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Worldwide Construction Update

Petrobras charts development hubs for Santos basin fields
Shell's interest in enhanced oil recovery grows
Lost manufacturing resulting in slower US petchem growth
Historical pipeline data provide low-cost estimating tool

OIL&GAS JOURNAL®

Nov. 20, 2006
Volume 104.43

WORLDWIDE CONSTRUCTION UPDATE

REGULAR FEATURES

COVER

Inaugurated in June, the $950 million Oryx GTL plant in Qatar is the first commercial plant to convert natural gas to liquid fuel using low-temperature Fischer-Tropsch technology. Oryx GTL is a joint venture between Qatar Petroleum and Sasol Ltd. Details of other construction projects are in *OGJ's Worldwide Construction Update* starting on p. 20 and in the survey tables at www.ogjonline.com. Photo from Foster Wheeler.

General Interest

Exploration & Development

Drilling & Production

Processing

Transportation

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Nov. 20, 2006

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General Interest — Quick Takes

DOI to assemble royalty policies review panel

The US Department of the Interior is forming an independent panel to examine royalty policies and procedures on federal and Indian lands, the federal department announced on Nov. 14.

The Subcommittee on Royalty Management will operate under the Royalty Policy Committee, an independent advisory board that the Interior secretary appoints to advise the US Minerals Management Service on royalty management and other mineral-related policies.

"Recently, there has been much interest regarding the accuracy and effectiveness of the minerals management program within [MMS]," said C. Stephen Allred, assistant Interior secretary for land and minerals management.

"We have decided that a review of the procedures and policies surrounding management of mineral revenue at [DOI] is in order," he wrote in a letter to incoming Royalty Policy Committee Chairman Daniel Reimer.

MMS attracted heavy criticism earlier this year following the discovery that price thresholds were omitted from federal deepwater oil and gas leases issued in 1998-99. Thomas M. Davis (R-Va.), chairman of the House Government Reform Committee, and Darrell E. Issa (R-Calif.), chairman of the committee's energy subcommittee, have asked the Government Accountability Office for an investigation.

Allred said that the panel specifically would review:

- The extent to which existing reporting and accounting procedures and processes are sufficient to assure that MMS receives the correct amount.
- MMS audit, compliance, and reporting procedures to ensure that lessees comply with existing statutes, terms, and regulations governing royalties.
- Operations of the royalty in-kind program to assure that adequate policies, procedures, and controls are in place.

Subcommittee members will be announced soon, Allred said. He added that the group would spend 6 months on its review before reporting to the full Royalty Policy Committee.

Iraq to boost oil output, develop Al Ahdab field

Iraqi oil minister Hussein al-Shahristani, fresh from a tour of Asia, said he expects his country to produce 3 million b/d of crude oil by yearend and, with new investment, some 4.5 million b/d by 2010.

He said Iraq produced an average of 2.3 million b/d in October, and exported 1.6-1.7 million b/d despite 2-3 insurgent attacks/week on the country's pipelines.

Sharistani has just returned from a tour of Asian countries where he won support for increased investment in Iraq's oil industry, in particular from China and Japan.

In China, he brokered an agreement with the China National Petroleum Corp. for new exploration rights over al-Ahdab field in southern Iraq. He said a joint Iraqi-Chinese committee will hold meetings in Baghdad, beginning on Nov. 11, to determine how to develop the oil field.

In June 1997 China signed a $700 million contract to explore al-Ahdab over 23 years. Plans originally called for 90,000 b/d of oil production, but field development was suspended due to UN sanctions on Iraq and to security problems since the beginning of the US-led war in 2002.

Al-Ahdab field, in the middle and southern regions of Iraq, has estimated reserves of as much as 1 billion bbl of oil and is considered commercially viable, especially because of its proximity to existing pipelines and refineries.

During Sharastani's swing through Asia, he also held talks with Sinopec Group and CNOOC to seek more energy investment in Iraq once the new Iraqi energy investment law is approved.

In Japan, Shahristani said, the government promised to give a soft loan of $3.5 billion to help Iraq build a refinery and a floating loading platform off Basra in the Persian Gulf.

UK still studying 24th-round license bids

The UK government will publish the results of its 24th licensing round "within weeks," Energy Minister Malcolm Wicks said in Aberdeen during a conference by the UK Offshore Operators' Association. Operators had hoped he would report bid results.

The Department for Trade and Industry (DTI), which issues the licenses, is carrying out further environmental checks against the 147 applications received from 121 companies, he said. The round closed June 16 (OGJ, Aug. 7, 2006, p. 37).

A DTI spokesman told OGJ that the agency has sought comments on environmental issues raised by its licenses as stipulated by the European Union's recently clarified Habitat Directive.

Baltimore marketer settles EPA tank charges

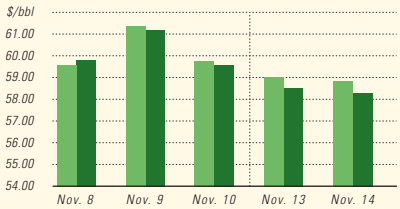
Carroll Independent Fuel Co. reached a consent agreement with the US Environmental Protection Agency Nov. 14 in which the Baltimore-based heating oil, gasoline, and products distributor agreed to pay a $284,156 civil penalty and complete a special environmental project at 32 of its facilities in Maryland.

EPA's regional office in Philadelphia cited Carroll for several underground storage tank (UST) violations including failure to perform release detection, meet new UST system standards for spill and over-fill prevention, provide corrosion protection on metal piping, investigate a suspected release, report a suspected release, and perform lint tightness testing.

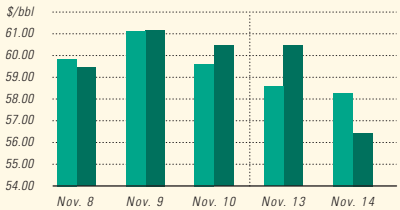
The alleged violations were documented through multifacility

Industry Scoreboard

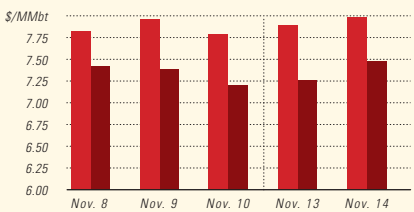
IPE BRENT / NYMEX LIGHT SWEET CRUDE



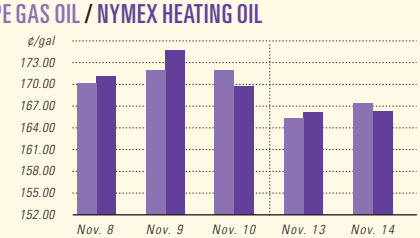
WTI CUSHING / BRENT SPOT



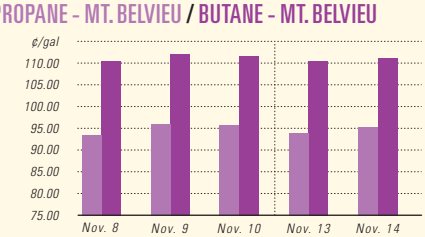
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



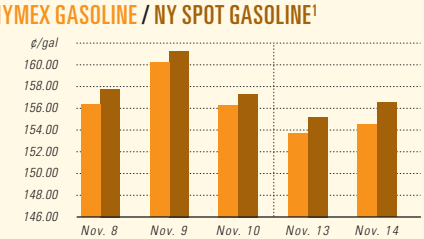
IPE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



NYMEX GASOLINE / NY SPOT GASOLINE[1]



[1]Nonoxygenated regular unleaded.

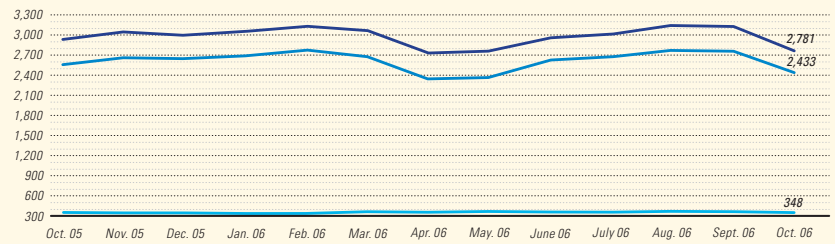
US INDUSTRY SCOREBOARD — 11/20

Latest week 11/10	4 wk. average	4 wk. avg. year ago[1]	Change, %	YTD average[1]	YTD avg. year ago[1]	Change, %
Demand, 1,000 b/d						
Motor gasoline	10,153	9,036	12.4	9,832	9,112	7.9
Distillate	4,472	4,062	10.1	4,154	4,091	1.5
Jet fuel	1,632	1,609	1.4	1,604	1,617	–0.8
Residual	450	975	–53.8	729	906	–19.5
Other products	5,182	4,625	12.0	4,955	4,861	1.9
TOTAL DEMAND	21,890	20,308	7.8	21,274	20,587	3.3
Supply, 1,000 b/d						
Crude production	5,275	4,422	19.3	5,120	5,135	–0.3
NGL production	2,416	1,565	54.3	2,235	1,733	28.9
Crude imports	9,722	9,696	0.3	10,247	10,020	2.3
Product imports	3,296	4,358	–24.4	3,449	3,467	–0.5
Other supply[2]	1,094	1,130	–3.2	1,091	1,250	–12.7
TOTAL SUPPLY	21,803	21,172	3.0	22,141	21,605	2.5
Refining, 1,000 b/d						
Crude runs to stills	15,083	14,138	6.7	15,157	15,220	–0.4
Input to crude stills	15,629	14,433	8.3	15,588	15,500	0.6
% utilization	90.2	84.2	—	90.6	90.6	—

Latest week 11/10	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	339,927	333,246	6,681	322,615	17,312	5.4
Motor gasoline	203,703	205,109	–1,406	201,349	2,354	1.2
Distillate	138,718	141,034	–2,316	126,235	12,483	9.9
Jet fuel	40,012	40,376	–364	39,535	477	1.2
Residual	45,028	43,941	1,087	37,974	7,054	18.6
Futures prices[3]						
Light sweet crude, $/bbl	59.88	58.62	1.26	58.69	1.19	2.0
Natural gas, $/MMbtu	7.76	7.67	0.09	11.69	–3.93	–33.6

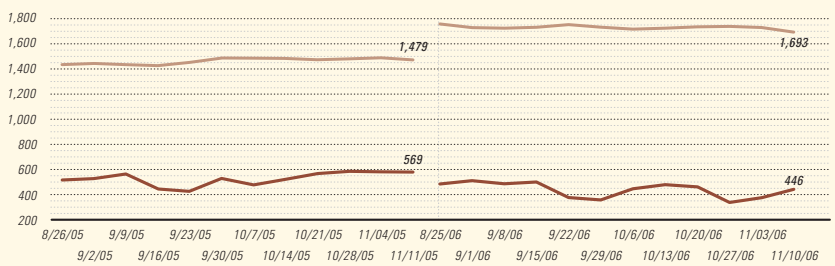
[1]Based on revised figures. [2]Includes other hydrocarbons and alcohol, refinery processing gain, and unaccounted for crude oil.
[3]Weekly average of daily closing futures prices.

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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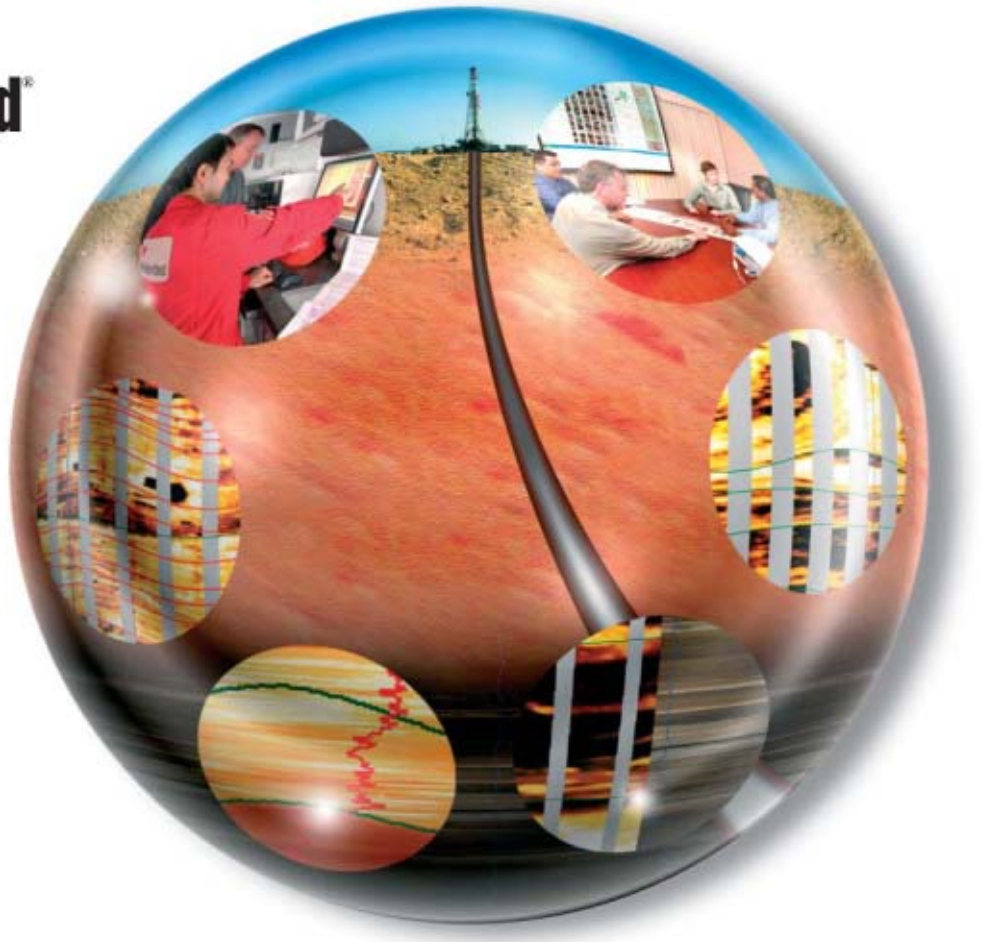

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underground storage tank audits submitted to EPA by Carroll's auditor after the company entered into a consent agreement and final order on June 30 to audit all of its facilities for compliance. As part of the settlement, Carroll neither admitted nor denied liability for the violations. The company also agreed to implement a $447,000 environmental project to be determined, to secure significant environmental or public health protections, EPA said. ✦

Exploration & Development — *Quick Takes*

Statoil gets stake in deepwater block off Angola

Statoil ASA has signed a production-sharing agreement (PSA) with Angola's Sonangol for a 5% interest in deepwater Bock 15/06 off Angola.

The 2,984-sq-km block, in 300-1,800 m of water about 100 km from Luanda, is composed of relinquished parts of Block 15. These parts were relinquished in 2002, when the exploration period of that acreage of Block 15 expired.

The work program for Block 15/06 includes 3D seismic surveys and drilling eight wells in the first 5 years of the exploration phase.

Chevron strikes gas with wildcat off Australia

Chevron Corp. has made a natural gas discovery with its Clio-1 wildcat in 3,000 ft of water on permit WA-205-P, 90 miles off northwestern Australia.

Clio-1, which was completed in September, 20 km northwest of Gorgon gas field, encountered 623 ft of net gas sands in the Triassic Mungaroo formation.

Transocean Inc.'s Jack Bates semisubmersible, capable of drilling in water as deep as 5,400 ft, drilled the well to a TVD of 15,500 ft.

Chevron plans to conduct a 3D seismic survey program, starting in mid-December, to better determine the potential of the gas find and subsequent development options.

Total confirms Tunu field extension off Indonesia

Total SA confirmed an extension of Tunu gas field's southern zone with a gas discovery between Tunu and Peciko fields off East Kalimantan.

The Tunu Great South-1 well, drilled in very shallow water 8 km southwest of Tunu field's southernmost platform, encountered numerous gas reservoirs on Mahakam block.

Total E&P Indonesia plans a production test and also plans to drill appraisal wells. The extension could come on stream by 2009, it said.

Last year, Total said it planned to spend $1.5 billion on gas development in Indonesia, much of that on Mahakam block.

Indago has successful well tests off Oman

Indago Petroleum Ltd. subsidiary Indago Oman Ltd. has begun testing the West Bukha-2A (WB2A) well on Block 8 off Oman, as it pursues a production target of first-quarter 2008.

