 tcf/year by 2030, accounting for more than half of US Lower 48 gas production (Fig. 1).

Fig. 2 provides a more disaggregate EIA outlook for each of the unconventional gas sources. This shows that EIA expects gas production from tight gas sands and coalbed methane to plateau in the next decade, with gas shales providing the great bulk of expected growth.

To assess the reliability of EIA's outlook for unconventional gas production, we undertook two tasks. First, we used ARI's unconventional gas data and modeling system (MUGS). Second, we examined 6 years of actual production data for unconventional gas and compared these data with past EIA projections.

The exercise with the MUGS model and its 93 distinct gas plays provides somewhat higher projections for unconventional gas production in the next decade than EIA, particularly for tight gas sands. As such, EIA's projections may be somewhat conservative.

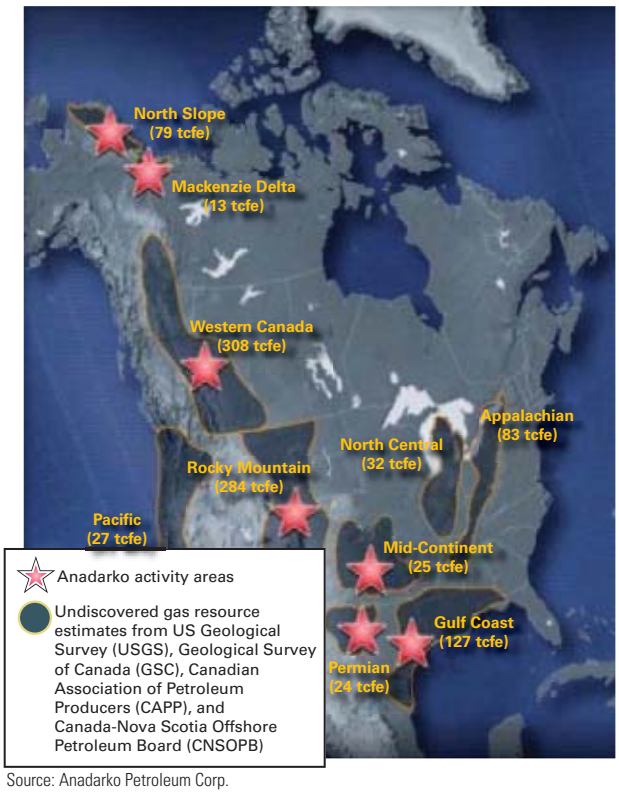
The reason is that MUGS provides a projection of potential natural gas production without some of the constraints included in EIA's National Energy Modeling System (NEMS).

The actual performance of unconventional gas has consistently exceeded EIA's projections in past Annual Energy Outlooks. Table 2 shows the projections through 2005 for unconventional gas in 12 Annual Energy Outlooks and compares these with the actual value. For example, the 1996 outlook projected that unconventional gas production would grow only modestly to 2.6 tcf by 2005. Four years later, with benefit of new data and an improved model, the 2000 outlook raised the 2005 production estimate to 5.6 tcf.

The actual unconventional gas production in 2005 was about 8.0 tcf, substantially exceeding both earlier projections. If history holds, EIA's projections for unconventional gas production 10 years from now may, once again, turn out to be conservative.

ANADARKO'S PERSPECTIVE GAS RESOURCES

Fig. 4



Source: Anadarko Petroleum Corp.

Industry's plans

Another way to gain insight on the outlook for unconventional gas is to look more closely at industry's plans for unconventional gas and resource plays.

The majors are returning to unconventional gas.

ConocoPhillips, North America's largest natural gas producer, greatly expanded its presence in unconventional gas with the acquisition of Burlington Resources Inc. With this acquisition, ConocoPhillips gained access to 1.2 bcfd of San Juan basin tight gas and coalbed methane production, plus significant undeveloped acreage in other resource plays.

ExxonMobil Corp. has established a large deep tight-gas prospect in the Piceance basin of Colorado that, ac-

NINE OF THE 12 LARGEST US GAS FIELDS ARE UNCONVENTIONAL

Table 1

Rank in size	Field	Basin	State	Resource type	Production in 1996 (bcfd)	Production in 2005 (bcfd)
1	San Juan basin gas area	San Juan	New Mexico and Colorado	Coalbed methane and tight gas sands	3.4	3.8
2	Newark East	Fort Worth	Texas	Gas shale	0.1	1.4
4	Pinedale	Greater Green River	Wyoming	Tight gas sands	—	1.3
5	Wyodak-Big George	Powder River	Wyoming	Coalbed methane	—	0.9
6	Jonah	Greater Green River	Wyoming	Tight gas sands	—	0.7
7	Southern Piceance gas area	Piceance	Colorado	Tight gas sands and coalbed methane	<0.05	0.7
8	Carthage	East Texas	Texas	Tight gas sands	0.6	0.6
10	Wattenberg basin	Denver	Colorado	Tight gas sands	0.2	0.5
12	Antrim	Michigan	Michigan	Gas shale	0.2	0.5

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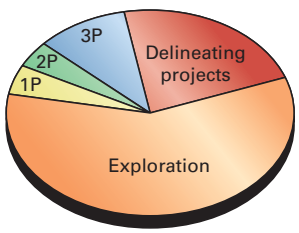
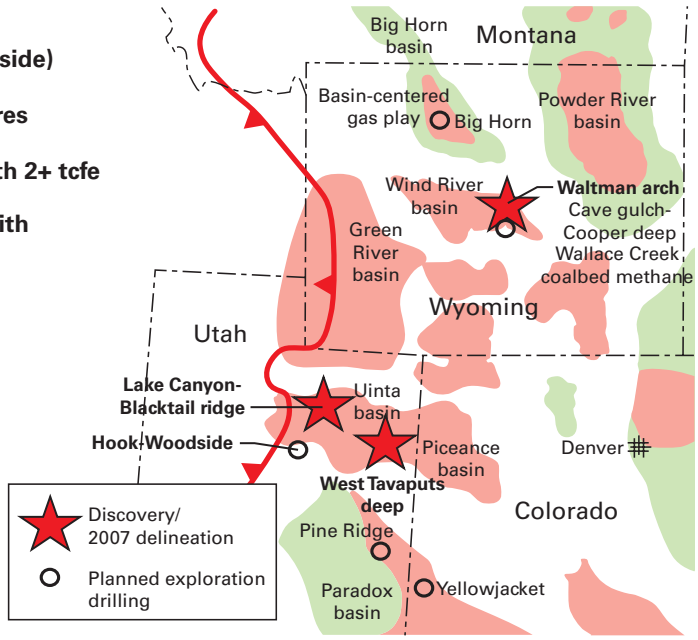
8-9 tcfe unrisked potential



Source: Bill Barrett Corp., 2007

Fig. 5



EIA'S UNCONVENTIONAL GAS PRODUCTION OUTLOOK

Table 2

Outlook year	2000	2001	2002	2003	2004	2005
	Projected and actual unconventional gas production, tcf					
1996	2.3	2.3	2.3	2.4	2.5	2.6
1997	3.0	2.9	3.1	3.2	3.3	3.3
1998	3.5	3.6	3.6	3.6	3.6	3.7
1999	3.8	3.9	3.9	3.9	3.8	3.9
2000	4.8	4.7	4.8	4.9	4.9	4.9
2001	4.7	4.8	5.0	5.3	5.4	5.6
2002	4.6	4.9	4.9	5.6	5.7	5.8
2003	*5.2	5.4	5.6	6.1	6.3	6.3
2004		*5.6	5.9	6.2	6.1	6.2
2005			*6.5	6.6	7.0	7.3
2006				*6.8	7.5	7.5
2007					*7.5	*8.0

*Actual unconventional gas production.

cording to company officials, "ultimately could yield about 35 tcf."

Shell has under active development the tight gas sands at the Pinedale anticline in the Green River basin of Wyoming, already the fourth largest US natural gas field, with expectations of producing 0.5 bcfd from this area.

BP PLC, with large land holdings in Wyoming and Colorado, recently announced a $4.6 billion, 15-year development program to increase production from unconventional gas areas.

Large independents are increasing their already substantial investments in unconventional gas.

For EnCana Corp., North America's second largest natural gas producer, has a growth strategy centered on unconventional gas resource plays, having already increased gas production from these key resource plays from 1.2 bcfd in 2002 to 2.7 bcfd, expected for 2007 (Fig. 3).

Anadarko Corp., North America's sixth largest natural gas producer, has identified 1,000 tcf of future natural gas potential in North America, with 70% being unconventional gas (Fig. 4).

XTO Corp. has built significant positions in key unconventional gas plays, including the acquisition of Dominion's tight sand and coalbed methane assets in the Rocky Mountain and South Texas regions. These actions have enabled XTO to increase its overall gas production from 0.5 bcfd in 2001 to an expected 1.8 bcfd in 2007. Tight gas accounts for 65%, gas shales for 17%, and coalbed methane for 10% of XTO's overall natural gas production.

Midsize and smaller independents are making unconventional gas their core strategy.

Bill Barrett Corp., formed in March 2002 after the sale of Barrett Resources to Williams Cos., has assembled a portfolio of unconventional gas and oil prospects with 8-10 tcf of unrisked exploration potential (Fig. 5). Barrett's exploration prospects include testing the basin-centered tight gas sand play in the Big Horn basin, a basin whose resource potential has yet to be assessed by the USGS.

Southwestern Energy Co. has assembled about 900,000 acres in the Fayetteville gas shale play of the

WELL PERFORMANCE, SAN JUAN TIGHT GAS SANDS

Table 3

	Pictured Cliffs	Mesaverde	Dakota
		bcf/well	
Pre-1980	0.94	3.14	1.99
1980-89	0.69	1.24	0.89
1990-95	0.99	1.15	1.03
1996-99	0.83	0.93	0.73
2000-05	0.51	0.86	0.58
Wells drilled	6,465	7,879	6,291
Cumulative recovery, bcf	4,272	11,495	6,389
Estimate ultimate recovery, bcf	5,700	15,300	8,200

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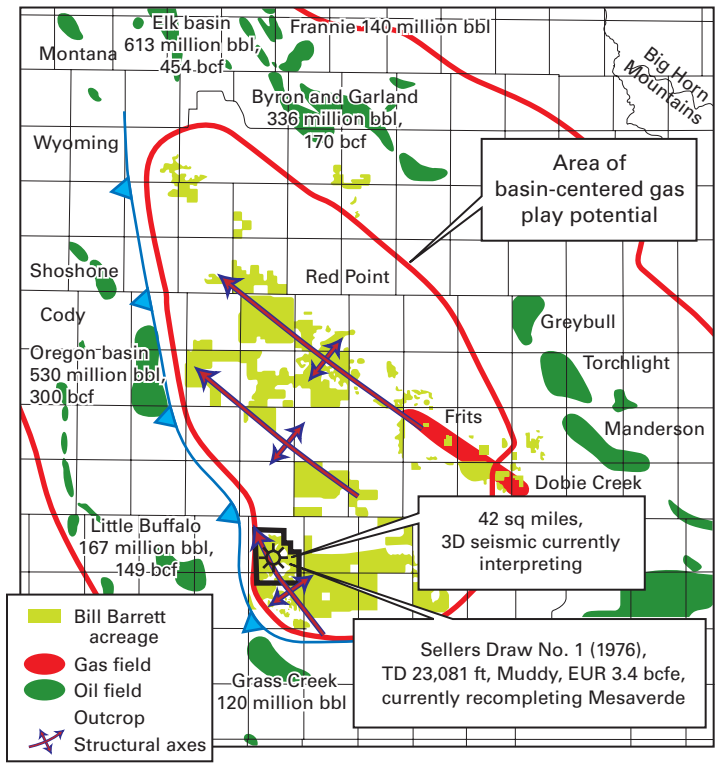
BIG HORN BASIN-CENTERED GAS PLAY

Fig. 6



Source: Bill Barrett Corp.

US GAS SHALE PLAYS

Fig. 7

Source: AAPG Explorer

Arkoma basin. According to company officials, assuming development of 50% of the acreage at 80-acre spacing and 1.4 bcf/well, the play has a potential for 11 tcf of gross ultimate gas recovery.

Newfield Exploration Co. has acquired 400,000 acres in the Woodford gas shales of the western Arkoma basin, holding an anticipated upside of 3-6 tcf unbooked net recoverable resources.

Remaining resource economics

Numerous energy analysts and producers have asked how much the sharp rise in well drilling and completion costs and the decline in well productivity (reserves per well) have harmed the economic viability of unconventional gas.

With at least a pause in the rise in well costs, the key concern is the steep recent declines in well productivity. The first article in this series (OGJ, Sept, 5, 2007, p. 35) discusses this topic in more detail. A look at the mature San Juan basin, which has already produced 22 tcf of tight gas, serves as the example and provides useful insights.

The 1990s had robust R&D and technology investment in unconventional gas and saw only modest declines in well productivity. As investment in unconventional gas R&D and technology were slashed in this decade, well productivity resumed its steep decline (Table 3).

The "silver lining" in this case study is that, with the persistent pursuit of efficiencies in well drilling and field operations, the unconventional gas industry has been able to continue to develop economically what would otherwise be marginally economic resources.

Based on our modeling and analyses, we find that, precluding a collapse in natural gas prices, unconventional gas can and will remain an economically viable or growing gas

play, assuming three steps are taken:

1. Investments in improved recovery technology to stabilize the decline in well productivity.
2. Geologic and reservoir knowledge of emerging unconventional gas plays is improved, enabling this resource to be more intensively developed.
3. New resource assessments uncover the many still overlooked unconventional gas plays and prospects.

Priority

If unconventional gas is to remain economically viable in light of increasingly difficult reservoir environments, reserves per well must improve. The question is what will it take to achieve this objective?

In the authors' view, as first priority, it will take major new investments in unconventional gas R&D and technology development, considerably beyond the levels of investments made so far in this decade. Imperfections exist in the R&D and technology investment marketplace, as set forth in the recent Congressional Budget Office (CBO) report.[1] Overcoming these market imperfections will require a pooling of R&D investment resources and efforts, combined with effective transfer of technology.

Many insights and technologies being used to unlock unconventional gas were acquired from the extensive R&D and technology investments made by a partnership involving industry, the former Gas Research Institute, and the US Department of Energy in the 1990. These technologies included efficient multizone well completions for coalbed methane, hydraulic fracture mapping and diagnosis for tight gas sands, and horizontal wells for gas recovery from extremely low permeability gas shale.

With the formation of the new unconventional gas technology institute called RPSEA (Research Partnership for Securing Energy for America), there is a promise that the next decade should see similar accomplishments.

With improved technology, it will also become more feasible to pursue the second priority for unconventional gas—intensive resource development.

The intense infill development of the lenticular Mesaverde tight gas sands of the southern portion of the Piceance basin at Rulison field provides a most instructive case study.[2] One section in this field (Section 20, T6S R94W) has been progressively downspaced from its initial 160 acres/well to the current 10 acres/well. As a result, this one section now will contribute 110 bcf of recoverable resource rather than only 8 bcf under the initial well spacing, as discussed in the second article in this series (OGJ, Sept. 17, 2007, p. 64).

The intensive vertical development of the Lance tight-gas formation in the northwestern portion of the Greater Green River basin at Jonah field provides a second instructive case study. Here the combination of more precise pay selection and intensive completion (often involving 20 or more frac stages and pay zones) now provide 5-10 bcf/well, up from 1-2 bcf/well with previous completion practices.

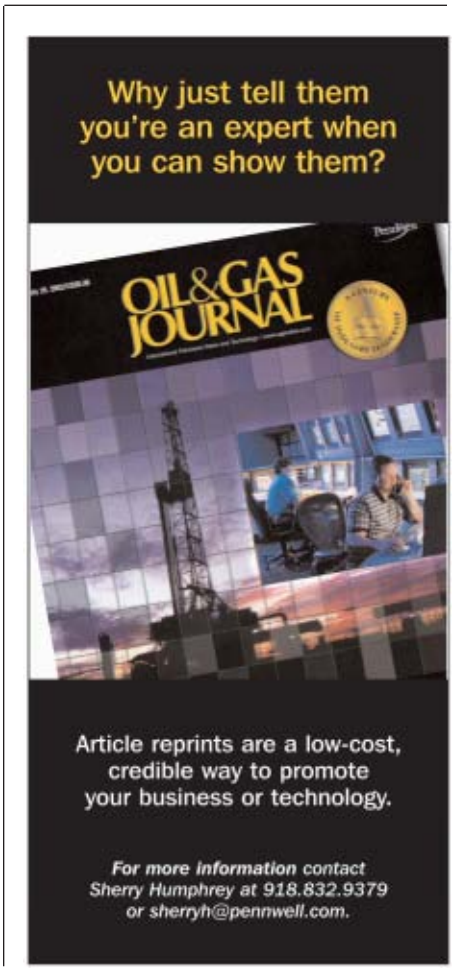
Third, the future of unconventional gas will rest on the successful pursuit of new, previously overlooked basins and plays, such as the tight-gas reservoir in the Columbia and Big Horn basins, (Fig. 6), and the numerous emerging gas-shale plays of the Mid-Continent, West Texas, and the Rockies (Fig. 7).

Massive resources also exist in the deep, high rank, coalbed methane in the Piceance, Uinta, and Greater Green River basins and shallow, lower rank, coalbed methane along the Gulf Coast. Again, economically unlocking these unconventional gas resources will require advances in technology.

Finally, the efficient and environmentally prudent development of unconventional gas will require supportive regulatory frameworks and public policies, particularly with respect to resource access and environmental stewardship. Industry and government will need to continue to collaborate to ensure that this critically important domestic resource can be developed, while also ensuring that the environment and other public interests are appropriately protected. ✦

References

1. "Evaluating the Role of Prices and R&D in Reducing Carbon Dioxide Emissions," US Congressional Budget Office, September 2006.
2. Kuuskraa, V.A., and Ammer, J., "Tight Gas Sands Development—How to Dramatically Improve Recovery Efficiency," GasTIPS, Winter 2004.
3. "US Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2005 Annual Report," US DOE, Energy Information Administration, DOE/EIA-0216(2005), November 2006.



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Baljit Singh, RepsolYPF

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Production Optimization Through Integrated Production Modeling

Usha Pakala, ONGC, India

The interdependence of diverse technologies on one another and on production behavior is important for optimizing production. Integrated production modeling brings together all individual technologies. This presentation describes the applications of this technology in areas of flow assurance, adequacy checks, production gain through back-pressure reduction, etc. by ONGC.

Applying the Technology and Lessons Learned from Deep Water Field Developments in West Africa to Projects Offshore Asia

Ian Frazer, Acergy

This presentation will explore the potential for transferring and applying the technology employed in West Africa to the new deep water frontier areas offshore Asia. The technology and field development solution will be highlighted together with the potential to provide solutions field developments offshore Asia.

Application of MPD to Reduce Drilling Cost Excesses

Ken Muir, Weatherford Asia Pacific Pte Ltd, Singapore

This presentation looks at the application of MPD technology to the offshore industry, the equipment, the procedures and the practical application of MPD to reduce unnecessary drilling cost overruns.

Kikeh: Deepwater Technology Lessons Learned

TBD, Petronas

The Kikeh field development resulted in a number of "firsts" and new technology applications. This presentation summarizes the results of the entire field development cycle, focusing on lessons learned and "what went wrong and how did you fix it."

Simultaneous Operations at Baronia Gas Compression platforms during Main Trunkline Repair

Muhd Amirulnizam Bin Ahmad, Petronas Carigali Sdn. Bhd

A main trunkline to shore from the Baronia field, located offshore Sarawak Malaysia was found defective. The field was producing 20,000 b/d and gas sales amounted to 140 MMscfd. It was decided to do the repair with minimum gas export instead of total shutdown. This paper discusses the challenges and solutions, including how to contain condensate from gas wells and subsea pipelines, as the surge vessels were insufficient to contain the liquid.

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US gasoline supply deficit to more than halve by 2010

Aileen Jamieson
Linda Giesecke
Wood Mackenzie
Edinburgh

The US gasoline supply deficit has grown considerably in recent years because demand growth has outpaced refinery output. The recent flurry of refinery expansion and upgrade projects, however, in addition to regulations that will increase ethanol consumption, will reverse this trend before the end of the decade.

We expect the refinery supply deficit of gasoline to remain broadly constant in the short term at just more than 50 million tonnes; however, the addition of ethanol significantly reduces the balance. In 2006, ethanol use of 16 million tonnes reduced the total gasoline deficit to about 40 million tonnes.

We forecast ethanol's contribution to grow rapidly during 2006-10, increasing about 20 million tonnes. This additional supply more than halves the 2010 gasoline deficit to only 16 million tonnes. This means that less than 4% of gasoline demand must be met with imports by 2010 vs. almost 10% currently.

Beyond 2010, because of slower demand growth and continually increasing crude processing due to refinery capacity expansions, capacity creep, and slightly higher utilization rates, the deficit reduces further. Our forecast shows the US moving to balanced gasoline by 2020 (Fig. 1).

Slower gasoline growth

Gasoline is the single most important oil product in the US, accounting for more than 40% of total demand. Demand has grown at 1.6%/year during the past decade due to increased car ownership and travel, whereas vehicle fleet efficiency has changed very little.