WB2A, a sidetrack of the original West Bukha-2 wellbore, penetrated the Shuaiba and Kharaib reservoirs of the Lower Cretaceous Thamama formation.

The WB2A sidetrack, a result of the drill string parting while drilling, reached a depth of 4,529 m and was plugged back to 4,383 m after electric wireline logs were obtained.

On the first of two 4-hr flow tests of the uppermost Shuaiba section of the Thamama, over an open-hole interval from 4,363 m to 4,383 m, the well achieved an average stable flow rate of 3,524 b/d of 42° gravity oil and 1 MMscfd of gas on a $^{36}/_{64}$-in. choke at 2,512 psi. This success followed acidization and initial clean-up period.

On the second test, the well's flow rate increased to an average 4,392 b/d of oil and 1.4 MMscfd of gas through a $^{50}/_{64}$-in. choke at 1,711 psi.

After completing flow testing, Indago, the block operator, will shut in the well to conduct a pressure build-up survey.

Both the primary reservoir (Mishrif-Mauddud) and secondary target (Thamama) were encountered higher to prognosis, resulting in a longer hydrocarbon-bearing interval in the Thamama than expected. However, the Shuaiba section of the Thamama was not previously part of Indago's audited 2P reserve estimates, plus, the reservoir has yet to be assigned commercial reserves, Indago said.

It plans to conduct a second flow test in the Mishrif-Mauddud following the Thamama testing period. Previously, flow rates of as much as 13.6 MMscfd and 2,910 b/d of condensate have been obtained in the Mishrif formation, which lies above the Thamama, in the 1976 discovery well.

PTTEP Bongkot gas well to extend field life

The first exploration well drilled in 8 years on the Bongkot concession block in the Gulf of Thailand, about 600 km south of Bangkok, has resulted in an additional natural gas find, said Thailand's state-controlled PTT Exploration & Production PLC (PTTEP).

Ton Chan-1X, drilled to 3,442 m TD in a new structure at the northern section of the block, found gas-bearing sands with 143 m total thickness in the stratigraphic trap.

The company said the well's results indicate a potential for discovery of additional gas reserves in Bongkot's production areas.

PTTEP will conduct additional drilling to estimate the petroleum reserves there and prepare a development plan for future production in due course, said Pres. Maroot Mrigadat.

The discovery will increase production and prolong the life of Bongkot, which has been on stream since July 1993 and is producing 600 MMcfd of gas and 19,259 b/d of condensate.

Austral Pacific completes another Cheal B well

Austral Pacific Energy Ltd. on Nov. 7 achieved a TD of 1,866 m with its Cheal B2 well, the second of four wells to be drilled back-to-back from the Cheal B site. The program is part of Cheal oil field development in New Zealand's Taranaki basin.

This well targeted and intersected the late Miocene Mount Messenger sands over a gross interval of 1,709-1,735 m.

Wireline logs indicate these sands are oil bearing. The logs also showed that thinly bedded sands from the secondary target—the

Urenui formation—over a gross interval of 1,278-1,383 m were oil bearing as well.

Production casing has been run at the Cheal B2 well, and the Ensign Energy Services Rig 19 is being mobilized to the adjacent Cheal B3 site. Drilling of the Cheal B3 well is expected to begin by Nov. 17.

The four wells are expected to produce a combined 1,000 b/d in first quarter 2007, rising to 1,900 b/d in second quarter 2007 (OGJ Online, Oct. 12, 2006).

Urals Energy granted access to ESPO Pipeline

OAO Transneft has authorized Urals Energy Public Co. Ltd.'s Dulisma oil field to be connected to the planned East Siberian Pacific Ocean (ESPO) Pipeline.

Dulisma field, 350 km northeast of Ust-Kut, is expected to produce 12,000 b/d by yearend 2008, and production is expected to reach 30,000 b/d by 2011.

Urals Energy plans to sell the oil to Pacific Rim consumers, probably China.

China and Russia are studying construction of an oil pipeline spur from Skovorodino to the Chinese border. The spur would be part of ESPO Pipeline connecting eastern Siberian oil deposits with an export terminal on Russia's Pacific coast (OGJ Online, Oct. 26, 2006).

Urals Energy said it would soon begin project design work for the Dulisma-ESPO interconnect, commencing procurement of pipe and other facilities by April 2007.

The ESPO line, which will be built in phases, is expected to start delivering oil in mid-2008.

Interim field production prior to connecting Dulisma to ESPO will continue to be transported to Ust-Kut via a temporary pipeline operated by an adjoining producer, Urals Energy said. ✦

Drilling & Production — *Quick Takes*

Terra Nova production resumes off St. John's

Production from Terra Nova oil field resumed Nov. 12, following completion of a planned maintenance turnaround on the Terra Nova floating production, storage, and offloading vessel (OGJ, Sept. 11, 2006, Newsletter).

The FPSO returned to the field Sept. 25 and was reconnected to its mooring system Oct. 1. Operator Petro-Canada expects Terra Nova average fourth quarter production to be 33,000 b/d gross.

"Over the course of the fourth quarter, we expect to restart all the wells and ramp up to peak production volumes in the 100,000 to 110,000 b/d range," said Bill Fleming, Petro-Canada's vice-president, East Coast oil. "Along with the work done in the turnaround, the 40 new beds on the FPSO will permit improved inspection and preventative maintenance programs aimed at reducing future downtime."

Regulators approve Suncor's oil sands projects

Suncor Energy Inc. said the Alberta Energy and Utilities Board (EUB) on Nov. 14 approved the company's application to build a third oil sands upgrader, Voyageur, and approved plans to develop the Steepbank mine expansion.

Voyageur is the centerpiece in Suncor's plans to boost oil sands production to 500,000 b/d by 2012. Suncor plans to begin preparation for both Voyageur and Steepbank next year.

Meanwhile, work continues on the Athabasca oil sands expansion north of Fort McMurray (OGJ, Sept. 25, 2006, p. 39). With commissioning targeted for 2008, that expansion is expected to increase production to 350,000 b/d from 260,000 b/d.

Construction was 65% complete as of Sept. 30. Other work under way includes expansion of Suncor's in situ operations, with completion expected in 2007.

In granting Voyageur and Steepbank project approvals, the EUB outlined several conditions for Suncor. Three conditions specifically deal with managing tailings: the mixture of water, clay, sand, and residual bitumen produced during the extraction process. Separately, Suncor announced 2007 spending plans of $5.3 billion (Can.), of which $4.4 billion will be dedicated to oil sands.

Fortune Oil begins CBM drilling in China

A unit of Fortune Oil PLC has begun drilling its first pilot well on the Liulin Block in the eastern Ordos basin of Shanxi Province, China. The Ordos basin is one of the world's largest CBM resource areas.

Fortune Liulin Gas Co. Ltd., which entered into a production-sharing contract for development of the coalbed methane (CBM) block, spudded the FL-EP2 vertical production well on Nov. 7. The company plans to drill this well to a TD of 1,155 m and take core samples from coal seams numbers 4, 5, and 8.

A second vertical pilot production well—FL-EP1, targeting 610 m TD—will be drilled later this year.

After the two wells are complete, Fortune will fracture stimulate Seam 8 in both wells and will monitor production rates of CBM gas and water over the following months.

More than 70 coal coreholes and several CBM exploration wells have been drilled in the Liulin Block. The available data indicate that coal seam thickness, depth, gas content, and permeability appear to be highly prospective.

Fortune recently completed a joint study with the Shanxi Coal Bureau to analyze and map this data, which was used to optimize the locations for FL-EP1 and FL-EP2. The wells should provide significant reservoir and production data to assist in certification of gas reserves on the block, although it will not be possible to properly quantify the results until second quarter 2007.

The company has procured all necessary environmental permits for drilling in 2006-07. Further pilot production and slim-hole data wells are planned for 2007, with the aim of declaring commerciality for the block in 2008.

GlobalSantaFe, BHP agree to extend rig contracts

GlobalSantaFe Corp. has signed agreements with BHP Billiton Ltd. to extend the contracts on two ultradeepwater drilling rigs for additional 4-year terms. The rigs currently are operating in the Gulf of Mexico. The combined total value of the contracts is about $1.5 billion. The GSF Development Driller I semisubmersible is scheduled to start work under its contract extension in June 2008 and

continue until June 2012. The contract extension for the GSF C.R. Luigs drillship is scheduled to begin in September 2009 and end in September 2013.

Petrofac lifts first oil cargo from Cendor field

Petrofac Malaysia has lifted its first cargo totaling 311,000 bbl of oil from Cendor oil field on Block PM304 off Malaysia.

The field's production averages 12,000 b/d of oil, with an established peak rate of 16,000 b/d from the H15 and H20 formations. In October, the company began oil production of 3,500 b/d from one of the five wells in the field (OGJ Online, Oct. 5, 2006).

Petrofac recently completed the remaining two of the seven development wells comprising the field's first phase.

Petrofac, in a partnership with Petronas, is undertaking detailed analysis of the reservoir to reevaluate the extent of the estimated proven reserves. ✦

Processing — *Quick Takes*

Chevron plans further Pascagoula refinery upgrades

Chevron USA Inc. has applied for an environmental permit to construct a continuous catalyst regeneration (CCR) unit and several other minor units at its 325,000 b/cd refinery in Pascagoula, Miss.

These projects are to follow the refinery's $150 million fluid catalytic cracking (FCC) project, which remains on track to be completed by yearend and will increase the plant's gasoline production capacity by 10% to 5.5 million gal/day.

The CCR project is expected to further boost gasoline production capacity at the refinery by about 15%, adding 725,000 gal/day. The project will not increase the plant's crude oil capacity.

The CCR unit would replace two process units constructed more than 30 years ago, improving the refinery's ability to provide reliable supplies of gasoline to key markets in the eastern US, said general manager Roland Kell.

Chevron has selected WorleyParsons to complete the engineering for the CCR project, for which construction, if approved by the Mississippi Department of Environmental Quality, would likely begin in first quarter 2008.

Environmental permitting will run concurrently with Chevron's evaluation process.

Kell said Chevron plans to use appropriate air emission controls, installing best available control technology as required by the environmental authorities and is also proposing to voluntarily reduce certain emissions above current requirements. Meetings to discuss these plans are currently being organized with community groups.

Meanwhile, Chevron's FCC project, along with another project completed earlier this year at the company's refinery in El Segundo, Calif., will collectively bring online for Chevron about 1 million gal/day of additional gasoline manufacturing capacity—a 7% increase relative to the company's total US refinery gasoline production in 2005. ✦

Transportation — *Quick Takes*

Gas find could feed LNG in Papua New Guinea

InterOil Corp.'s Elk-1 gas discovery in the onshore eastern Papuan basin could potentially kick-start an LNG industry in the country, according to Papua New Guinea Prime Minister Michael Somare.

He said the project could be a driving force towards the creation of an industrialized nation.

The facility, proposed by Toronto-based InterOil and international investment bank Merrill Lynch last month for a site near Port Moresby, could be delivering LNG cargos by second quarter 2011 (OGJ, Oct, 23, 2006, p. 32)

Papua New Guinea authorities likely will officially declare Elk-1 a discovery once the technical staff completes a review of drillstem test data that indicated an open flow potential of 28.5 MMcfd of gas.

Reserves are reported at 3 tcf of gas.

InterOil intends to drill appraisal wells on Elk and conduct more exploration on adjoining structures.

Interestingly, Papua New Guinea's endorsement of Elk coincides with the increasing unlikelihood that the long-proposed Papua New Guinea-Australia gas pipeline project will go ahead.

Somare also had a dig at the world's oil majors when he said Papua New Guinea needed to be proactive in the development of its natural resources.

He said the country could not allow supermajors to place the country's projects on a list with other targets worldwide and leave them on the back burner for a decade.

LNG Ltd. moving into Middle East

LNG Ltd., Perth, and Iran's state-owned National Iranian Oil Co. (NIOC) have signed a gas supply deal by which NIOC will provide as much as 530 MMcfd of gas to LNG Ltd.'s proposed LNG production project on Qeshm Island, off Iran. NIOC has identified several gas fields for potential development near the proposed plant.

The project marks LNG Ltd.'s initial move into the Middle East. The company plans to construct a 3.5 million tonne/year LNG liquefaction plant at Qeshm, to produce LNG for sale in India or East Africa.

It will develop the facility in three stages: The first, scheduled to come on stream in first quarter 2010, will have an annual production capacity of 1.15 million tonnes. LNG Ltd. expects financial close to be reached within a year.

To fast-track the project, the company will immediately select its preferred site on Qeshm Island.

It will benefit from work already done during the last 18 months on its proposed Padang LNG Project in central Sulawesi, Indonesia.

Both projects involve similar-sized production trains, construction techniques, and scheduling and are expected to take 2 years to build. ✦

Letters

Oil industry public relations

The oil industry needs to improve its public relations. Three-dollar gasoline, seventy-dollar crude, forty-billion-dollar profits. The public feels that it is getting ripped off, and the politicians are already talking excess-profit taxes.

When the chairmen of the three largest oil companies sit at a table together to be interviewed on public television to explain that their profits are in line with other industries, it would appear that here is collusion.

Do something dramatic to get the attention of the public!

ExxonMobil, ConocoPhillips, Shell all have major refineries in Louisiana, near New Orleans, which is still a mess. Each of these majors should donate $1 billion to a fund for cleaning up and for

the reconstruction of New Orleans. They should engage Halliburton to coordinate and supervise this work. Halliburton should operate on a nonprofit basis to improve its damaged image.

Marathon is large in Louisiana and Chevron, in Mississippi. They may also want to join in this venture. But let's do something dramatic that the public will notice and not waste money on newspaper ads that very few read.

Henry Levkoff
Oil consultant
New York

Calendar

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

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European Biofuels Forum, Warsaw, 0044 20 7067 1800, 0044 20 7430 9513 (fax), e-mail: c.taylor@theenergyexchange.co.uk, website: www.wraconferences.com/wra112overview.html. 21-22.

PETEX Conference & Exhibition, Olympia, London, +44 (0)20 7408 2000, +44 (0)20 7408 2050 (fax), e-mail: petex@pesgb.org.uk, website: www.pesgb.org.uk. 21-23.

International Symposium on Protective Coatings, Bombay, 022-25767891, 022-25723480 (fax), e-mail: khanna@iitb.ac.in. 24-26.

Petrochem Arabia Conference, Dubai, +44 (0) 1242 529 090, +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 26-27.

Process Industry Maintenance Summit, Antwerp, 44 207 368 9579, 44 207 368 9401 (fax), e-mail: kate.warren@wbr.co.uk, website:

Calendar

www.wbr.co.uk/maintenanceeurope/index.html. 27-30.

IADC Drilling Gulf of Mexico Conference & Exhibition, Houston, (713) 292-1945, (713) 292-1946 (fax); e-mail: info@iadc.org, website: www.iadc.org. 28-29.

Power-Gen International Conference, Orlando, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.pgen.events.pennnet.com. 28-30.

Ethanol Summit, Houston, (207) 781-9617, (207) 781-2150 (fax), e-mail: cgroff@intertechusa.com, website: www.intertechusa.com. Nov. 30-Dec. 1.

DECEMBER

✦Annual Energy Caribbean Conference, Port of Spain, +44 (0)20 7017 4037, +44 (0)20 7017 4981 (fax), e-mail: monique.quant@informa.com. website: www.ibcenergy.com/caribbean. 4-5.

Independent Operators Forum, London, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.operatorsforum.com. 4-6.

Seatrade Middle East Maritime Conference & Exhibition, Dubai, +44 1206 545121, +44 1206 545190 (fax), e-mail: events@seatrade-global.com, website: www.seatrade-middleeast.com. 4-6.

GASTECH International Conference & Exhibition, Abu Dhabi, +44 (0)1895 454 592, +44 (0)1895 454 584 (fax), e-mail: info@gastech.co.uk, website: www.gastech.co.uk. 4-7.

Renewable Energy in the New Low Carbon Britain Conference, London, +44 (0) 20 7467 7100, +44 (0) 20 7255 1472, e-mail: info@energyinst.org.uk, website: www.energyinst.org.uk. 5.

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

OSEA International Exhibition & Conference, Singapore, +44 20 7840 2139, +44 20 7840 2119 (fax), e-mail: osea@oesallworld.com, website: www.allworldexhibitions.com. 5-8.