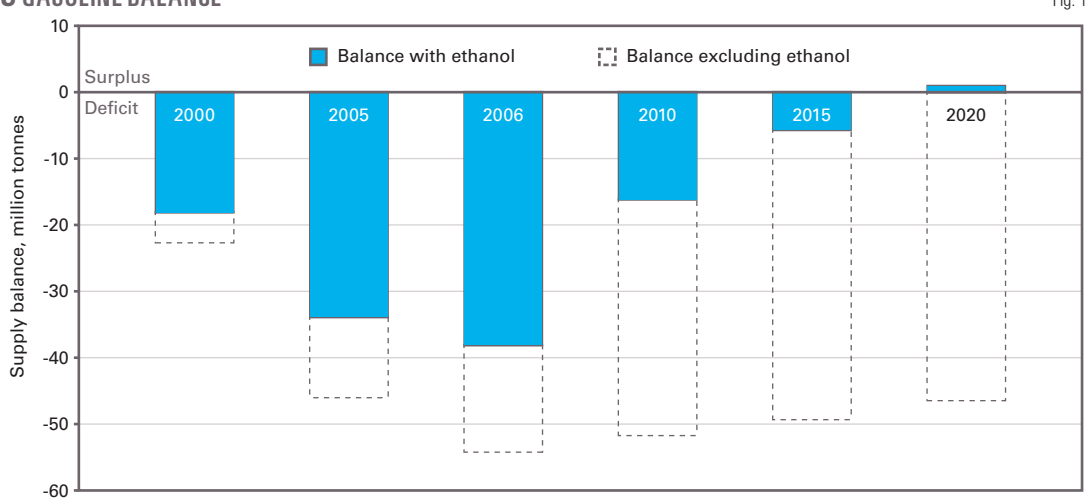
Growth has fluctuated, depending on the state of the economy and changes in pump prices; in 2002, demand grew nearly 3%, whereas in 2005, the increase was as little as 0.6%. Demand will grow at 1%/year through 2010, with growth subsequently slowing and eventually stagnating by yearend 2020.

The amount of ethanol blended into the US gasoline pool has risen sharply during the last 5 years, particularly since the phaseout of methyl tertiary butyl ether in 2006. The amount of ethanol blended will likely reach 18.5 million tonnes (6.1 billion gal) in 2007, almost three times the amount used in 2002. This is beyond the level dictated by the Renewable Fuels Standard (RFS) passed in 2005, which requires 4.7 billion gal of renewable fuels by this 2007.

Ethanol demand should continue to

US GASOLINE BALANCE

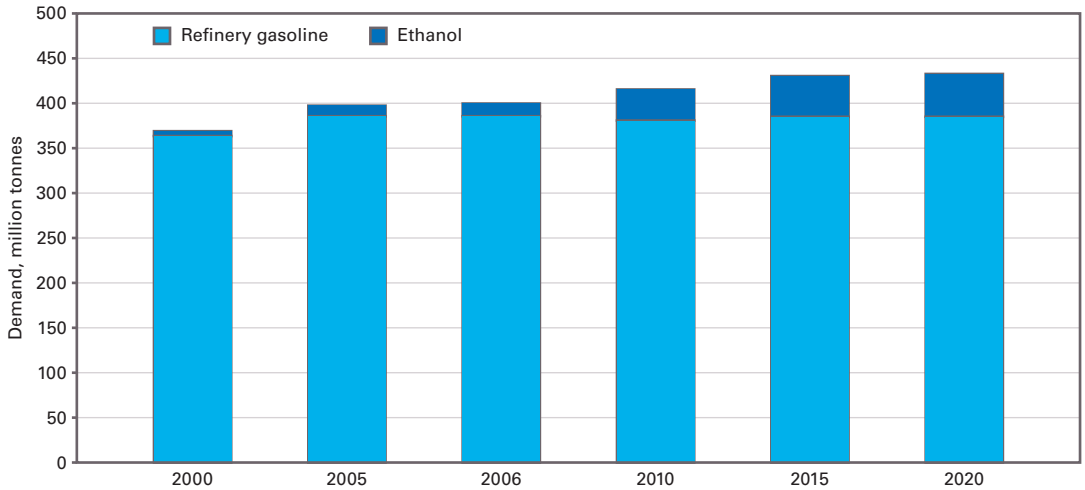
Fig. 1



expand quickly through 2010. Although the rate of growth should slow next decade, ethanol demand will reach 47 million tonnes (close to 16 billion gal) by 2020. This will represent roughly 10% of gasoline demand by then (Fig. 2).

GASOLINE DEMAND FORECAST

Fig. 2



Total gasoline demand growth will continue to be a result of ownership levels and efficiency improvements in the long-term and, in the shorter-term, pump prices. US car ownership will grow to nearly 820 cars/1,000 people in 2020 from 786 cars/1,000 people in 2006. With a growing US population, the total number of cars will increase to 275 million in 2020 from 235 million today.

Much of the incremental growth during the past 20 years has been in sales of light trucks (sport utility vehicles, multipurpose vehicles, and pickups), which have more relaxed mandatory fuel-efficiency standards than cars. Recent high pump prices, however, have brought fuel economy into focus once more and sales of these larger vehicles have faltered.

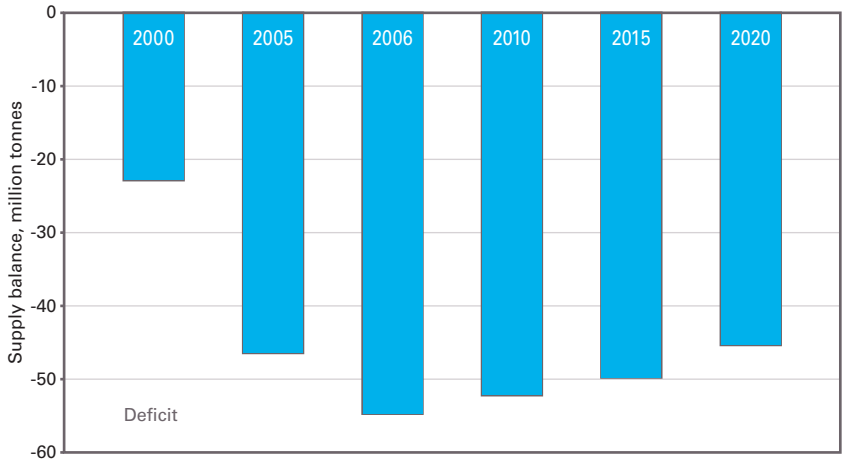
Nevertheless, the light-truck sector will continue to account for higher growth in the vehicle fleet—although the fuel economy of the fleet will improve. Some of this improvement will be mandated; the light truck fuel-efficiency standard, which remained unchanged at 20.7 mpg for model years 1996-2004, has been progressively increased and will average 24 mpg by model year 2011 based on the National Highway Traffic Safety Administration's new rulemaking from 2006.

Hybrid sales will also account for some of the efficiency gains because sales are increasing, despite disappointing efficiency gains outside of city use.

Continuing growth in vehicle miles traveled, however, will offset much of the improvement in vehicle efficiency. Travel by all vehicles in the US has increased at about 2.25%/year during the past 15 years. Although the rate will slow in the long term, it will still rise at 1.3%/year through 2020.

REFINERY GASOLINE SUPPLY DEFICIT*

Fig. 3



*Includes planned refinery investment up to 2013. Refinery supply includes MTBE before 2006, but does not include ethanol.

We therefore forecast total gasoline demand to grow to 432 million tonnes by 2020 from 400 million tonnes in 2006. Due to increased ethanol consumption, however, demand for refinery gasoline will remain static at around today's level of 385 million tonnes during the next 15 years.

Higher gasoline production

Refinery production of gasoline will grow by 40 million tonnes 2006-20 due to the combined effects of slightly increased refinery utilization rates, additional crude and upgrading capacity from planned projects, and the effect of capacity creep.

Utilization rates will increase by 2010 from the low rates seen in 2005 and 2006 (due to refinery shutdowns and maintenance caused by Hurricanes Katrina and Rita, and one-time events such as the BP Texas refinery explosion) but will not be at their maximum due to a number of project tie-ins that year. From 2010 onwards, we expect that utilization rates may increase further but we do not believe that they will exceed the levels in 2004, which were 93%. An increased safety and reliability focus in refinery processing, in addition to the processing to tighter-quality specifications, is unlikely to allow rates to rise higher than this.

We forecast total additional crude capacity (currently planned and we believe to be realistic) to be about 0.94 million b/d by 2013, of which around 500,000 b/d will be on stream by 2010. Some small expansions will add about 435,000 b/d of crude capacity to existing sites. Two major crude expansion projects are the 180,000-b/d expansion at Marathon Oil Corp.'s Garyville, Ind., refinery, expected to start up in 2010 and the 325,000-b/d expansion of Motiva's Port Arthur, Tex., refinery, which we have assumed will be completed in 2011.

Due to the large number of expansion projects, we do not believe creep will have much effect in the short to medium term; therefore, the majority of creep will increase capacity in the 2012-20 period in which projects have not yet been planned.

Refinery supply growth

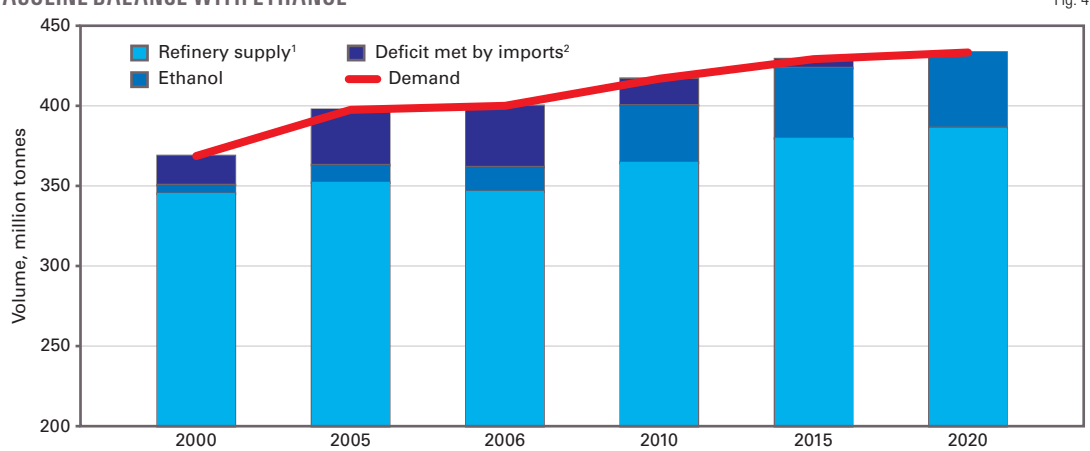
The deficit in the refinery supply of gasoline has grown considerably in recent years, increasing to 55 million tonnes in 2006 from 23 million tonnes in 2000. We expect the deficit, however, to start to decline gradually because increases in crude and upgrading capacity will grow refinery supply at a slightly faster rate than demand growth.

The deficit will fall to 45 million tonnes by 2020 (Fig. 3). This is before accounting for the effects of ethanol.

Although Fig. 3 highlights the total US (including the US territories) as deficit gasoline, there are regional differences. Petroleum Administration for Defense District (PADD) I has the largest deficit (refinery supply vs. demand of more than 80 million tonnes in 2006) and PADD III is 80 million tonnes in surplus.

GASOLINE BALANCE WITH ETHANOL

Fig. 4



¹Refinery supply includes planned refinery investment up to 2013 and also MTBE before 2006. ²Imports are net imports of finished gasoline not including gasoline feedstocks or blending components that feed into the refinery supply.

PADD II's deficit is currently around 40 million tonnes, and PADD IV is balanced. PADD V is slightly in deficit. PADD III is therefore a major supplier of gasoline to PADD I, and also sends product to PADDs II and V.

Although the total US refinery supply deficit gradually declines, the deficit in PADD I will increase to 90 million tonnes by 2020. PADD III's surplus will grow to more than 100 million tonnes. The remaining PADDs stay similar to current levels. This is due to significant investment being planned in PADD III, vs. very little planned in PADD I.

RENEWABLE FUEL STANDARD

Table 1

Year	Current / Proposed — Renewable fuel requirement, billion gal
2007	4.7
2008	5.4
2009	6.1
2010	6.8
2011	7.4
2012	7.5
2013	After 2012, legislation required that the future use of renewable fuels was no less than the percentage of gasoline consumption that the 7.5 billion gal represented in 2012.
2014	From 2013, the renewables mandate should include at least 250 million gal of ethanol derived from cellulosic biomass or waste.
2015	

Proposed
—
8.5
10.5
12.0
12.6
13.2
13.8
14.4
15.0

More ethanol on the way?

RFS currently requires 6.8 billion gal of renewable fuels by 2010 and 7.5 billion gal by 2012 (Table 1). There appears to be strong political support for increasing the RFS. A bill passed the Senate on June 21, 2007, which contained a substantially increased RFS.

Due to recent growth in ethanol consumption more than the required levels and additional ethanol capacity coming on stream in the US, we forecast that ethanol consumption will more than double during the next 4 years to 36 million tonnes (12 billion gal) in 2010. Although the rate of growth will slow in the next decade, ethanol demand will still reach 47 million tonnes (close to 16 billion gal) by 2020 (Fig. 4).

Adding ethanol to the refinery supply of gasoline reduces significantly the gasoline deficit. Currently there is a total supply deficit of 39 million tonnes; ethanol use of 16 million tonnes partially offsets the refinery supply deficit of 55 million tonnes.

We forecast ethanol consumption to grow rapidly between 2006 and 2010, increasing by about 20 million tonnes. In addition, slower overall gasoline demand growth and increased crude processing from refinery capacity expansions means that the refinery supply deficit reduces slightly. The overall supply deficit will therefore fall to 16 million tonnes by 2010.

Our forecast shows the US moving to balanced gasoline by 2020 if ethanol consumption matches the expected growth. ✦

The authors

Aileen Jamieson (energy@woodmac.com) is research manager—global products outlook for Wood Mackenzie, Edinburgh. She joined Wood Mackenzie's downstream consulting team in 2001, specializing in crude quality, refining, and oil product supply. Jamieson has been involved in detailed analyses of refining and forecasts oil product supply-demand balances for Europe, US, and Asia-Pacific. Before joining Wood Mackenzie, she worked for ExxonMobil Corp. for 5 years in both technical and commercial roles. Jamieson holds a BEng (1996) in chemical engineering from Edinburgh University.

Linda Giesecke is a senior analyst for oils research at Wood Mackenzie, Boston. She joined Wood Mackenzie in May 2007 and focuses on oil product demand in the Americas. Before joining Wood Mackenzie, she worked for Energy Security Analysis Inc. for 6 years, where she was involved in analyzing the oil product markets of the Atlantic basin. She has also worked in economic consulting, primarily for antitrust matters and damages estimation. Giesecke holds a BA from Lafayette College, Pa., and an economics degree (Diplom) from the University of Mannheim, Germany.

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PIPELINE INSPECTION—Conclusion

Corrosivity modeling helps determine current condition

Kirsten Oliver
Gareth John
CAPCIS Ltd.
Manchester, UK

Modeling the corrosivity of liquids transported over the life of a pipeline can determine the current condition of pipelines in which in-line inspection is not possible. Such modeling also allows development of a risk-based approach to extending asset life.

The first part of this two-article series (OGJ, Nov. 5, 2007, p. 92) described the parameters of the risk-based approach and presented the first of two case studies in which use of uncertainty modeling helped assess a pipeline's current condition.

This second, concluding, article presents the second case study.

North Sea case

A North Sea operator with an extensive subsea pipeline network experienced difficulty in performing inline inspection in many of its pipelines. Proper integrity management, however, required system-wide assurance of integrity.

While the operator routinely collects inspection data from related lines that

are accessible (for example when a section of the pipeline crosses the topside process systems or onshore process facilities), this does not on its own provide confidence in the condition of the subsea section of the pipelines and therefore does not satisfy corporate requirements for the assurance of the integrity of each of the pipelines. The operator therefore decided to carry out a comprehensive assessment of all pipelines using the statistical modeling-based approach.

Using this approach to develop a written scheme for examination (WSE) for each pipeline provides an auditable trail and clearly identifies corrosion threats and mitigation measures.

The ages of the pipelines in the network vary considerably, and they carry a variety of substances, from dry gas to wet oil to methanol. Consistently assessing the integrity of each pipeline establishes an overall picture of asset condition across the network.

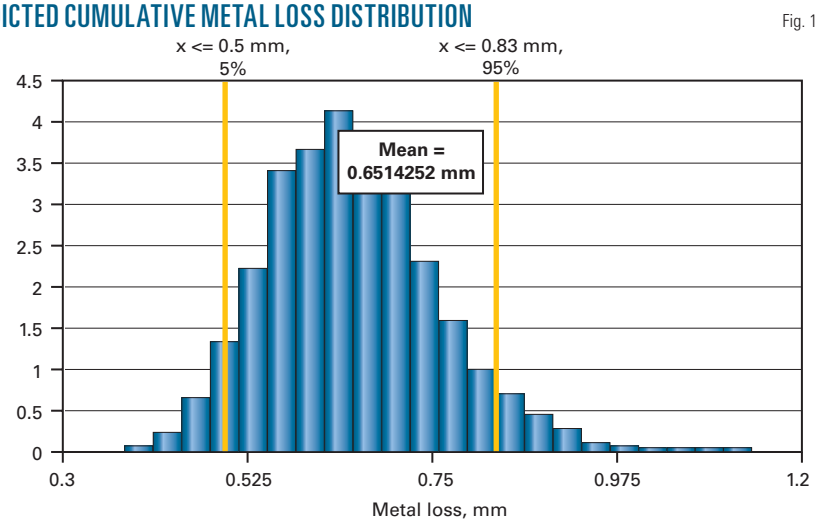
This case study demonstrates the process of developing a WSE for one of the operator's gas pipelines.

Data collection

Considering the historic operating condition of each pipeline provides an estimate of its likely cumulative corro-

Based on presentation to the NACE Corrosion 2007 Conference, Nashville, Mar. 11-15, 2007.

PREDICTED CUMULATIVE METAL LOSS DISTRIBUTION Fig. 1



sion profile. Older pipelines often have little (if any) operating data available, with much of what does exist held by inaccessible legacy data systems. The quality of the data is also often poor.

Uncertainty modeling approach in this example captures tacit knowledge and embeds it in a software system that can be updated annually.

Extensive data collection and interpretation took place. Discussions with the operator, review of production profiles for each offshore asset, and review of design and operating data for appropriate reservoirs allowed reasonable estimation of the following key corrosion-related input parameters:

- Operating conditions (temperature, pressure, and flow rates).
- Reservoir parameters (CO_2 content and water cut).
- Reservoir water chemistry (bicarbonate and total dissolved solids).
- Chemical injection philosophy (estimates against target levels).
- Pigging philosophy (estimates against target levels).
- Pipeline physical parameters (e.g. design code, material of construction, nominal wall thickness, original corrosion allowance, etc.).

Each of the input parameters for each of the defined operating periods then receives a range of credible values. The data collected and national production statistics for the region allow identification of major operating changes in the pipeline life, including the tie-in of new wells and reservoirs.

Cumulative assessment

The semi-qualitative pipeline corrosion risk assessment model enables assessment of CO_2 corrosion, microbial-induced corrosion, and oxygen corrosion in accordance with standard industry practice. The model combines the Norsok CO_2 corrosion model,[1] the Shell Global Solutions MIC model,[2] and the Berger and Hau oxygen model[3] into corrosion-rate equations to enable a cumulative assessment and computation of a pipeline's likely degradation. Assessing the number of "wet days" based on an analysis of routinely monitored process parameters (e.g. dew point) allows assessment for nominally dry gas pipelines.

The model again uses a Monte Carlo simulation to take a range of input data through the oxygen, carbon dioxide, and microbial influenced corrosion modules (as applicable) to calculate corrosion-rate ranges. In this case, the @Risk analysis package performed the calculations and analysis.

The operator may use gathered data to subdivide pipeline historical operating conditions into as many time periods as required to capture significant changes in pipeline operations. Summing the predicted metal loss for each historical period provides an estimate of the distribution total metal loss to date. The corrosion-rate range calculated for the final time period, in combination with the metal already lost, predicts a probability profile that defines pipeline time-to-failure based on the minimum allowable wall thickness provided by the integrity assessment.

Relevant parameters considered for the gas line include:

- Gas flow rate.
- Water rate.
- CO_2 content.
- Pipeline pressure.
- Pipeline temperature.
- Bicarbonate content.
- TDS.
- Fluid shear stress.
- Glycol content.
- Sulfate content.
- Extent of prolonged oxygen ingress (> 50 ppb).
- Use of biocide and number of days wet.

In the first 10 years of operation, the gas flow rate remained reasonably constant at an average of 221 MMcfd, ranging between 107 and 351 MMcfd. It then dropped to an average of 52 MMcfd, (22-76 MMcfd) after 20 years.

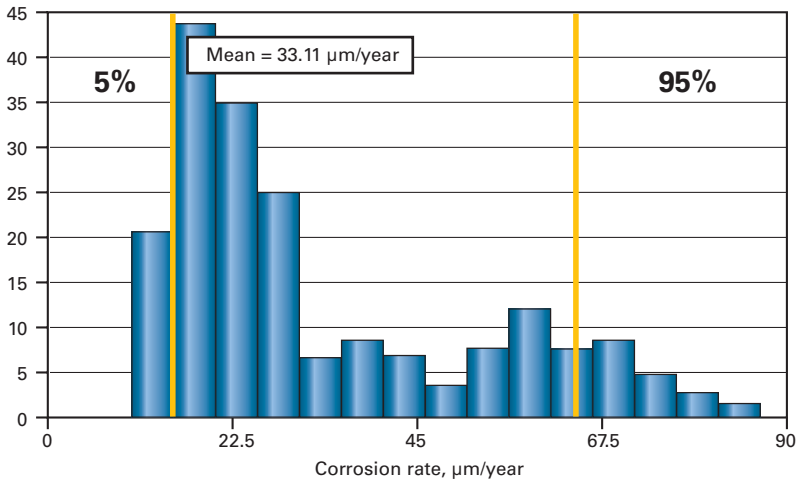
During this period the produced-water rate, CO_2 content, pipeline pressure, and temperature remained essentially constant, varying to the same degree. But the TDS, shear stress, glycol content, and sulfate levels increased with time. Days wet stayed the same at about 10%.