Common pipeline ground

Christopher E. Smith
Pipeline Editor

Many observers have interpreted the recent US midterm elections as reflecting a public grown weary of the manner in which the nation's business is being conducted. Time will tell to what degree and how broadly this was actually the case.

In the meantime, business—governmental and otherwise—still needs to get done, and get done safely.

Bills reauthorizing the Pipeline Safety Improvement Act of 2002 for 4 additional years starting in 2007 have been introduced in both houses of Congress. The House Energy and Commerce and Transportation and Infrastructure committees have reported out, in versions that will have to be reconciled, reauthorization legislation introduced by Don Young (R-Alas.; OGJ, Oct. 9, 2006, Newsletter).

In September, Senate Commerce Committee Chairmen Ted Stevens (R-Alas.) and Sen. Daniel Inouye (D-Ha.), the committee's chief minority member, introduced legislation reauthorizing the Pipeline Safety Act, as the original law is called. The Senate bill, still in committee, also increases the US Department of Transportation's pipeline inspection staffing to 135 from 90, includes civil enforcement authority against excavators and pipeline operators responsible for third-party damage, provides grants to states that have damage-prevention programs in place, and applies DOT standards to all low-stress pipelines.

Hope for passage

Oil and gas pipeline associations and safety groups hope to see renewing legislation passed before Congress adjourns. "We remain optimistic that the bipartisan nature of this legislation will allow passage during Congress' current session," said Ben Cooper, executive director of the Association of Oil Pipe Lines, adding that pipeline safety is a "universal good" and as such would merit the prompt attention of the next session even if no agreement can be reached with the current Congress.

Despite the progress made toward reauthorization over the course of the year, however, concern has emerged that the current session of Congress might not pass pipeline safety legislation before the end of its term and that the effort to do so might stall.

New leaders in the House and Senate might seek new approaches to the regulatory oversight of industries such as oil and gas pipelines. New relationships will need to be built and new trust established.

Even in purely practical terms, it would be easier to pass legislation already advanced than start the process over in 2007. But if renewal of the Pipeline Safety Act does have to wait until the next congressional session, the groundwork is in place.

In testimony before the House Subcommittee on Energy and Air Quality, Katherine Siggerud, director of physical infrastructure issues for the nonpartisan Government Accountability Office, said, "The overall framework laid out in the Pipeline Safety Improvement Act is improving the safety of gas transmission pipelines." She noted that incremental improvements rather than major restructuring were all that the act required.

Initial results of inspections completed by the Pipeline and Hazardous Materials Safety Administration and states under the Pipeline Safety Act show that operators are "doing well in implementing the assessment and repair requirements of [PHMSA's] integrity management program," according to the GAO, which also noted that documentation of program processes need to improve.

Inspections completed

As of June 2006, PHMSA had completed 20 of 100 inspections scheduled, with states having completed 117 of 670 as of January 2006. The remaining inspections are expected to be completed by 2009, within the term that would be covered by renewed pipeline safety legislation, according to the GAO report entitled "Integrity Management Benefits Pipeline Safety, but Consistency of Performances Measures Should Be Improved."

Pipeline operators, regulators, and legislators will doubtless find many bones of contention in the years ahead. Finding common ground surrounding the safety of their shared customers and constituents could provide the beginnings of the cooperation that will be required to face whatever other hurdles await them. ✦

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Energy to Trade

Editorial

Climate pressure tactics

As though uncertainty over promised benefits didn't provide reason enough to be skeptical, climate alarmists are undermining their agenda with pressure tactics designed to squelch rather than win arguments. By now, futility of the clumsily fabricated Kyoto Protocol is obvious. Repeated claims about a "consensus" of scientists have degenerated into discredited propaganda. And former US Vice-President Al Gore's sermons about the moral imperative of believing whatever he says about global warming speak for themselves.

By nature, however, zeal never rests. A portion of humanity has convinced itself that people are warming the climate dangerously. So it demands that all of humanity change behavior. It declares scientific arguments to have been settled in its favor and rejects suggestions to the contrary as apostasy. It scoffs at precautionary suggestions that differ from its own.

These are not the persuasive activities of groups comfortable with the logic of their position. They seem, in fact, desperately manipulative. And they characterize two decades of global warming politics.

New gambits

Most visible in a new round of pressure gambits is a report by Nicholas Stern, head of the UK Government Economic Service and former chief economist of the World Bank. The report claims that failure to act on climate change will generate costs and risks equivalent to at least 5%/year of global gross domestic product, "now and forever," and perhaps 20%/year or more. And it says the cost of avoiding the worst effects of climate change, requiring cuts in greenhouse-gas emissions of 25% between now and 2050 "and perhaps much more," can be held to 1%/year of global GDP.

Who wouldn't invest 1%/year of economic output to avoid 20%/year of cost? But the deal's not that good. Critics of the 575-page Stern Report point to flaws, including reliance on worst-case assumptions about climate change, problems with cost estimates, and sparse attention to the possible benefits of climate change and to remediation strategies other than forced cuts in carbon emissions.

Hard on the heels of the Stern Report came a proposal from French Prime Minister Dominique de Villepin that the European Union impose a carbon tax on imports from countries rejecting international efforts to cut greenhouse-gas emissions. The blending of policy imperialism with protectionist greed is clever. It probably deserves sacramental status in Gore's moral scheme.

More insidious is an effort in the US to force regulation of greenhouse gases as air pollutants under the Clean Air Act (CAA). The Supreme Court soon will hear arguments in a case challenging the US Environmental Protection Agency's refusal to regulate emissions of greenhouse gases as CAA pollutants. Environmental groups, the governments of 12 states, and three cities want EPA to impose the regulation under a section calling on the government to act on "any air pollutant" that can "reasonably be anticipated to endanger public health or welfare." EPA says the authority doesn't apply to greenhouse gases.

The plaintiff's argument asserts its conclusions. Contrary to alarmist propaganda, the question about climate-change danger to public health remains open. And equating CO_2, a natural substance essential to life, with pollutants addressed by CAA is spurious. Plaintiffs are trying to accomplish in court what they haven't achieved in politics. Characteristically, they're also trying to foreclose debate on the need for costly remedy and on policy options that differ from the mandates and taxes they favor.

Kyoto alternative

A Kyoto alternative received support Nov. 14 in a press briefing by Margo Thorning, managing director of the International Council on Capital Formation. Thorning called the Asia-Pacific Partnership on Clean Development and Climate (APP) preferable to Kyoto, in part because it allows for economic growth. Signed last year by India, China, South Korea, Japan, Australia, and the US, the APP relies on technological development, technical transfer, and international consensus. Thorning cited a recent study done for ICCF that concluded the APP can outperform Kyoto in cuts of global greenhouse-gas emissions.

To alarmists, however, emissions cuts unassociated with the manipulation of people by governments seem not to matter. If alarmists have their way, in fact, prospects for such cuts will receive no attention at all. ✦

OGJ update: Advances in downstream projects create survey category changes

Leena Koottungal
Survey Editor

Oil & Gas Journal's semiannual Worldwide Construction Update reports on refining, petrochemical, LNG, gas processing, gas-to-liquids, sulfur recovery, and pipeline projects. For the first time, this edition of the update separates LNG from gas processing into a category of its own. The gas-to-liquids category includes other related projects such as coal gasification.

Specific project details such as cost, status, completion date, and contractor information included in the report come from an intensive industry survey.

Refining

Plans have been announced for new refineries in the Middle East, South America, and Eastern Europe. Expansions and upgrades are planned in the US, Mexico, Greece, and Asia. Several new and expanded coking units also appear for the first time in this report.

Motiva Enterprises LLC is in the engineering stages of a 325,000-b/d expansion of its 285,000-b/d refinery in Port Arthur, Tex. While the expansion would notably increase refining capacity, modern design and technology would minimize associated emissions. Motiva would utilize advanced technology in all new installations and replace existing systems to cut emissions per barrel from refinery operations.

"We are confident that the market fundamentals will support an expansion of our US refining capacity. Adding 325,000 b/d of refining capacity would be the equivalent of building a new refinery" in the US, said William B. Welte, Motiva president and chief executive officer.

Construction will begin in 2007 with the expanded capacity to come online in 2010. The project would make the Port Arthur refinery the largest in the US (OGJ Online, May 8, 2006).

Sinclair Oil Corp. is in the engineering stage of a project to construct a 30,000-b/d delayed coker at its 60,000-b/d refinery in Tulsa. The unit will begin operating in 2009.

OGJ subscribers can download free of charge the 2006 semiannual Worldwide Construction Update at *www.ogjonline.com* by clicking on OGJ Subscriber Surveys under Online Research Center. This link also includes previous editions of the update.

Construction progresses on the 400,000-tonne/year propylene plant in Yanbu by NatPet. The plant will begin operating by yearend 2007. Photo from Lurgi AG.

In Gujarat, India, the Reliance Petroleum Ltd. refinery will install a new eight-drum delayed coking unit as part of the Jamnager Export Refinery Project. It will be the largest delayed coker in the world, according to Foster Wheeler, and is to commence operations in 2008. Foster Wheeler received a process and detailed engineering contract for the coker.

Saudi Aramco plans two 400,000-b/d refineries, one in Yanbu and a twin plant in Jubail, to be completed in 2011.

Meanwhile, Petroleos Mexicanos (Pemex) plans to upgrade Mexico's oldest refinery near Minatitlan in Veracruz. The upgrades for the 194,000-b/d refinery will allow additional heavy, high-sulfur oil to be refined and will increase production of low-sulfur gasoline and middle distillates.

Petrochemical

The Middle East dominates petrochemical activity with new and expansion projects.

Saudi Kayan awarded an engineering, procurement, and construction (EPC) contract to KBR for a 1.35 million-tonne/year (tpy) olefins plant in Jubail Industrial City. Saudi Kayan is a partnership of Saudi Basic Industries Corp. and Kayan Petrochemical Co.

In the UAE, Abu Dhabi Melamine Industry Co. is planning an 80,000-tpy melamine project in Ruwais. The project's estimated cost is $260 million with completion scheduled for first-quarter 2009. Also, Abu Dhabi Polymers Co. Ltd. is planning a polyethylene and polypropylene unit, both expected to be completed in 2010.

Elsewhere, Shell Eastern Petroleum Pte. Ltd. has awarded a contract to ABB Lummus Global and partner Toyo Engineering Corp. for a world-scale 800,000-tpy ethylene cracker on Bukom Island, Singapore.

The contract covers engineering, procurement, and construction management for the cracker, which will use ABB Lummus's proprietary liquid feedstock steam cracking technology. Construction is to begin in 2007. Start-up is due in 2009-10.

Currently under construction is a Group III lubricant base oil plant within the Petronas refinery complex in Melaka. The first of its kind in Malaysia and Southeast Asia, says the company, the plant will be able to produce 300,000 tpy and is to be completed in 2008.

In US construction, US BioEnergy completed its ethanol plant in Woodbury, Mich., in September. The new, 50 million gal/year plant is the third of its kind in Woodbury.

LNG

LNG construction projects are grow-

CB&I is building an LNG terminal in Xiuyu, Fujian Province, China, for CNOOC Fujian LNG Co. The terminal has Phase I capacity of 2.6 million tonnes/year with Phase II expansion under planning. The terminal is to begin operating in early 2008. Photo from CB&I.

ing in number worldwide.

In June, the US Federal Energy Regulatory Commission approved several LNG terminal projects.

Cheniere Energy received approval to expand capacity at the Cameron Parish, La., terminal, currently under construction, to 4 bcfd from 2.6 bcfd. Also, Cheniere received authorization to build a 3.3-bcfd terminal in Cameron Parish, to be completed in third-quarter 2009.

For Jefferson County, Tex., near Port Arthur, FERC approved a 3-bcfd terminal for Sempra Energy. The project will cost $600 million and is to be completed in 2009. BP PLC's 1.2-bcfd Crown Landing terminal in Logan Township, NJ, also received approval.

Dominion Cove Point LNG and Statoil ASA began construction in October on the expansion at Cove Point on Chesapeake Bay in southern Maryland. Completion of the project targets fall 2008.

Elsewhere, China and EurOrient Financial Group signed an agreement in September to construct an LNG terminal in Rizhao City in Shandong province with an initial import capacity of 1.5 million tpy. Construction of the $965-million terminal is to begin in first-quarter 2008.

LNG projects are in planning and engineering stages in Australia, France, and the Netherlands.

Gas processing

Energy Transfer Partners LP is planning a gas processing plant in Johnson County, Tex., to handle gas produced from the Barnett shale and connect with the partnership's pipeline system. The project consists of two phases: Phase I will be operating by the end of November and consists of a 115-MMcfd cryogenic gas plant. A 170-MMcfd cryogenic gas plant, planned for Phase II, will be completed by the end of June 2007. Project cost is $65 million.

Meanwhile, Inter Pipeline Fund plans to expand its Cochrane ethane plant west of Calgary to 80,000 b/d from 65,000 b/d. Upon regulatory approval, the project is to be completed by year-end 2008.

The In Amenas natural gas project in southeastern Algeria started production in May (OGJ Online, May 8, 2006). Production is to build to 9 billion cu m/year of gas over the next several months. The project is a joint venture of Sonatrach and Statoil ASA.

GTL, other gas

In June, the $950-million Oryx gas-to-liquids plant was inaugurated in Qatar (OGJ Online, June 7, 2006). It is the first commercial GTL plant in the world and utilizes the proprietary, low-temperature Sasol Slurry Phase Distillate process, which is based on Fischer-Tropsch technology (OGJ, Mar. 14, 2005, p. 18).

The plant will convert 330 MMcfd of lean gas from Qatar's North gas field into 34,000 b/d of ultralow-sulfur diesel, 24,000 b/d of diesel, 9,000 b/d of naphtha, and 1,000 b/d of LPG.

In Spreetal, Germany, the Siemens Power Generation Group plans to build a large-scale coal gasification plant. The plant will have more than 1,000 Mw thermal capacity and is scheduled for completion in 2009.

GE Energy & Bechtel Power have agreed with American Electric Power to proceed with the front-end engineering and design of a 630-Mw coal gasification plant in Mason County, W.Va. The FEED work is to be completed in mid-December. GE and Bechtel also signed a FEED agreement with AEP in September 2005 for a 600-Mw coal gasification project in Meigs County, Ohio.

Sulfur

Kuwait National Petroleum Co.'s tail-gas treating unit is currently under construction in Shuaiba, Kuwait. Project cost is $54 million.

Construction includes 6 miles of 30-in. pipeline on the Northeast ConneXion-NY/NJ natural gas expansion project by Tennessee Gas Pipeline, subsidiary of El Paso Corp. Photo from El Paso.

Worley Parsons is working with several sulfur projects in the engineering stage. A Claus project in Nizhnekamsk, Russia, will process 880 tonnes/day of sulfur from refinery acid gas. A similar project is being completed for Statoil in Mongstad.

More sulfur projects in the engineering stage are in Italy, Canada, and other locations.

Pipeline

In May in the US, Oneok Partners and Williams formed a joint venture, Overland Pass Pipeline Co. LLC, to construct an NGL pipeline from Opal, Wyo., to Conway, Kan. The pipeline will transport 110,000 b/d with an expandable capacity of 150,000 b/d.

The route spans from higher to lower elevations, requiring only one pump station and minimizing operating costs, according to the partners. Construction of the 750-mile, 14- and 16-in. pipeline is to begin in summer 2007, with start-up scheduled for early 2008. The project cost is about $450 million.

Energy Transfer Partners is planning a 36-in. expansion connecting the Barnett shale to its Texoma pipeline. Pipelay will include 27 miles of 30-in. pipe and 108 miles of 36-in. pipe at an expected cost of $300 million.

In Canada, Pacific Trail Pipelines LP, a partnership of Pacific Northern Gas Ltd. and Kitimat LNG, plans a 292-mile natural gas transmission pipeline between Kitimat and Summit Lake, BC. The project will cost $1.2 billion and will begin operating in late 2009. ✦

Elections jostle the outlook for US energy issues

Nick Snow
Washington Correspondent

Energy remains firmly on the national agenda following Nov. 7 congressional elections in which Republicans received what US President George W. Bush described as "a thumpin'."

At a White House briefing on Nov. 8, Bush said debate on the subject must continue.