Putting parameter distributions into the three separate corrosion rate models (CO_2, MIC, and O_2) for each operating period allowed an estimate of the cumulative metal loss distribution to date, as well as the current corrosion-rate distribution for the line (Figs. 1-2).

Comparing these to nominal wall thickness and minimum allowable wall thickness (in accordance with the relevant pipeline design code) allows prediction of the remaining life of the pipeline (Fig. 3).

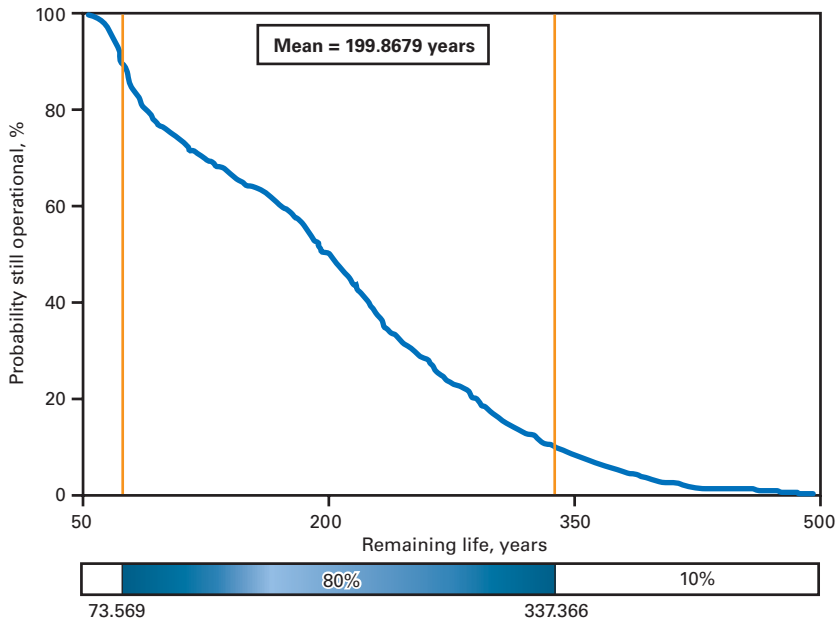
ESTIMATED CORROSION RATE DISTRIBUTION

Fig. 2



CUMULATIVE REMAINING LIFE DISTRIBUTION

Fig. 3



WSE

The written scheme of examination presents the critical input parameters, result of risk assessment, and inspection and monitoring requirements in a straightforward manner.

Updating operating-period input parameters and re-running statistical analysis allows the WSE to be updated annually, providing a record of the risk-based corrosion assessment and keeping an electronic record of operating conditions in addition to generating the formal operating record of the WSE itself.

Another valuable aspect of the WSE is the "tornado plot," which presents the parameters that most affect the overall result, in this case temperature and glycol content. The plot allows the engineer to determine either which missing data is most important or which parameter is most critical to keep under control.

Data validation

A reality check of predicted data with regards to the condition of the line is an important part of overall pipeline assessment. Where an ILI has been carried out this occurs as a like-for-like comparison of measured vs. predicted metal loss distributions.

Where ILI, however, is not possible (and since lack of ILI data is one of the main drivers for this approach, this is often the case) then comparison of what little information is available can determine the overall credibility of the approach.

The case history presented here describes a nominally dry gas export subsea pipeline. Despite the dry status of the line, however, about 12 cu m/year of water and glycol are carried over from the dehydration system. Inspection of the export riser on the gas platform in 2002 and 2003 predicted metal loss after 20 years of between 0.8 and 1.5 mm. This compares with the model average for the pipelines (which operate at a lower temperature than the riser) of 0.65 mm (range 0.38-1.14 mm).

Liquids carried over from the dehydration process contain up to 80% glycol. The extremely low water content of the line yields a corrosion rate similar to condensation water, with a factor of 0.1 applied.[4]

Corrosion monitoring at the onshore reception facilities and offshore platform export line show an average metal loss of 0.027 mm/year and 0.001 mm/year, respectively. This compares with a current average calculated value of 0.028 mm/year, range 0.02-0.07 mm/year (Fig. 2).

Such monitoring results show the overall pipeline corrosion assessment model to be in good agreement with the limited practical data available and a reasonable assessment of overall pipeline condition. The projected remaining life of 99.99% at 49 years, 99.9% at 54 years and 90% for 75 years, is considered reliable based on current operating conditions. ✦

References

1. Norsok M-506, "CO_2 Corrosion Rate Calculation Model," Norwegian Technology Standards Institution, 2005.

2. Pots, B.F.M, et al., "Improvements on de Waard-Milliams Corrosion Prediction and Applications to Corrosion Management," NACE Corrosion 2002, Denver, Apr. 7-12, 2002.

3. Berger, F.P., and Hau, K., "Mass transfer in turbulent pipe flow measured by the electrochemical method," International Journal of Heat and Mass Transfer, Vol. 20, No. 11, pp. 1185-94, November 1977.

4. Smith, L., and de Waard, K., "Corrosion Prediction and Materials Selection for Oil and Gas Producing Environments," 16th International Corrosion Congress, Beijing, Sept. 19-24, 2005.

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Equipment/Software/Literature

New laser technology gives fast moisture detection

New water moisture and carbon dioxide analyzer technology is available that uses tunable laser diode (TDL) spectroscopy to provide accurate and virtually instantaneous measurements of trace gas amounts of H_2O or CO_2 in the LNG liquefaction process.

By its nature, the TDL based gas detection method is not susceptible to aging affects, making its factory calibration a timeless constant, the company points out. The result is a low maintenance analyzer that does not require consumables or scheduled calibration.

The system consists of a cell that the sample gas flows through, a tunable laser diode that emits a specific wavelength of light through the gas, an optical detector, and software to analyze and output the results.

The technology, which the firms says is considered a new standard in natural gas measurement, is fast, and the results are reliable. Changes in gas concentrations during dehydration can be seen immediately, without the wet-up and dry-down delays that occur with traditional moisture analyzers, the company says. Furthermore, this TDL sensor does not become desensitized or drift over time.

Source: **SpectraSensors Inc.,** 11027 Arrow Rte., Rancho Cucamonga, CA 91730.

Underwater visualization software

DeepView 2.0, which is a subsea visualization software, and DeepLive real-time data capture module are newly launched items for industry use.

DeepView 2.0 is an advanced visualization and animation tool for creating subsea scenarios that allow multiple concurrent views of an operation with full data recording and replay in 3D.

DeepLive is a supplementary data input module for DeepView and the forthcoming release of DeepSim 2.0. DeepLive accepts GPS and USBL data inputs to show the position—in a 3D visualization—of subsea objects such as a vessel and its ROV or a pipe-lay barge and its anchor lines.

Source: **General Robotics Ltd.,** 7 Walker Ave., Wolverton Mill East, Milton Keynes, MK12 5TW, UK.

Services/Suppliers

Technip

Paris, has announced the appointment of Bernard di Tullio as president and chief operating officer. Di Tullio, who joined Technip in 1975, most recently served as president of the Oil and Gas Div.

The company also announced creation of geographical business units supported by global product lines. To enhance the focus on subsea, a global subsea management team has also been created. The regions, products lines, and global subsea team all report directly to the COO.

Technip is among the world's largest providers of oil, gas, and petrochemical engineering, construction, and services. In support of its activities, the group manufactures flexible pipes and umbilicals, and builds offshore platforms.

Schlumberger

Houston, has announced formation of a joint venture with High Arctic Energy Services Inc. to provide underbalanced drilling services and managed pressure drilling services to the worldwide upstream oil and gas industry. Initially, the joint venture will provide these services for projects managed by Schlumberger's Integrated Product Management group.

High Arctic Energy Services Inc., based in Red Deer, Alta., currently has operations in western Canada, the Middle East, North Africa, and Asia.

Schlumberger is a leading supplier of products and services ranging from seismic acquisition and processing, formation evaluation, well testing, directional drilling, well cementing and stimulation, artificial lift, well completions, and consulting, software, and information management.

Mustang Engineering

Houston, has appointed Lowell Wiles as director of construction operations. Wiles has more than 30 years of experience in the engineering and construction industry, most recently with Fluor Corp.

Mustang Engineering is an independent services provider to the global oil, gas, chemical, and manufacturing industries. The company specializes in design, engineering, procurement, project management, and construction management.

BJ Services Co.

Aberdeen, has announced the appointment of Jan Frieling as Libya country manager for the Well Services Div. within the Europe-Africa region. Before joining BJ in 2002, Frieling worked for 18 years for a major UK-based service company.

BJ Services Co. is a leading global provider of pressure pumping and related oil field services.

Granherne Ltd.

Leatherhead, Surrey, UK, has appointed Geeta Thakorlal as general manager for its Leatherhead operations. Thakorlal has been with Granherne for 11 years, most recently as manager of the risk, safety, and environment group. She earned a chemical engineering degree from the University of Auckland, New Zealand.

Granherne Ltd., a subsidiary of KBR, is a global engineering consultancy, specializing in the hydrocarbon and energy industries.

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	Districts 1-4 11-2 2007	Districts 1-4 10-26 2007	District 5 11-2 2007	District 5 10-26 2007	Total US 11-2 2007	Total US 10-26 2007	Total US *11-3 2006
	1,000 b/d						
Total motor gasoline	1,063	1,233	68	5	1,131	1,238	991
Mo. gas. blending comp.	591	611	20	—	611	611	484
Distillate	259	325	11	—	270	325	224
Residual	309	235	75	—	384	235	232
Jet fuel-kerosine	101	86	90	88	191	174	186
Propane-propylene	136	212	24	4	160	216	219
Other	824	897	96	31	920	928	574
Total products	**3,283**	**3,599**	**384**	**128**	**3,667**	**3,727**	**2,910**
Total crude	**8,954**	**8,080**	**702**	**1,301**	**9,656**	**9,381**	**9,787**
Total imports	**12,237**	**11,679**	**1,086**	**1,429**	**13,323**	**13,108**	**12,697**

*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

	*11-9-07	*11-10-06	Change	Change, %
	$/bbl			
SPOT PRICES				
Product value	104.90	67.31	37.59	55.8
Brent crude	93.56	59.83	33.73	56.4
Crack spread	11.34	7.48	3.86	51.7
FUTURES MARKET PRICES				
One month				
Product value	104.90	68.18	36.71	53.8
Light sweet crude	95.77	59.91	35.86	59.8
Crack spread	9.13	8.28	0.85	10.3
Six month				
Product value	106.08	76.93	29.15	37.9
Light sweet crude	91.69	65.06	26.63	40.9
Crack spread	14.39	11.87	2.52	21.3

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

Purvin & Gertz LNG netbacks—Nov. 9, 2007

Receiving terminal	Liquefaction plant: Algeria	Malaysia	Nigeria	Austr. NW Shelf	Qatar	Trinidad
	$/MMbtu					
Barcelona	6.70	5.04	6.39	4.93	5.70	6.36
Everett	6.34	4.02	5.91	4.09	4.67	6.68
Isle of Grain	9.24	6.79	8.69	6.67	7.48	8.57
Lake Charles	5.09	3.08	4.81	3.22	3.46	5.79
Sodegaura	5.11	7.56	5.30	7.13	6.38	4.49
Zeebrugge	6.73	4.49	6.10	4.38	5.13	6.13

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: Total	Motor gasoline: Blending comp.[1]	Jet fuel, kerosine	Fuel oils: Distillate	Fuel oils: Residual	Propane-propylene
	1,000 bbl						
PADD 1	16,638	49,459	23,117	10,685	61,132	14,455	5,400
PADD 2	61,753	47,282	15,118	7,302	28,701	1,386	23,020
PADD 3	163,962	63,421	28,094	13,703	31,346	16,690	30,356
PADD 4	15,849	5,497	1,564	496	2,344	354	[1]2,933
PADD 5	53,660	28,654	21,879	9,319	11,854	5,586	—
Nov. 2, 2007	**311,862**	**194,313**	**89,772**	**41,505**	**135,377**	**38,471**	**61,709**
Oct. 26, 2007	**312,683**	**195,132**	**89,980**	**41,543**	**135,279**	**36,958**	**61,931**
Nov. 3, 2006[2]	**334,690**	**204,033**	**92,855**	**42,226**	**138,583**	**41,941**	**71,464**

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

Refinery report—Nov. 2, 2007

District	Refinery operations: Gross inputs	Refinery operations: Crude oil inputs	Refinery output: Total motor gasoline	Refinery output: Jet fuel, kerosine	Refinery output: Fuel oils: Distillate	Refinery output: Fuel oils: Residual	Refinery output: Propane-propylene
	1,000 b/d		1,000 b/d				
1,422	1,422	1,428	1,730	95	463	116	83
PADD 2	3,120	3,099	2,056	183	945	69	200
PADD 3	7,302	7,211	3,234	772	2,027	284	775
PADD 4	501	504	239	19	139	11	[1]125
PADD 5	2,701	2,642	1,634	385	596	180	—
Nov. 2, 2007	**15,046**	**14,884**	**8,893**	**1,454**	**4,170**	**660**	**1,183**
Oct. 26, 2007	**15,034**	**14,927**	**8,917**	**1,407**	**4,115**	**687**	**1,096**
Nov. 3, 2006[2]	**15,326**	**15,153**	**8,730**	**1,447**	**4,005**	**619**	**1,040**
	17,448 operable capacity		**86.2% utilization rate**				

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

OGJ GASOLINE PRICES

	Price ex tax 11-7-07	Pump price* 11-7-07	Pump price 11-8-06
		¢/gal	
(Approx. prices for self-service unleaded gasoline)			
Atlanta	264.8	304.5	211.1
Baltimore	253.2	295.1	213.8
Boston	250.2	292.1	218.4
Buffalo	253.1	313.2	236.8
Miami	269.9	320.2	234.5
Newark	254.1	287.0	211.8
New York	241.0	301.1	232.4
Norfolk	250.5	288.1	209.7
Philadelphia	251.5	302.2	231.5
Pittsburgh	251.4	302.1	223.1
Wash., DC	264.7	303.1	227.1
PAD I avg.	255.0	300.8	222.8
Chicago	277.5	328.4	251.6
Cleveland	258.9	305.3	218.2
Des Moines	255.8	296.2	206.6
Detroit	266.1	315.3	225.9
Indianapolis	262.3	307.3	220.6
Kansas City	255.9	291.9	209.9
Louisville	266.4	303.3	214.9
Memphis	249.0	288.8	212.9
Milwaukee	259.0	310.3	230.4
Minn.-St. Paul	261.9	302.3	220.6
Oklahoma City	259.8	295.2	207.9
Omaha	257.3	303.7	222.6
St. Louis	249.5	285.5	215.2
Tulsa	253.9	289.3	208.2
Wichita	246.5	289.9	215.6
PAD II avg.	258.7	300.8	218.7
Albuquerque	264.0	300.4	217.8
Birmingham	257.0	295.7	212.9
Dallas-Fort Worth	250.8	289.2	211.2
Houston	247.1	285.5	207.9
Little Rock	253.9	294.1	212.6
New Orleans	251.1	289.5	214.2
San Antonio	247.4	285.8	210.2
PAD III avg.	253.1	291.5	212.4
Cheyenne	257.5	289.9	219.3
Denver	260.0	300.4	217.7
Salt Lake City	253.4	296.3	229.4
PAD IV avg.	257.0	295.5	222.1
Los Angeles	268.4	326.9	248.6
Phoenix	250.5	287.9	227.7
Portland	269.5	312.8	250.3
San Diego	278.4	336.9	254.1
San Francisco	293.9	352.4	270.4
Seattle	272.9	325.3	260.3
PAD V avg.	272.3	323.7	251.9
Week's avg.	**258.6**	**302.2**	**223.7**
Oct. avg.	**237.3**	**280.9**	**228.0**
Sept. avg.	**236.3**	**280.4**	**253.3**
2007 to date	**231.0**	**274.6**	—
2006 to date	**216.8**	**260.4**	—

*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

	11-2-07 ¢/gal		11-2-07 ¢/gal
Spot market product prices			
Motor gasoline (Conventional-regular)		Heating oil No. 2	
New York Harbor	247.39	New York Harbor	255.72
Gulf Coast	242.64	Gulf Coast	253.09
Los Angeles	263.85	Gas oil	
Amsterdam-Rotterdam-Antwerp (ARA)	237.67	ARA	256.10
Singapore	230.67	Singapore	248.10
Motor gasoline (Reformulated-regular)		Residual fuel oil	
New York Harbor	245.89	New York Harbor	171.74
Gulf Coast	242.10	Gulf Coast	182.14
Los Angeles	265.85	Los Angeles	188.46
		ARA	177.73
		Singapore	186.43

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

BAKER HUGHES RIG COUNT

	11-9-07	11-10-06
Alabama	7	5
Alaska	11	6
Arkansas	48	26
California	39	37
Land	38	33
Offshore	1	4
Colorado	116	90
Florida	0	0
Illinois	0	0
Indiana	2	0
Kansas	15	7
Kentucky	8	12
Louisiana	165	186
N. Land	60	58
S. Inland waters	28	19
S. Land	28	37
Offshore	49	72
Maryland	1	0
Michigan	1	2
Mississippi	8	14
Montana	10	18
Nebraska	0	0
New Mexico	69	83
New York	6	11
North Dakota	49	36
Ohio	14	8
Oklahoma	198	176
Pennsylvania	18	15
South Dakota	0	1
Texas	860	780
Offshore	6	9
Inland waters	2	2
Dist. 1	23	18
Dist. 2	36	24
Dist. 3	65	57
Dist. 4	93	98
Dist. 5	176	133
Dist. 6	113	127
Dist. 7B	39	39
Dist. 7C	62	44
Dist. 8	113	101
Dist. 8A	21	24
Dist. 9	41	40
Dist. 10	70	64
Utah	40	49
West Virginia	33	31
Wyoming	71	92
Others—NV-3; TN-6; VA-3	12	8
Total US	**1,801**	**1,693**
Total Canada	**361**	**446**
Grand total	**2,162**	**2,139**
Oil rigs	337	273
Gas rigs	1,459	1,415
Total offshore	57	86
Total cum. avg. YTD	**1,762**	**1,639**

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	11-9-07 Percent footage*	Rig count	11-10-06 Percent footage*
0-2,500	60	5.0	50	—
2,501-5,000	103	59.2	93	49.4
5,001-7,500	231	23.8	232	18.5
7,501-10,000	430	1.1	412	2.4
10,001-12,500	441	2.4	448	1.7
12,501-15,000	283	—	246	0.8
15,001-17,500	114	—	119	—
17,501-20,000	68	—	70	—
20,001-over	35	—	32	—
Total	**1,765**	**7.6**	**1,702**	**6.4**
INLAND	38		39	
LAND	1,672		1,604	
OFFSHORE	55		59	

*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]11-9-07	[2]11-10-06
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	15	20
Alaska	685	685
California	647	682
Colorado	51	63
Florida	7	6
Illinois	32	28
Kansas	97	99
Louisiana	1,371	1,371
Michigan	15	15
Mississippi	51	47
Montana	96	92
New Mexico	174	151
North Dakota	109	115
Oklahoma	174	172
Texas	1,369	1,354
Utah	46	49
Wyoming	145	143
All others	62	67
Total	**5,146**	**5,159**

[1]OGJ estimate. [2]Revised.

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

US CRUDE PRICES

$/bbl*	11-9-07
Alaska-North Slope 27°	71.17
South Louisiana Sweet	96.50
California-Kern River 13°	84.20
Lost Hills 30°	92.20
Southwest Wyoming Sweet	88.32
East Texas Sweet	92.25
West Texas Sour 34°	86.25
West Texas Intermediate	92.75
Oklahoma Sweet	92.75
Texas Upper Gulf Coast	89.25
Michigan Sour	85.75
Kansas Common	92.00
North Dakota Sweet	84.50

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

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

WORLD CRUDE PRICES

$/bbl[1]	11-2-07
United Kingdom-Brent 38°	89.40
Russia-Urals 32°	86.72
Saudi Light 34°	85.81
Dubai Fateh 32°	83.22
Algeria Saharan 44°	91.12
Nigeria-Bonny Light 37°	91.42
Indonesia-Minas 34°	92.34
Venezuela-Tia Juana Light 31°	84.66
Mexico-Isthmus 33°	84.55
OPEC basket	87.59
Total OPEC[2]	86.47
Total non-OPEC[2]	85.48
Total world[2]	86.02
US imports[3]	83.69

[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]

	11-2-07	10-26-07	11-3-06	Change, %
		bcf		
Producing region	1,063	1,046	1,010	5.2
Consuming region east	2,017	2,004	1,967	2.5
Consuming region west	465	459	469	–0.9
Total US	**3,545**	**3,509**	**3,446**	**2.9**
	Aug. 07	**Aug. 06**	**Change, %**	
Total US[2]	**3,017**	**2,969**	**1.6**	