"Dependency on foreign oil is a national security and economic security problem, and it's a problem that requires bipartisan cooperation," he said. "I know the Democrats are concerned about this issue, as am I."

Democrats want to repeal tax breaks the oil and gas industry has received, Rep. Nancy Pelosi (D-Calif.), who becomes speaker of the House, told one interviewer after the election. She was not more specific, but the House Democratic Leadership web site lists "$33 billion in tax breaks and subsidies for Big Oil."

Tax breaks

These include $4 billion of provisions in the Energy Policy Act of 2005 and $8.6 billion of "tax loopholes," which two House bills, HR 5218 and HR 5234, aim to close.

The first bill, which Rep. Jim McDermott (D-Wash.) introduced on Apr. 27, would make oil and gas companies ineligible for reduced tax rates related to exports enacted in 2004 for domestic manufacturers after the World Trade Organization ruled previous provisions, which did not include the oil and gas

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WATCHING GOVERNMENT

Nick Snow, Washington Correspondent

Meantime, back in the states...

North Dakota Gov. John Hoeven became chairman of the Interstate Oil & Gas Compact Commission at the group's annual meeting in Austin in late October and immediately announced several objectives. They include an initiative to continue emphasizing states' roles in national energy policies and security, continued efforts to reduce energy manpower shortages, and support for Wyoming Gov. Dave Freudenthal's oil price differentials task force.

"The United States is the major supplier of natural gas and oil to the United States. We often lose sight of the abundant natural resources existing in this country and their huge importance to our citizens," Hoeven said.

Freudenthal's task force is examining price anomalies in the Rocky Mountains and Northern Plains. "The price differential has resulted in creating unnecessary uncertainty for mineral owners and companies that are willing to explore and produce in our part of the country," said Hoeven. The task force is expected to have a report prepared by the end of 2006.

Four resolutions

Four resolutions came out of the meeting of officials from 37 states. The first called for an energy policy that would provide access to federal lands, support and encourage research and development, enhance the oil and gas transportation infrastructure, and support each state's right to oversee oil and gas regulation.

IOGCC noted that domestic gas demand is expected to increase 60% by 2020 and that currently inaccessible acreage contains more than 65% of the country's undiscovered onshore oil resources and 40% of its undiscovered gas.

The group's second resolution urged the US Department of Energy to support regulations that enable the development of safe carbon dioxide storage in underground geologic formations. It also urged the US Environmental Protection Agency to work with IOGCC in its carbon capture and storage efforts.

Under the third resolution, IOGCC said it plans to continue helping the oil and gas industry meet its labor needs, an effort that began with a task force Hoeven led.

Plugging orphan wells

The fourth resolution urges Congress to establish funding for the reclamation of orphan wellsites. Unplugged abandoned wells and associated facilities can cause pollution and other hazards, and states that already have established programs to plug them receive no federal help.

IOGCC also released its 2006 report on marginal wells, which it said accounted for nearly 17% of the oil and 9% of the gas produced onshore in the US during 2005. Marginal gas wells produced more than 1.76 tcf last year as average daily production reached a 10-year peak.

The report noted that research remains important to these wells' continued productivity and that appropriations committees in the US House and Senate proposed eliminating oil and gas research in DOE's Office of Fossil Energy.

"The small independent producers who operate marginal wells many times do not have the means to conduct their own research," IOGCC Executive Director Christine Hansen said. ✦

industry, were protectionist. McDermott's bill was referred to the Ways and Means Committee, which did not act on it.

The second bill, HR 5234, aimed to repeal Energy Policy Act provisions relating to temporary expensing of oil refining equipment, determination of a small-refiner exception to the accounting for depletion on oil production, and amortization of geological and geophysical expenses. It was introduced by Rep. John B. Larson (D-Conn.) on Apr. 27 and referred to the Ways and Means Committee, where it was not acted upon.

The Democrats also propose repeal of deepwater royalty relief, which they say would save taxpayers up to $20 billion over the next 25 years. Deepwater royalty relief became controversial earlier this year when it became apparent that price thresholds were omitted for leases issued during 1998-99.

Shortly before the election, House Government Reform Committee Chairman Thomas M. Davis (R-Va.) and Energy Subcommittee Chairman Darrell E. Issa (R-Calif.) announced that the Government Accountability Office agreed to investigate the Minerals Management Service's handling of the federal deepwater leasing program.

Their likely successors when Democrats take control of the House in January—Henry A. Waxman (Calif.) and Diane E. Watson (Calif.), respectively—probably will try more aggressively to recover royalties lost as a result of the omission of price thresholds. They probably will try to repeal deepwater royalty relief.

Biggest casualty

Among advocates of federal oil and gas leasing in the House, Resources Committee Chairman Richard W. Pombo (Calif.) led the list of election casualties.

As he tried to convince voters that greater access to domestic oil and gas resources was as important as developing solar, wind, and other alternatives, Pombo fought to preserve the House's

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aggressive approach to Outer Continental Shelf leasing and resisted the Senate's more modest proposal.

His departure, along with the likely assumption of the committee's chairmanship by Democrat Nick J. Rahall (W.Va.) in January, removes most of the resistance to the Senate bill, which concentrates on the eastern Gulf of Mexico and has the support of Florida's senators.

Resource Committee activities potentially affecting oil and gas the past few years were not confined to leasing of the OCS and Arctic National Wildlife Refuge coastal plain. Cathy McMorris Rogers (Wash.) led a task-force review of the National Environmental Policy Act, which held seven hearings and issued 20 recommendations on Sept. 20. She was reelected but likely will become chief minority member if Democrat Tom Udall (NM) decides to pursue the matter further.

Pombo became the target of environmental groups after he pushed a bill that they felt would have gutted the Endangered Species Act. One such organization, Defenders of Wildlife, opened a political headquarters in Pombo's district last spring from which almost 2,000 volunteers were sent to knock on the doors of 76,000 voters' homes, political director Mark Longabaugh said.

Defenders of Wildlife opposed Pombo's stands on drilling off California's coast and in ANWR, according to Longabaugh. "The combination of those positions with money he'd taken from the oil and gas industry was a detriment to him," he told OGJ.

His group, the Sierra Club, and other environmental organizations worked against 26 incumbents. "But Pombo was our main target. A large percentage of our efforts went toward defeating him," Longabaugh said.

New committee chairs

When the 110th Congress convenes in January, the House Energy and Commerce Committee chairmanship will move from Republican Joe Barton of Texas to John D. Dingell of Michigan. While Democrats can be expected to aggressively promote alternative motor fuels, Dingell probably will temper many of the ideas because he comes from Detroit and is receptive to automakers' concerns.

One Energy and Commerce Committee member who pushed important legislation last session won't be back in 2007. Rep. Charles H. Bass (R-NH), who spearheaded a bill aimed at expediting new-refinery construction, lost his reelection bid. The bill passed the House and got as far as the Senate Energy and Natural Resources Committee, where it received no more than a polite hearing.

Democrat Jeff Bingaman of New Mexico will become Energy and Natural Resources chairman in the Senate, trading jobs with Pete V. Domenici, who will become chief minority member. While the two worked closely on many oil and gas issues, a major difference emerged the past few months as Bingaman pushed for more discussions of climate change. Those discussions can be expected to move to the foreground in January.

Bingaman also did not like aspects of the OCS leasing bill that the committee approved and the Senate passed, but it's not likely he will try to undo the measure. It was a carefully developed compromise that eventually won the support of Florida's senators, who previously opposed any activity in the eastern Gulf of Mexico.

More fireworks are likely in the Environment and Public Works Committee, where Republican James M. Inhofe (Okla.) will surrender the chairmanship, following the lame duck session, to Democrat Barbara Boxer (Calif.). James M. Jeffords (I-Vt.), the current chief minority member, is retiring at the end of the year.

In other major House oil and gas-related races, Rep. Heather Wilson (R-NM) was ahead of her Democratic challenger, Patricia A. Madrid, by more than 1,300 votes but had not been declared the winner at this writing. Thelma Drake (R-Va.) received 51% of the vote in her coastal district, which would be most directly affected if the state supports oil and gas leasing off its coast.

And Rep. John E. Peterson (R-Pa.), one of the principal sponsors of the House's offshore leasing bill in 2006, was handily reelected. His return as the leading proponent of increased natural gas leasing on the OCS will make the issue difficult to ignore even in a House controlled by the Democrats. ✦

IEA: Fossil energy to dominate market through 2030

Doris Leblond
OGJ Correspondent

Fossil fuels will dominate the energy market through 2030 as oil's share slips to 33% from 35%, according to the International Energy Agency's World Energy Outlook 2006.

The report said the reliance on fossil fuels prevails both in a reference scenario, where current policies remain the same, and in an alternative policy scenario where governments act strongly to create "an energy future which is clean, clever, and competitive," but at a lower level.

In the reference scenario, oil demand would grow by 1.3%/year during 2005-30—broadly in line with gross domestic product—averaging 1.7% in 2005-15 and 1.1% in 2015-30. It would reach 99 million b/d in 2015 and 116 million b/d in 2030, up from 84 million b/d in 2005.

Sources of demand

Over 70% of the oil demand increase

will come from developing countries where economic growth, the main driver of oil demand, is highest. Demand rises more slowly in developed, Organization for Economic Cooperation and Development member countries, especially in Europe and the Pacific region, but the report notes "the absolute increase in North America—5.9 million b/d over the Outlook period—is the second largest over any region because it is already by far the largest consumer."

The share of natural gas also rises, but grows less than projected in the last Outlook due to higher prices. However gas demand grows faster than coal, which sees the biggest fossil fuel demand increase in absolute terms, but it does not overtake it before 2030.

The main demand for oil to 2030 will be from the transport sector, which rose to 47% in 2004 from 35% in 1980. It is projected to increase to 52% in 2030. Although biofuels are expected to make a significant contribution to meeting the sector's energy needs, their share by 2030 will reach only 4% as rising food demand competes for the needed land. However, points out the report, new biofuels technology, notably lingo-cellulosic ethanol, could allow biofuels to play a much larger role.

Supply sources

Oil supply is increasingly dominated by a small number of major producers where oil resources are concentrated. Organization of Petroleum Exporting Countries's share of global supply grows to 48% by 2030 from 40% now and 42% in 2015. Conventional crude production from non-OPEC countries peaks by the middle of the next decade, but natural gas liquids production continues to grow.

Conventional oil accounts for the lion's share of the increased oil supply over the Outlook period, but nonconventional resources—mainly oil sands in Canada—and, to a lesser extent, gas-to-liquids plants play a growing role. Canadian oil sands are projected to triple to 3 million b/d by 2015 and reach 5 million b/d by 2030.

The oil industry needs to invest $164 billion/year over 2005-30—a total of $4.3 trillion (in 2005 dollars). Three quarters of this will go to the upstream, indicates the Outlook, adding that upstream investment needs are more sensitive to changes in decline rates at producing fields than to the demand growth rate of oil.

IEA admits there is no guarantee that all of the investment needed will be forthcoming, as the possible impact of government policies, geopolitical factors, unexpected changes in unit costs, and prices and new technology could affect the opportunities and incentives for private and publicly owned companies to invest. IEA considers particularly uncertain the ability and willingness of major oil and gas producers to step up investment in order to meet rising global demand.

It notes, in this context, that capital spending by the world's leading oil and gas companies increased sharply over the first half of the current decade and, under company plans, will rise further to 2010. But "the impact on new capacity of higher spending is blunted by rising costs" and was only 5% higher than in 2000.

Prices

In its analysis of oil prices over the Outlook period, IEA has revised them upwards in the expectation that crude oil and refined-product market remains tight. Market fundamentals point to a modest easing of prices as new capacity comes on stream and demand growth slows. But prices could be driven up by new geopolitical tensions or a major supply disruption.

The Outlook assumes that the average IEA crude oil import price—$51/bbl in 2005—will average slightly over $60/bbl through 2007, then decline to $47/bbl by 2012. It would rise slowly thereafter, reaching $50/bbl in 2020 and $55 in 2030. Assuming a 2.3%/year inflation rate, the price in nominal terms would reach $97/bbl in 2030. Natural gas prices should follow this trend because of inter-fuel competition and the continuing use of oil-price indexation in long-term gas supply contracts.

The Outlook, however, noted that oil demand is becoming less sensitive to changes in final prices, as consumption increasingly is concentrated in transport where demand is the least price-elastic. Income, which has continued to grow strongly in most regions, remains the primary demand driver for oil as well as other energies.

The result is that oil demand in global oil consumption becomes less and less responsive to movements in international crude prices, and this means prices would fluctuate more than in the past to future short-term demand and supply shifts. IEA blames the "cushioning effect" of subsidies to oil consumers as well as taxes for the insensitivity of oil demand to higher prices.

However, it is careful to add: "Oil prices still matter to the world economy," which would have grown more rapidly had oil prices and other energy prices not increased, the impact being higher on heavily indebted poor countries. ✦

Nigeria group to use flare gas for electricity

Nick Snow
Washington Editor

The Kwale partners' flaring-reduction project will be the first in Nigeria to use associated natural gas for generating electricity, officials of the International Finance Corp. and World Bank announced Nov. 10. Nigeria currently leads the world in reported flared gas.

They said Kwale also would be the first effort supported by Global Gas Flaring Reduction (GGFR), a public-private partnership to be registered as a Clean Development Mechanism (CDM) under the Kyoto global warming reduction accords.

WATCHING THE WORLD

Eric Watkins, Senior Correspondent

Corrib project issue persists

Remember Shell's efforts to bring natural gas to Ireland and efforts by protestors to stop them? It's a while since we've looked at that issue, but it's still in the news, and the news is not good given the reports we see (OGJ, Dec. 19, 2005, p. 39).

Now, Ireland's prime minister, or taoiseach, Bertie Ahern, has entered the debate. Last week he said "the rule of law has to be implemented" and "the work goes on" at the Corrib gas terminal at Bellanboy in County Mayo.

Construction of the terminal and the route of an onshore pipeline to bring gas from offshore Corrib field have been strongly opposed by some local residents. Indeed, protests had been staged at the site every day since Oct. 2, when building resumed after lengthy consultations and a number of safety studies.

Police knock heads

Ahern, who was aware that Irish police had used batons against anti-Shell demonstrators on Nov. 10, defended his government's actions. "The negotiations are over," he said. "The work goes on. If there are those who try to frustrate that, they are breaking the law, and it is a matter for the gardai [police] to enforce that."

Ahern added, "From the government's point of view, that's it." But not everyone agrees with that view, especially Ahern's political opponents.

The president of Ireland's Labor party, Michael D. Higgins, said protestors in the north Mayo community have "genuine grievances" and insisted that Ahern was "distorting the facts" in relation to planning approval for the complete project.

He was one of several people who criticized the prime minister along with Justice Minister Michael McDowell for suggesting that the protestors, who operate under the rubric of the Shell to Sea campaign, have been infiltrated by Sinn Fein, the political wing of the militant Irish Republican Army.

Sinn Fein front?

"Yet again, in an entirely predictable tirade, Michael McDowell is trying to use the difficulties in Bellanaboy as an excuse to attack Sinn Fein," said Vincent Wood, a member of the Shell to Sea campaign.

"In doing so, he is also misleading the public," Wood wrote. "Michael McDowell claims that the Shell to Sea campaign is led by Sinn Fein. It is not. He does not have to take Sinn Fein's word for it; he could take a trip to Mayo and ask the members of the Shell to Sea group who is running their campaign."

Regardless of who is behind the Shell to Sea campaign, the protest came as a result of unwillingness to accept the government's decision to move ahead with the project.

That decision came in late October, when Minister for the Marine Noel Dempsey rejected requests for a new inquiry into alternative sites for the terminal, saying there was simply "no case" for any such inquiry.

Some people just don't seem to want to know that. ✦

The partnership was launched at the World Summit on Sustainable Development in Johannesburg in 2002 to bring public and private sector participants together to reduce gas flaring and venting. The group will host a forum on flaring reduction and gas utilization Dec. 13-15 in Paris to discuss opportunities and technology.

Fewer than 20 countries account for more than 85% of flared and vented gas worldwide, according to GGFR estimates. Most gas is flared because it can't be produced or transported economically. Some is disposed of in this manner for safety reasons at production sites.

"This doesn't just involve developing countries," said Rashad Kaldany, director of IFC and World Bank's oil, gas, mining, and chemicals department in Washington, DC. "Wells are being flared in Canada and the US too." Most US flaring is at small, state-regulated onshore wells, he said.

"There also are legislative or regulatory reasons why gas is flared or, worse, vented in some countries," he said.

He said that GGFR hopes that the Kwale project, which is 40% owned by Nigerian Agip, an affiliate of Italy's Eni SPA, and 60% owned by Nigerian National Petroleum Corp., will stimulate other producing companies and countries' interest in using associated gas to generate electricity or for other purposes. Kwale's captured gas will be used at a combined-cycle power plant in Okpi.

World leader

Nigeria led with 24.1 billion cu m (851.08 bcf) of the 107.5 billion cu m (3.796 tcf) of flared or vented gas reported worldwide in 2004, the most recent year for which figures are available, according to GGFR. Russia, which was second at 14.7 billion cu m (519.1 bcf), could be bigger because its figure may not be reliable.

Two other projects—a Royal Dutch Shell PLC gas-to-power venture and a reinjection effort supported by Eni—are being considered there as alternatives to

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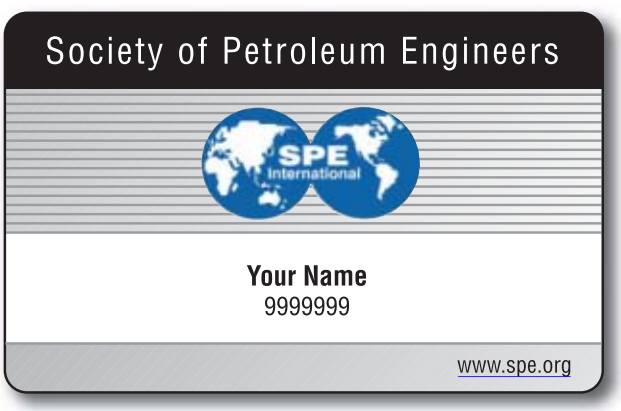

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flaring, said GGFR Partnership Manager Bent Svensson.

Nigeria's national power company hopes more gas-to-power projects will help its total annual generation ultimately grow to 15 Gw from 2-3 Gw currently, Svensson said.

But it's the reduction of global climate change contributing emissions, as much as additional available gas, that could make more flaring-reduction projects work economically, Svensson suggested. "This mechanism creates an additional revenue flow from the sale of [pollution reduction] credits," he explained.

The Kwale project will eliminate a projected 1.5 million tons of carbon dioxide annually, making it the 10th largest of the 2,160 projects in the CDM pipeline under the Kyoto accords.

"There's major potential in Africa because so much gas is being flared there," said Svensson. He noted that GGFR held a flare reduction workshop in Algeria this week, where it is supporting efforts by Sonatrach, the national energy company, and private partners. The partnership soon will send officials to Libya for the first time, he added.

LNG's impact

The LNG market's growth has made a big difference in reducing gas flaring and venting globally, the two officials said. Kaldany said it has had a major impact in Nigeria, while Svensson noted that much of the gas now being flared in Angola will be used for an LNG project backed by Chevron Corp., which will consolidate production from 20 locations for export.

But Kaldany added that LNG is not always a solution because it requires large volumes. "In other cases, local uses are more practical. Most of these are gas-to-power projects, but some also are petrochemical plants," he said.

"LNG plants need to be big to be commercial. Gas-to-liquids plants are promising for smaller amounts. It's possible we'll have a good discussion about these technologies at our conference in December," said Svensson.

GGFR members include multinational oil companies BP PLC, Chevron, Eni, ExxonMobil Corp., Marathon Oil Corp, Norsk Hydro AS, Shell, Statoil ASA, and Total SA.

Member countries include Algeria, Angola, Cameroon, Chad, Ecuador, Equatorial Guinea, Indonesia, Kazakhstan, Nigeria, Qatar, and the Russian province of Khanty-Mansijsysk. Canada, Norway, the UK, the US, and members of the European Union are listed as donor countries.

GGFR also gets support from the Organization of Petroleum Exporting Countries' secretariat and the World Bank Group.

The members represent countries with about 75% of the world's total flared gas. GGFR would like Mexico, Venezuela, Brazil, Egypt, Iraq, Iran, and the rest of the Russian federation to join. ✦

FERC finds three Rocky Mountain gas lines acceptable

Nick Snow
Washington Correspondent

Three related Rocky Mountain natural gas pipeline projects would be environmentally acceptable with appropriate mitigation measures, the Federal Energy Regulatory Commission's staff concluded in a draft environmental impact statement.

Known as the Rockies West Phase Project, the three proposed pipelines would transport 1.5 bcfd of gas, FERC said Nov. 3.

The three are the REX-West Project, proposed by Rockies Express Pipeline LLC; the Blanco to Meeker Project, proposed by TransColorado Gas Transmission Co., and the Wamsutter Expansion Project, proposed by Questar Overthrust Pipeline Co.

FERC said that its staff concluded that the projects would be environmentally acceptable because:

- More than 99% of the REX-West facilities would be on existing rights-of-way while the Wamsutter Expansion Project would parallel existing rights-of-way for its entire length.
- The overall project would be consistent with or conform to federal resource management plans.
- The three pipelines' sponsors would use resource or activity-specific plans, procedures, and agreements to protect natural resources, avoid or limit environmental impact, and promote restoration of all disturbed areas during the pipelines' construction and operation.
- Horizontally drilling would not disturb beds and banks of the Missouri River on the Kansas-Missouri state line and of Big Creek in Missouri along the REX-West main line, and of Ten Mile Creek in Wyoming along the Wamsutter Expansion mainline.
- Appropriate consultations with the US Bureau of Land Management, US Fish and Wildlife Service, and states' historic preservation offices, as well as resulting compliance actions, would be completed before construction would be allowed to commence on each of the three projects.
- An environmental inspection and monitoring program would be implemented to ensure compliance with all mitigation measures, certificate conditions, requirements in the BLM's development plan, and other stipulations included in permits from authorizing federal, state, and local agencies.

FERC said that its commissioners would consider staff recommendations and the final EIS when they issue final decisions on the projects. ✦

Industry, ethanol producers sign use charter in France

Doris Leblond
OGJ Correspondent

Members of France's oil industry, independent motor fuels distributors, automobile manufacturers, farmers, and ethanol producers on Nov. 13 signed the "Charter for Ethanol E85" which sets out their commitments over the next 5 years.

Esso SAF is the only major oil company that did not sign it. Spokesman Emmanuel du Grandrut told OGJ the group has already carried out all needed investments to incorporate the compulsory 5% ethanol into its gasoline, a content adapted to all current motors. E85 would require further investments, but Esso said it would adapt its investment as demand grows.

E85 contains 85% ethanol and 15% traditional unleaded gasoline. Finance and Economy Minister Thierry Breton describes it as "the first post-oil fuel." Its introduction as an alternative to traditional unleaded at all service stations in France by 2010 was deemed feasible in a study commissioned by the government from racing champion Alain Prost. It was launched at the end of September on condition that "the dynamics were all launched together" (OGJ, Oct. 23, 2006, p. 32).

Signing dynamics

In signing, Total SA promised to deploy the most E85 points of sale—200-275—by yearend 2007, about 40% more than the Prost study considers necessary. BP France promised to deploy 5-10 points over the same period, as did Société des pétroles Shell and Agip France.

Oil companies and motor fuels distributors are committed to adapt 500-600 selling points to "Superethanol E85" by yearend 2007, a number they said should treble by 2008 to meet growing demand.

This demand should be met by the commitment of automobile manufacturers to put on the market in 2007 at least one model capable of running on this type of fuel at a price in line with conventional models. The government promised that tax breaks to make the new fuel competitive would be submitted to Parliament.

Farmers are also committed to providing reliable supplies on a contractual basis to the ethanol producers, and producers have signed agreements to keep up with the distribution trend and, through productivity measures, achieve processing costs competitive with those of American operators by yearend 2012.

A committee will be set up to follow up application by all signatories of the charter, which became operational Nov. 13. ✦

DOI completes first Colorado oil shale projects' EIS

Nick Snow
Washington Correspondent

The US Department of the Interior found no significant negative impact from five planned oil shale research, development, and demonstration (RD&D) projects in Colorado's Piceance basin.

C. Stephen Allred, assistant Interior secretary for land and minerals management, signed decision records for the projects proposed by Chevron USA Inc., EGL Resources Inc., and Shell Frontier Oil & Gas Inc. on Nov. 13, effectively clearing the way for 160-acre leases associated with each proposal to be issued.

The Green River oil shale formation, which covers parts of Colorado, Utah, and Wyoming, holds the equivalent of 800 billion bbl of recoverable oil, more than 70% of which lies under federally managed lands.

"These RD&D projects will allow us to test our belief that we have the knowledge and expertise to develop this resource effectively, economically, and with responsibility to the environment and to local communities," Allred said.

The findings were based on environmental assessments conducted by the department's Bureau of Land Management, which examined each project's potential impacts as well as all five projects' cumulative impacts combined with other oil and gas developments in the area.

Each finding is supported by extensive mitigation impacts, which will be added as stipulations to the leases, DOI officials said. They added that the companies holding the leases will need to submit detailed development plans and obtain all required state, local, and federal permits before beginning any on-site activities.

Allred said that federal, state, and local governments and community partners cooperated during BLM's environmental assessments, and added that all stakeholders would continue to play an integral role as DOI moves forward with oil shale development. ✦

EIA: GHG emissions up, but growth rate declines

While volumes of greenhouse gases emitted in the US are rising, the rate of increase and amounts emitted in relation to economic growth are falling.

In an annual estimate required by Congress, the US Energy Information Administration said 2005 emissions of greenhouse gases associated with human activity totaled 7.1 billion tonnes of carbon dioxide equivalent (CO_2e). That's up 0.6% from the year before and 17% from 1990 (see table).

Emissions of CO_2, the target of most policy proposals for global-warming remediation, grew in 2005 at a below-average rate of 0.3%. Emissions—adjusted to CO_2e to reflect global warming potential—of nitrous oxide were up 1.9% and of methane, up 0.9%.

CO_2 represented 84% of US greenhouse-gas emissions in 2005. Nitrous oxide and methane together made up 14% of the total. The other greenhouse gases are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6), emissions of which increased by a combined 7.2% in 2005.

Since 1990, US greenhouse gas emissions have increased at an average rate of 1%/year. EIA notes that the growth rate is below those of population (1.2%/year), primary energy consumption (1.1%/year), electric power generation (1.9%/year), and gross domestic product (3%/year) over the same period.

Emissions of CO_2 alone have grown at an average rate of 1.2%/year since 1990, closely tracking growth in population and energy consumption. Methane emissions fell during the 1990s but have risen since 2001. Emissions of nitrous oxide are above their levels of 1990 but have fluctuated over the period.

Greenhouse gas intensity—emissions per unit of real economic output—has fallen by 25% since 1990 at a rate averaging 1.9%/year, EIA said. CO_2 intensity has fallen by 23% over the same period.

CO_2 emissions per person in 2005 were 1% above their 1990 level. The 2005 CO_2 emissions total was 20% above its 1990 level.

Almost all emissions of CO_2 are associated with energy consumption, with minor amounts coming from industrial processes. ✦

US GREENHOUSE-GAS EMISSIONS

Gas	1990	1995	1998	1999	2000	2001	2002	2003	2004	2005*
	Million tonnes of CO_2e									
Carbon dioxide	4,990.6	5,308.5	5,594.0	5,673.9	5,853.4	5,767.0	5,814.7	5,875.3	5,988.7	6,008.6
Methane	701.7	672.5	629.8	616.5	611.2	597.7	600.2	602.2	606.5	611.9
Nitrous oxide	333.5	357.7	348.8	346.8	342.8	337.9	333.6	332.9	359.9	366.6
HFC, PFC, SF_6	87.1	94.9	134.3	133.9	138.0	128.5	137.8	136.6	149.5	160.2
Total	**6,112.8**	**6,433.5**	**6,707.0**	**6,771.1**	**6,945.4**	**6,831.0**	**6,886.3**	**6,946.9**	**7,104.6**	**7,147.2**

*Preliminary.
Source: US Energy Information Administration

COMPANY NEWS

Shell to buy out Shell Canada for $7.7 billion (Can.)

Royal Dutch Shell PLC announced plans to buy the shares that it does not already own in Shell Canada Ltd. in a move aimed at boosting the parent company's stake in oil sands. Shell currently owns 78% interest in Shell Canada.

In other recent company news:

• A group led by BHP Billiton agreed to buy Anadarko Petroleum Corp.'s Genghis Khan oil and gas development in the deepwater Gulf of Mexico for $1.35 billion, Anadarko reported.

• Separately, Statoil ASA agreed to pay $901 million to acquire two of Anadarko's Gulf of Mexico oil discoveries and one prospect. Closing, subject to regulatory approvals, is expected during first quarter 2007.

• Dominion plans to pursue the sale of most of its oil and gas assets to concentrate more on its electric generation and distribution business and its transmission, storage, and retail business, said the utility, based in Richmond, Va.

PERSONNEL MOVES AND PROMOTIONS

ConocoPhillips makes senior management changes

ConocoPhillips has made changes to its exploration and production senior management team, all effective Dec. 1.

Kevin Meyers, president, Russia and Caspian region, will become president, ConocoPhillips Canada. He succeeds **Brent Smolik**, who left the company. Meyers will relocate to Calgary.

Don Wallette, vice-president, Shtokman project, will become president, Russia and Caspian region, succeeding Meyers. Wallette will continue to be located in Moscow.

Paul Warwick, president, Middle East and North Africa, will become president, Europe and West Africa. Warwick will relocate to Tananger, Norway. His successor will be named later, ConocoPhillips said.

Transier

Endeavour International Corp., Houston, has named **William L. Transier** chairman, chief executive officer, and president. Separately, **John N. Seitz** has been named vice-chairman of the company.

Transier will relocate to London, and Seitz will serve in a consulting capacity based in the Houston office. Both formerly served as cochief executive officers of the company.

In 2004 Seitz and Transier cofounded Endeavour, which focuses its exploration and development in the North Sea.

El Paso Corp. has named **Brent J. Smolik** president of El Paso Exploration & Production Co.

Smolik began his career as a drilling and reservoir engineer for ARCO. In 1990, he joined Burlington Resources Inc. as a reservoir engineer and acquisition coordinator. He advanced into engineering supervisory and management positions in the Denver, offshore, San Juan, and Gulf Coast divisions.

He then served as vice-president, chief engineer, in Houston until relocating to Calgary in 2004, where he was appointed president of Burlington Resources Canada.

Following Burlington's merger with ConocoPhillips in March, he remained in Calgary and became president of ConocoPhillips Canada.

TransMontaigne Partners LP, Denver, has appointed **Randall J. Larson** president and chief executive officer of TransMontaigne GP LLC, its general partner. Larson will continue to serve as chief financial officer for TransMontaigne GP.

He succeeds **Donald H. Anderson**, who has resigned. Anderson will continue to serve as nonexecutive chairman of TransMontaigne GP.

Heritage Oil Corp. has appointed **Michael Hibberd** as chairman and **Tony Buckingham** as chief executive officer.

Hibberd and Buckingham succeed **Micael Gulbenkian**, who retired.

Buckingham said, "[The company's] operations and exploration activities will continue without interruption in Russia, Uganda, Oman, and Iraq with a focus on Kurdistan. We shall look to update the market on the drilling of the Kingfisher-1 well in Uganda shortly."

Regal Petroleum PLC, a London-based E&P company, has named **Neil Ritson** as its new chief executive officer.

Prior to this appointment, Ritson was a nonexecutive director who joined Regal in July. He has extensive experience in the petroleum industry having started his career as a geophysicist with BP PLC before moving through senior technical roles into executive management.

Madagascar Oil Ltd. (MOL) has appointed **George B. Nilsen** chief operating officer.

Nilsen has more than 28 years of experience in the oil and gas industry, spending more than half of his career involved in heavy oil developments and

• Devon Energy Corp. intends to sell its Egyptian oil and gas assets and terminate its operations there.

• Pogo Producing Co., Houston, plans to divest nonstrategic oil and gas properties in the Gulf of Mexico, South and East Texas, South Louisiana, the Permian Basin and Texas Panhandle areas, and Western Canada.