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

Statistics

International rig count

Region	Oct. 2007 Land	Oct. 2007 Off.	Oct. 2007 Total	Oct. 06 Total
WESTERN HEMISPHERE				
Argentina	73	—	73	86
Bolivia	3	—	3	3
Brazil	21	20	41	31
Canada	335	3	338	345
Chile	2	—	2	1
Colombia	36	1	37	22
Ecuador	11	—	11	10
Mexico	75	24	99	82
Peru	8	2	10	6
Trinidad	—	5	5	8
United States	1,713	49	1,762	1,734
Venezuela	58	14	72	79
Other	2	—	2	2
Subtotal	**2,336**	**118**	**2,454**	**2,409**
ASIA-PACIFIC				
Australia	12	11	23	23
Brunei	2	4	6	5
China-offshore	—	21	21	17
India	54	32	86	83
Indonesia	41	22	63	50
Japan	1	—	1	2
Malaysia	—	12	12	10
Myanmar	7	—	7	9
New Zealand	4	2	6	4
Papua New Guinea	2	—	2	1
Philippines	—	—	—	2
Taiwan	—	—	—	—
Thailand	4	8	12	9
Vietnam	—	7	7	10
Other	1	3	4	5
Subtotal	**128**	**122**	**250**	**230**
AFRICA				
Algeria	27	—	27	29
Angola	—	4	4	4
Congo	1	1	2	3
Gabon	2	—	2	3
Kenya	1	—	1	—
Libya	14	—	14	10
Nigeria	3	7	10	10
South Africa	—	—	—	—
Tunisia	2	1	3	3
Other	4	2	6	6
Subtotal	**54**	**15**	**69**	**68**
MIDDLE EAST				
Abu Dhabi	9	4	13	15
Dubai	1	—	1	1
Egypt	39	9	48	41
Iran	—	—	—	—
Iraq	—	—	—	—
Jordan	1	—	1	1
Kuwait	9	—	9	14
Oman	50	—	50	41
Pakistan	19	—	19	18
Qatar	4	10	14	8
Saudi Arabia	69	10	79	76
Sudan	—	—	—	—
Syria	18	—	18	23
Yemen	16	—	16	17
Other	—	—	—	2
Subtotal	**235**	**33**	**268**	**257**
EUROPE				
Croatia	1	—	1	1
Denmark	—	2	2	4
France	1	—	1	1
Germany	5	—	5	5
Hungary	2	—	2	3
Italy	4	1	5	7
Netherlands	1	3	4	4
Norway	—	17	17	14
Poland	2	—	2	2
Romania	2	1	3	2
Turkey	5	—	5	4
UK	1	26	27	28
Other	8	—	8	5
Subtotal	**32**	**50**	**82**	**80**
Total	**2,785**	**338**	**3,123**	**3,044**

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

Oil import freight costs*

Source	Discharge	Cargo	Cargo size, 1,000 bbl	Freight (Spot rate) worldscale	$/bbl
Caribbean	New York	Dist.	200	164	1.38
Caribbean	Houston	Resid.	380	135	1.27
Caribbean	Houston	Resid.	500	143	1.34
N. Europe	New York	Dist.	200	217	2.90
N. Europe	Houston	Crude	400	152	2.98
W. Africa	Houston	Crude	910	97	2.10
Persian Gulf	Houston	Crude	1,900	46	1.86
W. Africa	N. Europe	Crude	910	97	1.55
Persian Gulf	N. Europe	Crude	1,900	44	1.29
Persian Gulf	Japan	Crude	1,750	61	1.46

*October 2007 average.
Source: Drewry Shipping Consultants Ltd. Data available in OGJ Online Research Center.

Waterborne Energy Inc. US LNG imports

Country	Oct. 2007	Sept 2007	Oct. 2006	Change from a year ago, %
	MMcf			
Algeria	—	2,820	—	—
Egypt	2,880	11,800	2,740	5.1
Equatorial Guinea	—	—	—	—
Nigeria	—	3,030	8,940	—
Qatar	—	—	—	—
Trinidad and Tobago	33,350	23,880	24,480	36.2
Total	**36,230**	**41,530**	**36,160**	**0.2**

Source: Waterborne Energy Inc.
Data available in OGJ Online Research Center.

Propane prices

	Sept. 2007	Oct. 2007	Sept. 2006	Oct. 2006
	¢/gal			
Mont Belvieu	129.50	143.15	101.18	93.82
Conway	128.76	140.36	97.58	93.46
Northwest Europe	124.72	143.66	104.76	95.94

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

Muse, Stancil & Co. refining margins

	US Gulf Coast	US East Coast	US Mid-west	US West Coast	North-west Europe	South-east Asia
	$/bbl					
Oct. 2007						
Product revenues	95.74	91.58	94.37	100.77	92.23	87.67
Feedstock costs	–82.84	–84.08	–75.18	–78.82	–81.49	–84.35
Gross margin	12.90	7.50	19.19	21.95	10.74	3.32
Fixed costs	–2.06	–2.39	–2.32	–2.71	–2.32	–1.81
Variable costs	–2.11	–1.40	–1.87	–3.19	–3.18	–0.98
Cash operating margin	**8.73**	**3.71**	**15.00**	**16.05**	**5.24**	**0.53**
Sept. 2007	10.75	5.29	19.33	13.04	5.67	0.16
YTD avg.	13.31	7.15	19.59	21.90	6.11	2.31
2006 avg.	12.49	6.01	14.99	23.73	5.88	1.06
2005 avg.	12.53	6.98	12.31	20.55	5.51	1.52
2004 avg.	6.16	3.70	6.64	11.76	5.08	1.83

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

Muse, Stancil & Co. gasoline marketing margins

Sept. 2007	Chicago*	Houston	Los Angeles	New York
	¢/gal			
Retail price	315.17	263.90	289.17	284.67
Taxes	57.83	38.40	58.74	50.69
Wholesale price	233.75	215.50	223.81	218.17
Spot price	217.21	202.51	216.27	203.98
Retail margin	23.69	10.00	6.62	15.81
Wholesale margin	16.54	12.99	7.54	14.19
Gross marketing margin	**40.23**	**22.99**	**14.16**	**30.00**
Aug. 2007	21.47	32.13	25.21	40.93
YTD avg.	27.36	22.40	18.86	31.00
2006 avg.	19.74	20.34	18.03	27.90
2005 avg.	19.77	16.26	20.39	27.13
2004 avg.	22.49	17.49	23.61	30.38

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

Muse, Stancil & Co. ethylene margins

	Ethane	Propane	Naphtha
	¢/lb ethylene		
Oct. 2007			
Product revenues	61.90	99.40	118.25
Feedstock costs	–41.08	–81.57	–114.30
Gross margin	20.82	17.83	3.95
Fixed costs	–5.38	–6.36	–7.19
Variable costs	–4.73	–5.57	–7.46
Cash operating margin	**10.71**	**5.90**	**–10.70**
Sept. 2007	15.56	11.71	–9.83
YTD avg.	14.09	14.48	–7.68
2006 avg.	19.55	22.53	1.77
2005 avg.	14.43	20.68	1.28
2004 avg.	9.00	12.03	0.51

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

Muse, Stancil & Co. US gas processing margins

Oct. 2007	Gulf Coast	Mid-continent
	$/Mcf	
Gross revenue		
Gas	6.42	5.54
Liquids	1.50	4.12
Gas purchase cost	7.14	7.44
Operating costs	0.07	0.15
Cash operating margin	**0.71**	**2.07**
Sept. 2007	0.65	2.03
YTD avg.	0.37	1.28
2006 avg.	0.26	0.97
2005 avg.	–0.06	0.25
2004 avg.	0.07	0.33
Breakeven producer payment % of liquids	50%	49%

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

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NOTICE
IN THE HIGH COURT OF JUSTICE OF ENGLAND AND WALES
QUEEN'S BENCH DIVISION
ADMIRALTY COURT
2007 FOLIO NO 1169

Any damage caused to the CATS gas pipeline on 25 June 2007 by the anchor
and / or cable of the "YOUNG LADY"

Notice is hereby given to:

All persons claiming and / or being entitled to make claims by reason of or resulting from or in connection with any damage caused to the CATS gas pipeline on 25 June 2007 by the anchor and / or cable of the "YOUNG LADY" that:

1. A decree was made on 6th November 2007 in an Admiralty Action in the High Court of Justice of England and Wales, 2007 Folio 1169, on the application of Blenheim Shipping UK Ltd (the "Claimant") limiting the Claimant's liability for claims of a type which fall within the 1976 Convention on Limitation of Liability for Maritime Claims to 20,061,200 Special Drawing Rights.

2. Any application to set aside the said decree must be made on or before 6th February 2008.

3. The Claimant has constituted a Limitation Fund by paying into the High Court of Justice of England and Wales the amount of £15,270,138.

4. Any claims of a type which fall within the 1976 Convention on Limitation of Liability for Maritime Claims must be made in this Admiralty Action on or before 6th February 2008.

5. All applications and claims are to be filed with the Admiralty and Commercial Registry, Royal Courts of Justice, Strand, London, WC2A 2LL, United Kingdom and copies sent to Claimant's solicitors referred to below.

The Claimant, Blenheim Shipping UK Ltd, is represented by Holman Fenwick & Willan of Marlow House, Lloyds Avenue, London EC3N 3AL, tel: +44 (0)20 7488 2300; fax: +44 (0)20 7481 0316, ref: RJM/445.

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Failure to enact bad energy bill would be triumph

Given what it has to work with, the 110th Congress will not have failed on energy if it enacts no legislation on the subject.

A conservative observer nevertheless discredits the Democratic leadership for its failure so far win enactment of an energy bill.

In a Nov. 9 article in Wall Street Journal's online Opinion Journal, former White House political mastermind Karl Rove catalogues bloopers committed by the House and Senate since Democrats regained control: unbridled spending, proposals to raise taxes, failure to pass a budget, security lapses, and preoccupation with investigations of political opponents.

But in a list of "Congress's failures" to enact legislation, Rove includes an energy bill.

"Congress has not done its work," he says of this list. "And these failures will have consequences."

In fact, the consequences of failure to pass energy law as proposed would be altogether constructive.

Congress doesn't intend to do anything to expand oil and gas supply, such as allow leasing of closed federal land.

Instead it proposes to punish oil and gas companies with tax increases, distribute proceeds among politically favored producers of tiny amounts of uneconomic energy, and expand an ethanol mandate that's raising food and energy costs.

A strategy of suppressing growth of oil and gas supply and replacing it fractionally with costlier alternatives is supposed to promote energy security.

It won't. It can't. It will raise energy costs.

That's senseless. But that's what will happen if this Congress passes an energy bill.

The idea that passage of no energy bill constitutes failure flows from the liberal assumption that market distress compels the government to act.

Oil prices above $95/bbl indeed signal a market in distress—a market trying to grow against limits to supply.

In response to such distress, the priority and perhaps only appropriate action by government is removal of whatever supply limits it may itself have imposed, such as leasing moratoriums.

Proposals before the 110th Congress promise the opposite—further limits on oil and gas supply coupled with subsidization of expensive substitutes.

For US energy consumers, failure to enact this folly would represent not failure but triumph.

(Online Nov. 9, 2007; author's e-mail: bobt@ogjonline.com)

The Editor's Perspective

by Bob Tippee, Editor

Market Journal

by Sam Fletcher, Senior Writer

High crude price divides market

With front-month benchmark US crude touching a record high of $98.62/bbl in overnight electronic trading Nov. 7, the oil market essentially split into two main groups, said Paul Horsnell at Barclays Capital Inc. in London.

One group sees the possibility of $100/bbl oil "as being almost magical in that it is the result of external and near mystical forces and supposedly unconnected with any real fundamentals," Horsnell said. "Explanations include a weak dollar, speculation, and, most entertainingly of all, negative gamma from options positions." However, he said, "In our view, none of those factors are particularly significant. Indeed, they miss the main point. If the supply side still looks bust above $90/bbl, then prices are rising simply because they are too low."