• Talisman Energy Inc. plans to sell noncore properties in North America. The predominantly nonoperated assets produce 17,000 boe/d, of which 60% is gas and 40% is oil and liquids.

• Separately, Talisman Energy (UK) Ltd. has agreed to pay an undisclosed sum to Shell UK Ltd. and Esso Exploration & Production UK Ltd. to acquire the companies' combined 85.81% interest in Fulmar oil field and a 100% interest in Auk oil field in the central North Sea.

• Private gas company Dana Gas PJSC of Sharjah, UAE, will acquire Centurion Energy International Inc., Calgary, for $1.15 billion (Can.), or $12/share.

• Unit Petroleum Co., Tulsa, plans to acquire privately owned Brighton Energy LLC for $67 million. The acquisition includes proved reserves of 27 bcf of gas equivalent and 5 MMcfd of production.

• Encore Oil PLC, London, announced a sales and purchase agreement to acquire four oil and gas companies having blocks in the UK North Sea. The four firms are privately held Virgo Oil & Gas PLC and Virgo Energy Ltd., Nido Petroleum (UK) Ltd., and Grove Energy (UK).

• Pluris Energy Group Inc., Houston, has agreed to acquire San Enrique Petrolera SA of Buenos Aires for an

many years in international projects including new field developments.

He has served as senior vice-president of strategic planning and asset management for Nuevo Energy and has managed the Gulf Coast division of Santa Fe Snyder, where he was in charge of engineering, production, and operations.

Nilsen also held a variety of operational and engineering positions with Santa Fe Energy, Petro-Lewis Corp., and Gulf Oil Exploration & Production Co.

Pebercan Inc., Montreal, has appointed **Christophe Ranger** interim chief executive officer. He succeeds **Frédéric Boulet**, who will pursue other interests, but will continue to serve as the company's director.

A recruitment program for a permanent chief executive is under way, Pebercan said.

Total SA has appointed **Yves-Louis Darricarrère** president, E&P. His appointment becomes effective February 2007, at which time **Christophe de Margerie** will assume the role of chief executive officer.

Darricarrère has extensive international experience, including 10 years working in Australia, Egypt, and Colombia.

Before this appointment, Darricarrère served as president of Total Gas & Power and has been a member of the executive committee since September 2003.

Darricarrère began his career with Elf Aquitaine in 1978, working first in the mining division in Australia and subsequently in E&P.

Michael D. Van Horn has been appointed senior vice-president, exploration, of Newfield Exploration Co., Houston. Van Horn succeeds Newfield's executive vice-president, exploration, **Elliott Pew**, who will retire at the end of the year.

Van Horn has 28 years of oil and gas experience. He has worked for EOG Resources Inc., and its predecessor Enron Oil & Gas, since 1993. During his tenure with EOG Resources, he served as vice-president of international exploration and previously as director of exploration.

Prior to EOG Resources, Van Horn worked for British Gas E&P Inc. and Tenneco Oil Co.

Separately, Newfield has added to the role of its general manager of the Gulf of Mexico, **John H. Jasek**, promoting him to vice-president and general manager, Gulf of Mexico.

Jasek joined Newfield in 2000 and since then has been a leader on the Gulf of Mexico team, the company said.

Previously, Jasek worked for Anadarko Petroleum Corp. and Amoco Production Co.

Dominion Exploration & Production has appointed **Richard L. Fowler** vice-president and general manager, Gulf of Mexico operations. He will oversee the company's deepwater, Continental Shelf, and southern Louisiana assets.

Previously, Fowler served as Dominion's general manager of deepwater development. He has been with the company since 1996 when the offshore unit was still part of Consolidated Natural Gas Co. (CNG), which merged with Dominion in 2000. Prior to joining CNG, Fowler worked for Exxon Corp.

Total Refining & Marketing has named **André Tricoire** senior vice-president, refining. The company also named **Thierry Pflimlin** senior vice-president, Asia.

Tricoire succeeds **Jean-Claude Company**, who is retiring. Prior to his current appointment, Tricoire served as chief executive of Total France. He joined Total Refining in 1986 at the Donges refinery. Before that he held a variety of positions in the Regional Directorates for Industry, Research, and Environment; the French Ministry of Industry; and the Labor and Employment Minister's Office.

Pflimlin, who succeeds **Gary Jones**, who also is retiring, joined Total in 1984. Pflimlin served in various positions, including Asia Trading Manager in Singapore in 1986, chief executive officer of Total Zambia in 1990, and a member of the Strategy Department at Paris from 1993-95. That year, he was named vice-president, development, for China, a position he held until 1998, when he was appointed chief executive officer of Total Deutschland.

undisclosed amount.

• Calgary independents Pearl Exploration & Production Ltd. and Atlas Energy Ltd. signed a merger agreement worth $340 million (Can.). Closing is expected in December.

• Energy Partners Ltd. (EPL) of New Orleans has terminated plans to buy Stone Energy Corp., Lafayette, La.

• ConocoPhillips and EnCana Corp. agreed to create an integrated heavy oil joint venture that will involve two 50-50 operating partnerships: one Canadian upstream and one US downstream.

• Chaparral Energy Inc. plans to acquire Calumet Oil Co. and certain affiliates for $510 million. The transaction involves production of 4,600 boe/d and proved reserves of 309 bcf of gas equivalent.

• Sierra Pacific Resources (SPR) has agreed to sell its 50% interest in its subsidiary Tuscarora Gas Transmission Co. (TGT) to TC PipeLines LP for $100 million, subject to customary closing conditions.

• OAO Lukoil Overseas said it intends to buy a 50% interest in Turgai Petroleum Inc., a Kazakhstan company, now that the Arbitration Institute of the Stockholm Chamber of Commerce (Sweden) has ruled in its favor.

• Duke Energy, which earlier announced plans to separate its natural gas business into an independent, publicly traded company, said the spin-off will be called Spectra Energy Corp.

• Forest Oil Corp., Denver, has transferred the majority of its Alaska business unit to a new subsidiary, Forest Alaska Operating LLC (Alaska), which will hold and operate the parent's oil and gas interests in Cook Inlet.

Shell-Shell Canada

Shell Canada has a substantial position in Canada's oil sands and is embarking on a major expansion of production and upgrading capacity.

"Canada is an important growth area for the group, and the group will be a major investor in Canada for many years to come," Shell said.

The group offered $40/share (Can.) or $7.7 billion. The proposal follows corporate structural changes Shell took after a series of reserves reclassifications. Once Shell Canada is fully combined with the group, the business will have a more simplified organization, the group said.

Structural changes came after the company reclassified reserves five times in a little over a year (OGJ Online, Feb. 4, 2005). Royal Dutch Petroleum Co. and Shell Transport & Trading Co. were merged into a single parent, Royal Dutch Shell, the stock of which began trading July 20, 2005.

Shareholders approved the unification formally combining the former Royal Dutch/Shell Group's British and Dutch parent companies under a single board and a single executive (OGJ Online, Oct. 28, 2004). Investors had said the old structure hindered transparency and financial accountability.

In July, Shell Canada announced plans to increase production in the Athabasca tar sands project in Alberta to 550,000 b/d from 150,000 b/d.

Alberta's oil sands contain an estimated 1.69 trillion bbl of bitumen and the produced 5 trillion bbl through 2005. Shell Canada intends to announce a final investment decision for this expansion project in the fourth quarter pending regulatory approvals. Bitumen production is expected in late 2009 followed by upgrader production in late 2010.

The group asked Shell Canada to establish a special independent committee to supervise preparation of a formal independent valuation and to review and make a recommendation regarding the proposed offer. The group reserves the right not to proceed with the making of an offer if it is unable to obtain this support. A formal offer will be conditional on more than 50% of Shell Canada's outstanding shares, calculated on a fully diluted basis, being tendered.

Genghis Khan sale

BHP Billiton leads the Shenzi group with 44% interest and will be the operator. Partners are Hess Corp. and Repsol YPF SA, each with 28%. These three companies already own adjacent Shenzi field.

The Genghis Khan sale involves a 100% stake in Green Canyon Block 652 and certain deep rights in Green Canyon Block 608. The sale is expected to close in the fourth quarter.

The development has gross hydrocarbon reserves of 65-170 million boe, BHP said Nov. 13. Development may include as many as seven production wells, and production is scheduled for mid-2007 with continued drilling to follow.

The Genghis Khan well, drilled to 26,000 ft TD in 4,300 ft of water, tested 110 ft of high-quality net oil pay in the Lower Miocene and additional pay in the Middle Miocene. Production plans call for a subsea tieback to the Marco Polo platform, 2.4 miles away (OGJ, May 5, 2005, Newsletter).

The divestiture is part of Anadarko's efforts to help raise $15 billion to reduce debt from its $21 billion purchases of Kerr-McGee Corp., Oklahoma City, and Western Gas Resources Inc., Denver (OGJ, July 10, 2006, p. 27).

Statoil buys GOM prospects

Statoil plans to acquire 25% interest in the Knotty Head discovery, operated by Nexen Inc., Calgary, and 15% interest in the Big Foot discovery, operated by Chevron Corp. Statoil already had 12.5% interest in Big Foot.

In addition, Statoil is acquiring a 15% stake in the Big Foot North prospect from Anadarko. Chevron operates Big Foot North, in which Statoil already has a 12.5% stake.

Earlier this year Statoil acquired interests in Big Foot and Big Foot North from Plains Exploration & Production Co. (OGJ Online, Sept. 18, 2006).

The Big Foot discovery, on Walker Ridge Block 29, lies in 5,000 ft of water about 225 miles south of New Orleans (OGJ, Aug. 7, 2006, Newsletter).

The Knotty Head oil discovery is on Green Canyon Block 512 and found about 600 ft of net oil pay in multiple zones (OGJ, Jan. 2, 2006, Newsletter).

Pending field development, Big Foot

and Knotty Head are expected to be in production after 2010, Statoil said.

Dominion divestiture

Dominion plans to keep its Appalachian basin properties, which account for 17% of its proved reserves and 8% of its average daily production as of Sept. 30. About 76% of the reserves are developed, and about 76% of the reserves are gas.

A formal sales process is scheduled to begin in February 2007 after completion of the 2006 reserve audit. Closing is expected by mid-2007, Dominion said. The E&P assets are managed by Dominion Exploration & Production Inc., Houston.

Excluding the Appalachian basin, Dominion has proved reserves of 5.5 tcf equivalent of gas spread across the deepwater Gulf of Mexico, West Texas, the Midcontinent and Rockies, and the Western Canadian Sedimentary Basin.

Devon divestiture

Devon did not announce an expected sale price. It plans to open data rooms in Houston and London during December. Acceptance of bids and completion of a purchase and sale agreement are anticipated during first quarter 2007.

The company's Egyptian production is 5,000 boe/d, less than 1% of both the company's total production and proved reserves.

The assets to be offered include interests in eight concessions, four in the Western Desert and four in the Gulf of Suez. Four of the concessions are producing. The concessions comprise 3.7 million gross (1.8 million net) acres.

The Oklahoma City-based independent obtained the assets through the $5.3 billion acquisition of Ocean Energy Inc., Houston (OGJ, Mar. 3, 2003, p. 31).

Pogo divestiture

Pogo expects $700-800 million in proceeds from the asset sales, and the company plans to use the proceeds to reduce debt. The divestitures are slated for completion in two phases.

The first phase, including the Gulf of Mexico, South and East Texas, and South Louisiana, is expected to close by the end of first quarter 2007. Production from these properties is estimated at 37 MMcfd of gas equivalent.

The second phase, covering properties in the Permian basin, the Texas Panhandle, and western Canada, is expected to be completed by midyear.

Talisman divestiture

Talisman's properties up for divestment are grouped into five areas: Greater Lloydminster, Central Alberta, Pembina-Brazeau, Wapiti-North Deep basin, and Cranberry-Chinchaga.

Talisman anticipates the sales pro-

gram will be completed early in second quarter 2007. The Calgary independent will use proceeds to repurchase shares.

Talisman buys N. Sea assets

Subject to government and other approvals, Talisman is expected to become operator of the fields later this year.

Fulmar, on Blocks 30/11b and 30/16s, and Auk, which lies on Blocks 30/16n and 30/16t, produces about 8,000 b/d of oil (OGJ Online, Feb. 22, 2006). Auk has remaining about 675 million bbl of oil.

Talisman also has agreed to acquire Hess Ltd.'s 1.48% interest in Fulmar field. Pending completion of both transactions, Talisman will hold a 100% interest in this field.

Dana-Centurion deal

Dana Gas also will assume Centurion's net debt of $99 million, giving the transaction a total value of $1.25 billion.

Centurion Energy has oil and gas exploration and production with properties in Egypt, Tunisia, and off West Africa. Centurion's board will recommend that shareholders accept the Dana Gas offer.

The acquisition requires the approval of two thirds of shareholders voting at a special meeting to be scheduled in early January 2007.

Dana Gas said Centurion's assets complement Dana Gas's existing activities in gas transportation, processing, and marketing and represent the entry by Dana Gas into the upstream sector.

Unit-Brighton deal

Unit has identified 27 proved undeveloped locations that can be drilled in addition to numerous probable and possible locations.

The reserves are 78% gas and 67% proved developed. Most of the acquired reserves are in the Anadarko and Gulf Coast basins of Oklahoma, Texas, and Louisiana, with additional reserves in Arkansas, Kansas, Montana, North Dakota, and Wyoming.

Encore in N. Sea

EnCore said it plans to issue 37 million shares to the sellers of the acquired companies, and that share issue will represent 15% of the resulting EnCore. Closing, subject to regulatory consents, is expected before Dec. 31.

Nido Petroleum Ltd. of Vancouver and Grove Energy Ltd., Perth, will continue to exist as independent companies.

Last year, Grove Energy, Virgo Energy, and Nido Petroleum merged their North Sea operations under Virgo Oil & Gas. The sale of those holdings to EnCore completes that consolidation strategy, Grove said Oct. 24.

Pluris-San Enrique

Pluris Energy, formerly Petrogen Corp., is placing a $65 million convertible bond instrument to finance the San Enrique purchase as well as other acquisitions.

San Enrique's assets includes 251,376 net acres in the Neuquén, Austral, and Golfo de San Jorge basins—the three most prolific basins in Argentina, holding 49 million bbl of oil equivalent, with estimated proved, probable, and possible reserves of 25 million bbl of oil and 142 bcf of gas.

Also, its current production exceeds 1,000 boe/d, which is expected to grow rapidly through an aggressive development program being carried out by Roch SA, operator. And it has three gas processing plants and pipeline infrastructure.

The transaction is expected to close around the beginning of 2007.

Upon closing the San Enrique acquisition, Pluris plans to file a prospectus for initial public offering on the Oslo Bors main market, while maintaining a dual listing and quotation in the US.

Pearl E&P-Atlas merger

Atlas is a heavy oil and natural gas exploration and development company that produces a net 5,800 boe/d. Both boards approved the combination, and Atlas shareholders will vote on the merger.

Key projects of the combined company include: Mooney (heavy oil, 74% working interest), Druid (heavy oil, 100%), Unity (shallow gas, 100%), Salt Lake (heavy oil and gas, 100%), Ear Lake (heavy oil and gas, 100%), Pikes Peak (heavy oil, 100%), Onion Lake (heavy oil, 87.5%), and southern Alberta (shallow and medium gas, 88%).

Atlas has more than 260,000 net undeveloped acres (average 83.6% working interest). Other key projects include San Miguel, Tex. (heavy oil), Palo Duro, Tex. (shale gas), and Gulf of Mexico shallow-water offshore (natural gas).

The transaction is synergistic with Pearl's core assets around Onion Lake in northeastern Alberta and northwestern Saskatchewan and will allow the combined company to focus on optimizing value through low cost development, operating, and product marketing.

EPL-Stone deal off

EPL has agreed to pay Stone $8 million in exchange for Stone's agreeing to release all claims against it. The sum represents a $17.6 million discount from the fee EPL would have been obligated to pay Stone under certain circumstances.

In September Woodside Petroleum Ltd.'s wholly owned subsidiary ATS Inc. began an $880 million tender offer for EPL in a takeover bid.

The offer from ATS, Covington, La., is conditional upon EPL shareholders' voting down the Stone transaction. EPL has proposed to buy Stone for $2 billion, which includes $1.43 billion in a cash-stock offer, plus $563 million in debt (OGJ, June 12, 2006, p. 34).

In an Oct. 12 statement, however, EPL said its board has decided to explore strategic alternatives, and it recommends that EPL stockholders reject the unsolicited tender offer of ATS, saying the offer is "inadequate and not in the best interests of EPL's stockholders."

ConocoPhillips-EnCana JV

ConocoPhillips and EnCana will contribute equally in assets and equity. The transaction, subject to final agreements

and regulatory approval, is expected to close Jan. 2, 2007.

Both companies' boards already approved the transaction. Each partnership will have a management committee with three ConocoPhillips and three EnCana representatives. Each parent company will hold equal voting rights.

"With this strategic alliance, ConocoPhillips strengthens its presence in North America by repositioning 10% of its US downstream business to access a large upstream resource base," said Jim Mulva, ConocoPhillips chairman and chief executive officer.

Randy Eresman, EnCana's president and chief executive officer, said his company had been looking for a partner to maximize the value of EnCana's in-situ oil sands.

"These innovative partnerships achieve this objective by strategically aligning about two thirds of our industry-leading oil sands projects with an industry-leading refiner," Eresman said. "ConocoPhillips brings a wealth of heavy oil refining expertise and widely adopted coking technology to our integrated heavy oil business."

The upstream partnership involves EnCana's Foster Creek and Christina Lake projects in the eastern flank of the Athabasca oil sands in northeast Alberta, having recoverable bitumen of more than 6.5 billion bbl. EnCana will operate and be the managing partner of the upstream partnership, to be based in Calgary.

The partnership plans to increase production to 400,000 b/d of bitumen by 2015 from current production of 50,000 b/d. A blend of 50-50 bitumen and synthetic oil will be sold at major Alberta trading hubs.

The downstream partnership involves ConocoPhillips's 306,000 b/cd Wood River refinery in Roxana, Ill., and its 146,000 b/cd refinery in Borger, Tex. ConocoPhillips will operate and be managing partner of the downstream partnership, to be based in Houston.The partnership plans to expand heavy oil processing capacity at these facilities to 550,000 b/d by 2015 from 60,000 b/d. Total throughput at the two facilities is expected to increase to 600,000 b/d from the current 450,000 b/d during the same period.

In addition, the partnership might additionally expand heavy oil processing capacity at these locations or in Alberta to match bitumen production.

ConocoPhillips and EnCana each will own 50% of the partnership; however, ConocoPhillips will hold a disproportionate economic interest in the Borger refinery for 2 years: 85% in 2007 and 65% in 2008.

Chaparral-Calumet deal

Chaparral of Oklahoma City said the acquisition fits with its existing enhanced oil recovery program. Calumet's properties are mainly in Oklahoma and Texas, including assets in the North Burbank oil field.

North Burbank is in the early phases of an EOR polymer flood. Chaparral plans to include carbon dioxide injection, return more than 400 wells to production, and perform horizontal infill drilling in the tighter portion of the Bartlesville reservoir.

The transaction is expected to close in the fourth quarter.

TCPL buys TGT stake

TC PipeLines already holds a 49% interest in TGT, which owns a 240-mile interstate natural gas pipeline extending from Malin, Ore., to Reno, Nev. TC PipeLines is managed by general partner TC PipeLines GP Inc., an indirect wholly owned subsidiary of TransCanada Corp.

Once the sale is closed, expected by yearend, TransCanada will operate the TGT system.

Sierra Pacific Power Co., the utility unit in northern Nevada for SPR, is currently the primary customer for gas transportation on the TGT system and will continue this role following the sale.

Earlier this year, SPR had announced plans to sell its interest in TGT to concentrate more fully on its rapidly growing utility businesses.

Lukoil-Turgai deal

Turgai Petroleum's primary asset is Kumkol field in the Kyzylorda region.

Arbitrators ruled in Lukoil's favor in a counter-claim it filed following PetroKazakhstan Inc.'s July 2004 claim against Lukoil.

Previously, Chinese National Petroleum Corp. acquired 100% of PetroKazakhstan Inc., which owns a stake in Turgai Petroleum. A shareholders agreement was violated because Lukoil was not asked whether it wanted to exercise its pre-emptive right to a stake in Turgai before CNPC bought PetroKazakhstan.

An independent expert will determine the price, which then must be approved by both CNPC and Lukoil. Failing an agreement on the price, the Stockholm Arbitration will appoint a price.

Duke's gas spin-off

Once Duke's spin-off transaction is complete, expected Jan. 1, 2007, Spectra Energy will consist of the business unit now known as Duke Energy Gas Transmission and Duke Energy's 50% interest in Duke Energy Field Services, which recently was renamed DCP Midstream.

Spectra Energy will operate primarily in transmission and storage, distribution, and gathering and processing.

Fred Fowler, president of Duke Energy Gas, will become chief executive officer of Spectra Energy.

The Spectra Energy name replaces Gas SpinCo Inc. (GasCo), the temporary name given the natural gas business. The stock is expected to be traded on the New York Stock Exchange.

Forest forms subsidiary

As of Sept. 30 Forest Alaska has 32 million boe of proved reserves and production of 6,000 boe/d. The company plans to focus on development of McArthur River field.

The subsidiary owns 186,000 net acres of developed and undeveloped land and interests in production and drilling infrastructure. ✦

Petrobras charts development hubs for Santos basin fields

Brazil's state-owned company Petroleo Brasileiro SA (Petrobras) has big development plans for the Santos basin.

The Santos Basin Business Unit's master plan calls for $18 billion in investment in the next 10 years.

The production goals for 2010-11 are 1.05 bcfd of gas and 100,000 b/d of oil, compared with 42 MMcfd and 10,000 b/d at present. The projected 1.05 bcfd is slightly more than the 990 MMcfd of gas Brazil now imports from Bolivia.

Of the Santos basin's 352,000 sq km, 43% is in water as deep as 1,300 ft and 57% is in 1,300-10,000 ft of water. Twenty-five percent of the concession areas Petrobras holds in Brazil are in the Santos basin. Petrobras and partners hold 11.5% of the basin's acreage.

Of the total area under concession, 52% lies off Sao Paulo state, 35% is off Rio de Janeiro, 7% is off Santa Catarina, and 6% is off Parana.

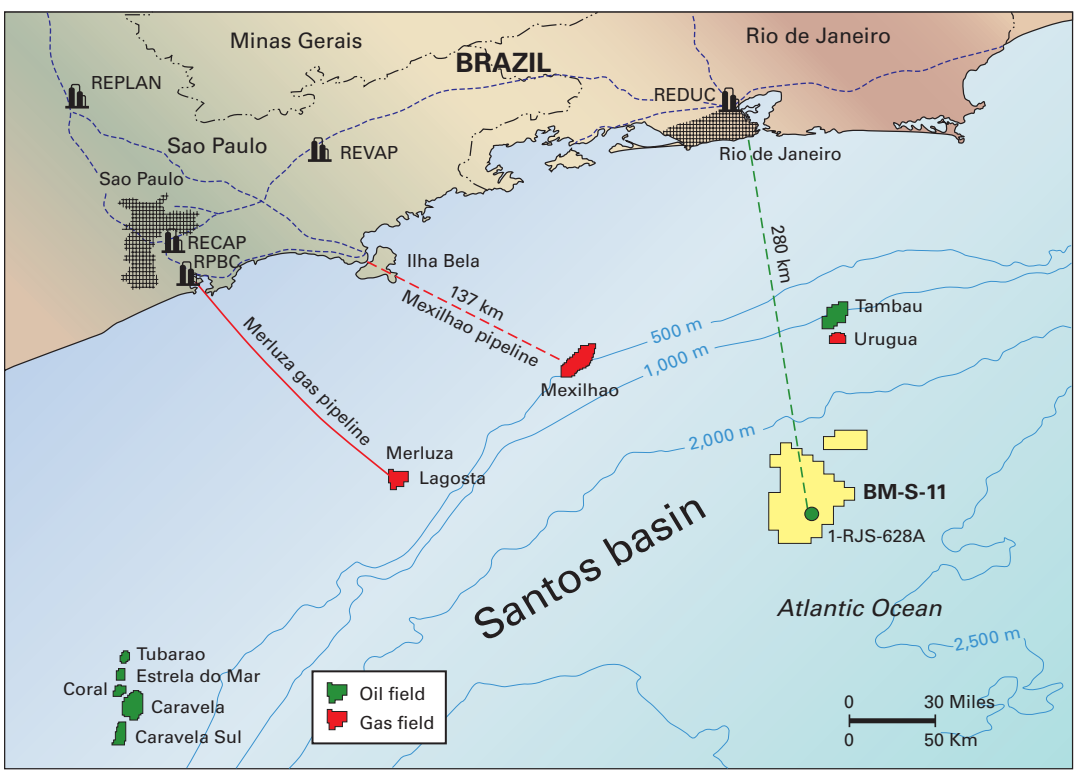
All indications are that the basin is only lightly explored, and the most recent discovery in its deepwater sector led some officials to speculate that the so far gas prone basin's subsalt realm might become another Campos basin in terms of ultimate recovery.

Production poles

Petrobras describes five production poles, two of which are producing now and three more that will come into production in the next several years (OGJ, Aug. 28, 2006, p. 25). The five poles are:

- Cedro and giant Mexilhao fields 137 km off the Sao Sebastiao Terminal are to start producing early in the next decade, initially at 280-320 MMcfd of gas into facilities with a capacity of 530 MMcfd of gas and 20,000 b/d of condensate.
- Another pole, dubbed Polo Centro, includes unexplored areas seaward of Merluza and Lagosta fields. If it pans

How Santos basin infrastructure may develop



out, production could be tied back to Mexilhao.

• Merluza field, discovered in 1979 and producing gas-condensate since 1992, is making 42 MMcfd of gas and 1,600 b/d of condensate. Gas output is to climb to 88 MMcfd in 2008 when the platform begins accepting gas from nearby Lagosta field and from the SPS-25 well area. Installation of a second platform could boost gas handling capacity to 350 MMcfd by 2010.

Merluza-Lagosta and Mexilhao-Cedro will be connected to a $300 million gas treatment plant at Caraguatatuba. The plant would have two units with capacities of 265 MMcfd each, and could be expanded to 800 MMcfd.

• Urugua and Tambau fields would anchor another production pole at Block BS-500 about 100 miles off Rio de Janeiro. Production there is estimated at 150,000-200,000 b/d of oil and 775 MMcfd of gas in 2011. Petrobras declared Urugua commercial in December 2005. Urugua and Tambau are in 3,280-4,600 ft of water. Urugua's reserves are 250 million bbl of 33° gravity oil and 1.3 tcf of gas, and Tambau's are 1.8 tcf of gas.

• The Southern Pole, 125 miles off Sao Paulo, Parana, and Santa Catarina states, produces 9,000 b/d of oil from the SS-11 platform off Parana from several declining fields. Cavalo Marinho field is to go on production in 2008 at 18,000 b/d, and Petrobras believes the area has the potential to deliver as much as 140,000 b/d and 105 MMcfd.

Deepwater subsalt

A great deal of optimism surrounds Petrobras's recent deepwater subsalt discovery.

Petrobras, operator with 65% interest in Block BM-S-11, said the Tupi well in 6,975 ft of water 175 miles off Rio de Janeiro flowed 4,900 b/d of 30° gravity oil and 5.3 MMscfd of gas from a deep presalt reservoir (OGJ Online, Oct. 6, 2006). BG Group holds 25% interest and Petrogal 10% interest in the frontier block.

The well, which went to true vertical depth of 19,680 ft, is the first drilled on the block and the first to penetrate an evaporatic salt sequence more than 6,500 ft thick, Petrobras said.

The discovery "follows on from the discovery earlier this year of oil with the (Petrobras operated) Parati well some 70 km distant in Block BM-S-10," BG said. Petrobras said Parati is non-commercial.

BG said it has built a "material exposure" to the new hydrocarbon province with equity interests ranging from 25 to 60% in seven blocks in the Santos basin that contain numerous prospects.

Petrobras geologists noted that Linguado and Badejo fields, discovered in 1978-79, respectively, produce subsalt light oil in shallow water in the Campos basin to the northeast off Rio de Janeiro. ✦

Operators more than replace 2005 produced reserves in US

Operators in the US replaced 164% of dry natural gas production and 122% of crude oil production in 2005, the US Energy Information Administration estimated.

US proved reserves at Dec. 31, 2005, were 21.757 billion bbl of crude oil, up 1.8% on the year, 204.385 tcf of gas, up 6.2%, and 8.165 billion bbl of natural gas liquids, up 3%.

The 11.87 tcf increase was the largest gain in natural gas proved reserves since 1970, but 2005 was the first uptick for oil reserves in 3 years, EIA said.

Oil production fell 4.7% to 1.733 billion bbl, gas output was down 4% to 18.458 tcf, and NGL production dropped 4.7% to 788 million bbl in 2005, the agency pointed out

As in most recent years, most of the oil and gas reserves additions in 2005 came from extensions to existing fields, not from new field or new reservoir discoveries.

Booked Gulf of Mexico deepwater reserves fell to 4.042 billion bbl of oil and 17.427 tcf of gas. Both figures include the Alabama federal offshore area.

Gas reserves

Gas reserves additions in the Lower 48 states alone overcame a 10% drop in gas reserves reported for the Gulf of Mexico federal offshore to 17.427 tcf, EIA said.

Texas and Colorado led the nation in 2005 gas reserves additions with notable reserves increases in Newark East field, core field of the Barnett shale play in the Fort Worth basin, and Ignacio-Blanco field, producing from tight sands and coal beds in the San Juan basin in southwestern Colorado.

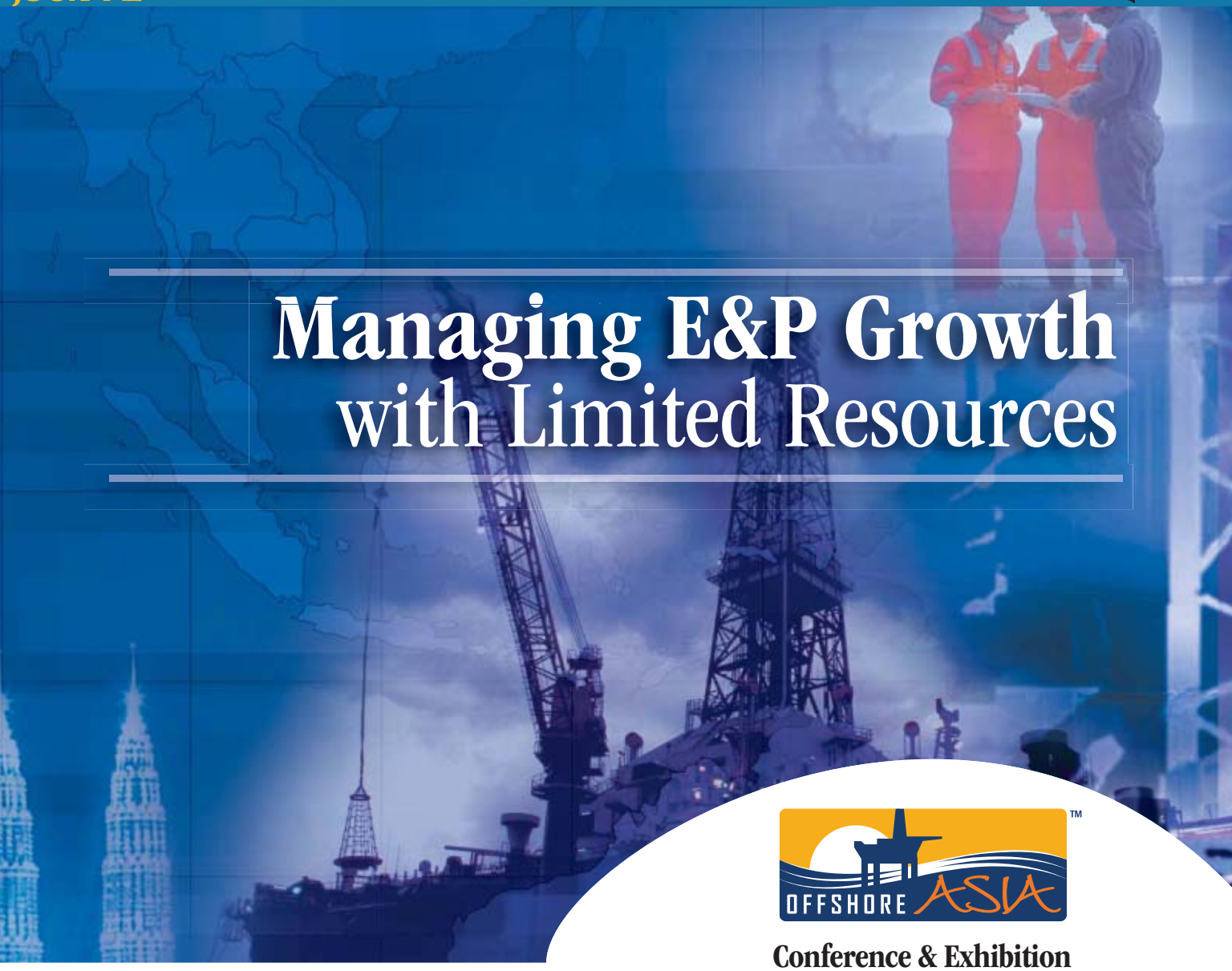
Gulf gas production had been falling about 10%/year for several years before hurricanes Katrina and Rita in August and September 2005.