Horsnell puts himself in the opposite group who claim the recent spike in crude prices resulted from "worsening supply-side weakness" and "steady but not spectacular demand growth" among countries outside of the Organization for Economic Cooperation and Development. "For us, the main question is whether we have seen any more sign of an amelioration as prices approach $100/bbl than we saw when prices approached $70/bbl." He said, "If anything the supply-side is now looking weaker short term, medium term, and longer term. In other words, the path of least fundamental resistance still seems to lie to the upside."

An opposing view

Michael C. Lynch, president of Strategic Energy & Economic Research Inc., Amherst, Mass., finds it "hard to credit" a paradigm shift in the oil market "where oil is much harder to discover and produce than before, demand is growing much faster, and prices have much less effect on demand. Lynch said. "Demand growth at present is one-half to two-thirds the long-term trend, and while Chinese oil demand is growing rapidly this year, it is growing much more slowly than in the past—about 6% versus 8-10% previously. The easy oil didn't suddenly disappear 5 years ago, and the Organization of Petroleum Exporting Countries' surplus capacity has been low for most of the last decade and a half, without prices soaring."

The push towards $100/bbl crude "seems to have been driven more by hedge funds and traders, that is, speculators not investors, (over)reacting to relatively unimportant news," said Lynch. "However, while a short-term reversal taking prices back to $70-80/bbl is probable in the next few weeks as speculators sell off, the 'investors' who have been buying energy derivatives for several years are less likely to pull out."

Price drops have two causes: overflowing inventories or a price war within OPEC (or between OPEC and non-OPEC), Lynch said. "The latter often causes the former, but not always," he said. "The market next year appears increasingly likely to experience a sharp price drop, especially from current elevated levels but probably even below the $75/bbl or so that many forecasters expect, as it appears that weak oil demand combined (possibly) with unexpected additional supply from Iraq and Nigeria will mean that surplus capacity in OPEC will grow by as much as 2 million b/d.

Lower production

Lynch sees improvement in two important producing areas. "Iraq has been able to operate its Ceyhan export pipeline at nearly 50% capacity (or 300,000 b/d) for about 2 months now, reportedly due to better security on the pipeline, which had previously been sabotaged whenever it operated," he said Nov. 12. "Royal Dutch Shell PLC is in the process of restoring its Nigerian production, as the new Nigeria President Umaru Yar'Adua is attempting to stabilize that region through negotiation. Neither is guaranteed to result in long-term resolution, but it is important to remember that there are upside production risks as well as downside. (That upside could easily mean an additional 500,000 b/d of production next year, which isn't factored into current projections.)" Horsnell noted third quarter oil production by some major integrated oil companies was "rather poor." Combined production from Shell, BP PLC, ConocoPhillips, ExxonMobil Corp., Chevron Corp., and Total SA fell 720,000 b/d, or 6.2%, to 10.86 million b/d from the third quarter of 2006.

"These output falls from major companies are not in themselves directly responsible for $100/bbl oil," Horsnell said. "However, they are strongly symptomatic of a mounting supply-side weakness, particularly within non-OPEC areas, that is in our view one of the main reasons why prices have been testing ever higher. If major oil companies have in general been finding it difficult to increase output even after a multiyear rise in prices, a fairly powerful signal about the sustainability of the upwards trend does appear to have been sent."

(Online Nov. 12, 2007; author's e-mail: samf@ogjonline.com)

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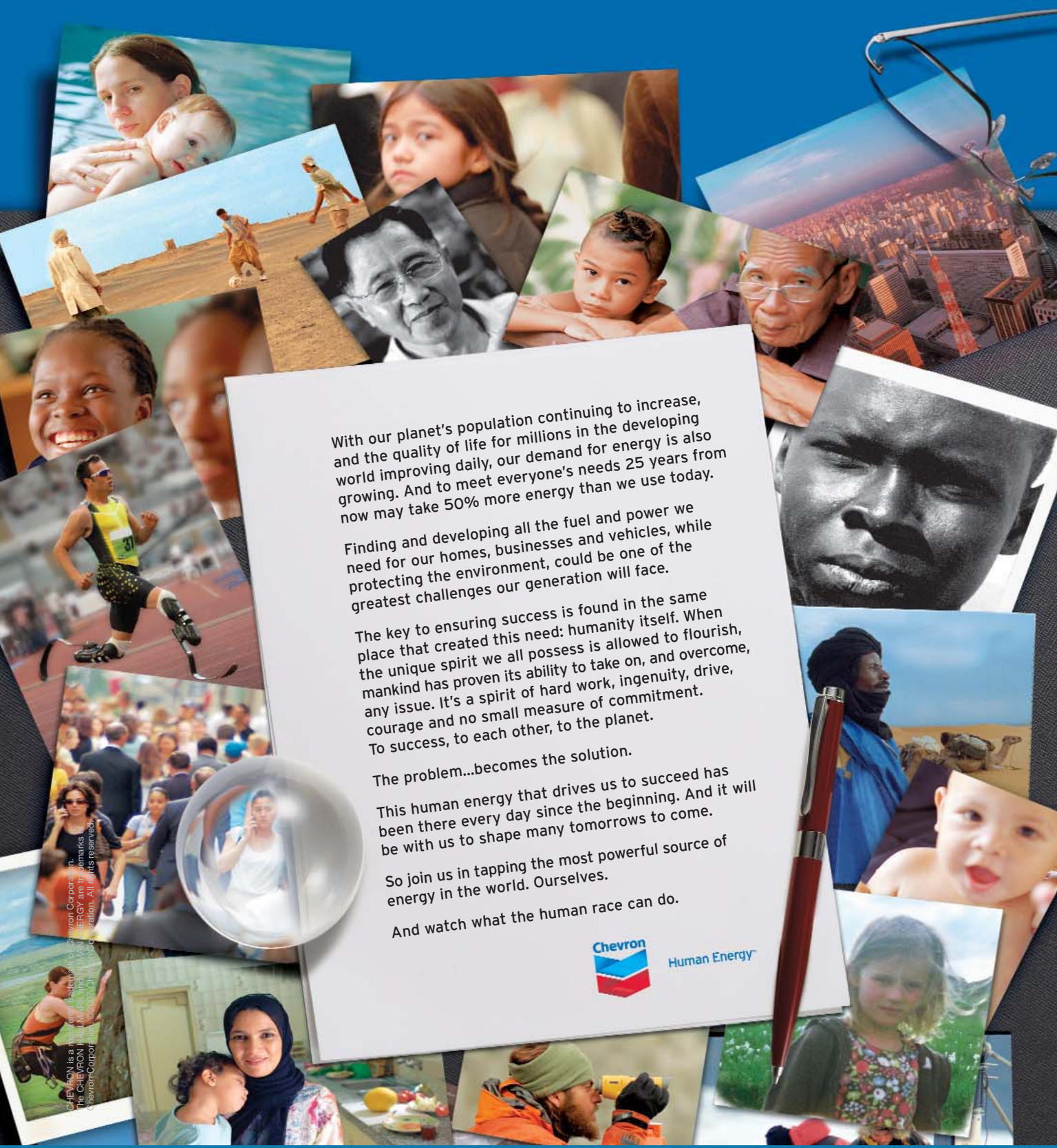

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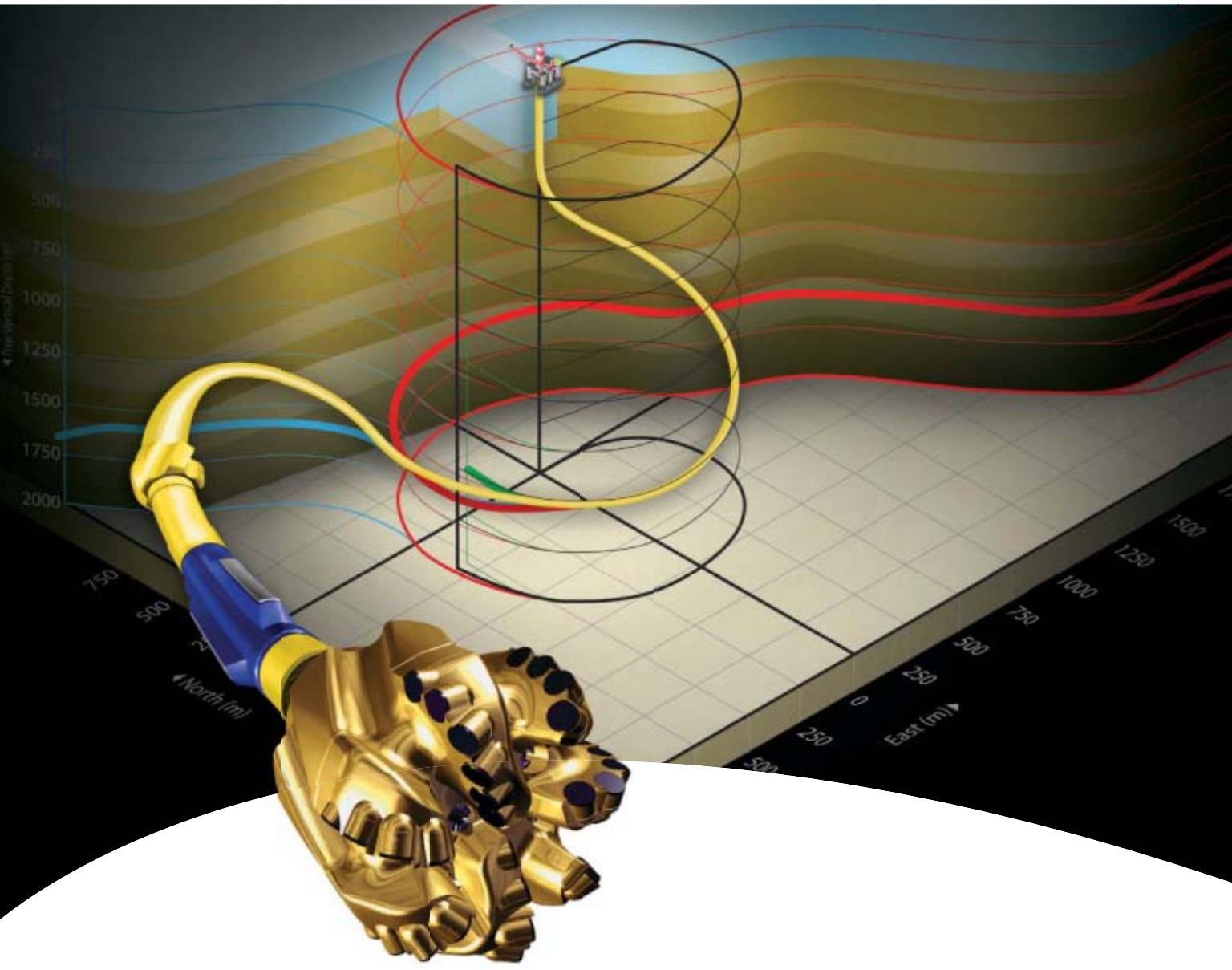

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