Extensions to existing gas fields in 2005 added 21 tcf, 16% more than in 2004 and 74% more than the prior 10-year average. New field gas discoveries were 942 bcf, 46% less than the prior 10-year average, and new reservoir gas discoveries in old fields were 1.2 tcf, 45% less than the prior 10-year average.

EIA figures for Wyoming showed 2 tcf of reserves added from field extensions, while upward revisions of 2.2 tcf more than made up for 1.8 tcf of negative revisions. This brought the state's dry gas reserves to 23.8 tcf at the end of 2005.

US coalbed methane reserves climbed 8% to 19.892 tcf, and CBM production was up slightly to 1.732 tcf. Coalbed methane production was listed in Alabama, Arkansas, Colorado, Indiana, Kansas, Montana, New Mexico, Ohio, Oklahoma, Pennsylvania, Utah, Virginia, West Virginia, and Wyoming.

Exploratory and developmental gas completions were up 27% from 2004.



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Oil and NGL

Oil reserves declined in Alaska and the Gulf of Mexico federal offshore and increased in Texas and California.

The oil reserves figures do not include volumes in large deepwater discoveries that have been made in recent years in the gulf and are not yet booked (OGJ, Sept. 25, 2006, p. 36).

Texas, Wyoming, and Montana were the top three states with Lower 48 oil reserves increases.

Extensions to existing oil fields in 2005 added 805 million bbl of reserves, 30% more than in 2004 and 53% more than the prior 10-year average. Most of the reserves increases from extensions came at fields in Texas, California, Montana, and Wyoming.

New field oil discoveries added 205 million bbl, almost totally (201 million bbl) in the gulf and six times the 2004 figure and only 49% of the prior 10-year average. New reservoir discoveries in existing fields were 41 million bbl, 69% less than 2004 and 23% of the prior 10-year average.

Oil production was lower in the gulf and in Alaska. Rocky Mountain states generally had gains, with Montana posting the largest increase of 36% to 427 million bbl from Bakken formation development in the Williston basin.

Exploratory and development oil completions were 25% higher than in 2004.

Operators replaced 130% of NGL reserves, the sum of lease condensate and natural gas plant liquids reserves. NGL reserves represented 27% of combined crude oil, condensate, and plant liquids reserves of 29.922 billion bbl. ✦

India

The submerged Shiva crater in the Mumbai offshore basin, with 500 km diameter and 7 km of structural relief, has emerged as a viable candidate for the Cretaceous-Tertiary mass extinction, said a publication by the Texas Tech University Museum, Lubbock, Tex.

The peak ring of the multiringed crater is the structural trap for oil and gas, wrote Sankar Chatterjee and three other authors.

Shiva has reserves in Miocene formations exceeding 8.4 billion bbl of oil, 24.2 tcf of gas, and 300 million bbl of natural gas liquids. The total 12.7 billion bbl of oil equivalent is from 165 fields of which 126 are 1 million boe or greater in size.

Shiva is at the juncture of India's Saurashtra, Surat, Panna, Murad, and Shelf Margin basins.

Pakistan

GEMS International NV let a contract to SCAN Geophysical ASA, Oslo, to acquire 3,000 km of 2D seismic data off Pakistan for the Pakistani government agency National Institute of Oceanography.

The 1-month survey is to start in mid-November.

Handling the survey is the M/V Geo Searcher, which just completed surveying off India using a 10,000-m long streamer and high volume sources.

Norway

The Norwegian Petroleum Directorate let a contact to Electromagnetic Geoservices (emgs), Trondheim, Norway, for a proprietary seabed logging survey of the Troms II area near the Lofoten Islands off northern Norway.

Hydrocarbon detection is carried out by a low-frequency electromagnetic source towed across an array of retrievable receivers placed on the seabed. Emgs, which has conducted more than 200 surveys, recently ordered a fifth vessel to meet growing demand.

Louisiana

Ensight Partners III, private Shreveport independent, and Meridian Petroleum PLC, London, will conduct a field development study of Calvin gas field in Winn Parish in early 2007 under a 50-50 cost and production split.

The companies will follow with a detailed plan of exploitation in Cretaceous Rodessa and Sligo/Pettet down to Calvin Deep and Troy lime.

Meanwhile, Meridian is completing the Calvin 36-1 well and plans flow tests.

Montana

First Star Resources Inc., Vancouver, BC, plans to purchase 100% working interest in Mosser Dome oil field in Yellowstone County from Big Snowy Resources LP, Billings.

The field has 21 wells on 360 acres that produce a total of 50 b/d of 22° gravity oil from the Lower Cretaceous Greybull sand at 1,000 ft. Closing is expected by Feb. 1, 2007.

The field, which has produced more than 500,000 bbl since discovery in 1936, may also have potential in the shallower Muddy and Basal sands.

Washington

Comet Ridge Ltd., Perth, said its US unit St. Helens Energy LLC bid successfully on 7-year leases covering 18,159 acres in the nonproducing Grays Harbor basin along the Pacific Coast southwest of Olympia, Wash.

St. Helens Energy is receiving results of 450 line-miles of reprocessed 2D seismic data, and prospect and lead generation is under way. More seismic is to be acquired in early 2007.

The acquired leases are largely contiguous with the 420,000 acres the company holds under an exclusive 2-year option in the Grays Harbor basin. No further details of that option were available.

DRILLING MARKET FOCUS

New projects develop in Canadian Maritimes

Nina M. Rach
Drilling Editor

New record investments in a deepwater wildcat, shallow water development projects, shipyards, LNG facilities, and even discussion of a new refinery signal continuing belief in Canada's maritime basins.

Chevron Canada Resources is now drilling the most expensive well to-date in Atlantic Canada, a deepwater wildcat off Newfoundland in the untested East Orphan basin.

Presentations at the recent Canadian Offshore Resources conference in Halifax, NS, and the Atlantic Canada Energy Summit in St. John, NB, suggest that local firms will need to ramp-up operations to handle upcoming oil, gas, and power project requirements. More than 300 firms attended a procurement session on EnCana Corp.'s Deep Panuke project.

Canada is wrestling with the challenge of attracting financial capital to untested basins. Although there is large potential, there is also more inherent risk. Operators continue to pour capital into projects designed to maximize the value of old, depleted fields, or explore for new reservoirs in well-drilled basins.

In 2002, Thomas S. Ahlbrandt classified the conventional natural gas reserves of Atlantic Canada in the same range as the Western Canada Sedimentary Basin and offshore Brazil, thought to contain 6-120 tcf. Ahlbrandt expected 1-20 billion bbl of conventional oil off eastern Canada, akin to reserves in the WCSB and northwest Australia.[1]

Nova Scotia

According to Kris Kendall, Nova Scotia Department of Energy, there have been 125 wildcats drilled off Nova Scotia, 20 gas discoveries, and 4 oil discoveries.[2]

In its 2005-06 annual report, the Canada-Nova Scotia Offshore Petroleum Board reported a slight reduction in activity over the past 3 years (Table 1). C-NSOPB's Neal Dawe told OGJ in October that 204 wells have been drilled off Nova Scotia

There are 27 active exploration licenses offshore Nova Scotia with a total original work commitment of about $1 billion (Can.).

There was heated discussion of the perpetual nature of "Significant Discovery" licenses at the Canadian Offshore Resources Exhibition & Conference in Halifax last month. Tom Hickey, CORE.06 conference chair and past chair of the Offshore Technology Association of Nova Scotia (OTANS), noted that operators of 11 SDLs had failed to drill any wells for 21-33 years.

BEPCo Canada plans to drill an exploratory well about 200 km south of Halifax in 2007.

Onshore Nova Scotia, Stealth Ventures continues drilling for coalbed methane in Cumberland and Pictou counties (OGJ, Aug. 21, 2006, p. 46). EOG Resources has recently drilled for oil in the East Hants area.

Sable

The Sable Offshore Energy Project (SOEP) encompasses Thebaud, Venture, and North Triumph fields (Tier 1 development); and Alma, South Venture, and Glenelg fields (Tier 2); 28 wells were proposed for the six fields, all to be drilled with jack up rigs (www.soep.com).

At the CORE.06 conference on Oct. 4, Brent Janke, ExxonMobil Canada's Sable asset manager, said that Sable reached its 1-tcf production milestone in September.

The C-NSOPB reported that September production from SOEP dropped to 279 million cu m gas, from a 12-month high of 380 million cu m in July.

Four other fields could potentially be developed for Tier 3: Arcadia, Chebucto, Citnalta, and Onondaga.

In 2003, CHC

CANADA-NOVA SCOTIA OFFSHORE PETROLEUM BOARD ACTIVITIES[1]

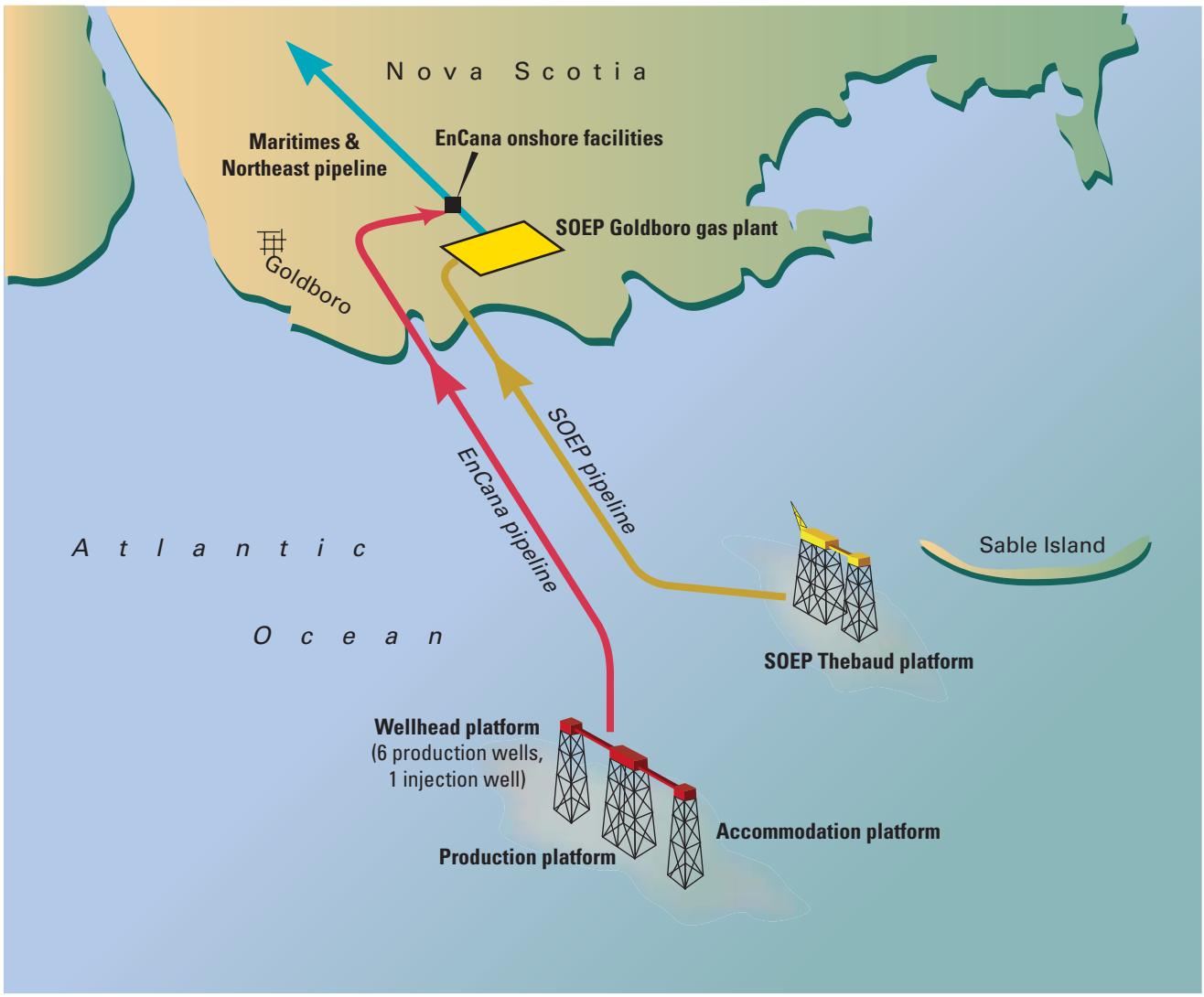
Table 1

	2005-06	2004-05	2003-04
Drilling program authorizations	1	3	4
Drilling program environmental assessments	1	1	10
Wells approved to drill	[2]4	4	7
Wells drilled	2	2	5

[1]Fiscal year Apr. 1-Mar. 31. [2]Includes 3 wells and 1 sidetrack.

DEEP PANUKE DEVELOPMENT

Fig. 1



Helicopter Corp. opened a new $4 million heliport at the Halifax International Airport, including a 26,000 sq ft hanger for four helicopters. CHC was flying two helicopters to GlobalSantaFe Corp.'s GSF Galaxy II jack up most of this year, according to CHC regional director Barry Clouter.

The rig finished drilling ExxonMobil Canada's Alma-3 development well in March but has remained on location at the Thebaud platform, serving as the accommodations module during work on the new compression facilities. GlobalSantaFe reported on Oct. 6 that the Galaxy II contract with ExxonMobil, at about $125,000/day, will finish mid-November, followed by a 3-week contract at $300,000/day before the rig moves to the North Sea.

Thebaud's 7,600-tonne compression platform, which arrived from Europe this past summer aboard the Saipem 7000 heavy lift vessel, has been installed next to the Thebaud central processing platform. The 8-leg jacket was built at Saipem Energy International's Intermare Sarda division in Sardinia, Italy, and sent by barge to Rotterdam. Daewoo built the topsides and SIF Group BV fabricated the piles.

Deep Panuke

The Deep Panuke gas field discovery was announced in 2000, after four wells were drilled about 250 km southeast of Halifax, 1998-2000. An environmental review completed in December 2002 concluded that the project is unlikely to cause significant adverse environmental effects.

In January 2006, EnCana selected the mobile offshore production unit concept and will probably lease a jack up to serve as the platform, capable of processing 300 MMcfd (down from 400 MMcfd initially proposed) over 13 years. The company plans to award the MOPU contract by late 2007.

EnCana signed the Deep Panuke offshore strategic energy agreement

(OSEA) with the Province of Nova Scotia in June 2006, outlining the field development framework (Fig. 1).

In mid-August, EnCana held a procurement session in Halifax to discuss Deep Panuke with potential service companies and contractors, and announced a new initiative to build land drilling rigs in Nova Scotia (OGJ, Sept. 18, 2006, p. 48).

A few weeks later, EnCana filed the project description for Deep Panuke, triggering the start of the environmental assessment process (under the Canadian Environmental Assessment Act).

Dave Kopperson, Encana vice-president for Atlantic Canada, said in a presentation at CORE.06 that the company plans to drill five to eight gas production wells to 3,600-4,000 m, as well as an acid-gas disposal well. The project will also require an offshore sour-gas treatment facility.

Decommissioning

The Cohasset Panuke project was operated 1992-99, producing 7.07 million cu m of oil (44.5 million bbl) in 7 years. The project was operated by PanCanadian (now EnCana); Nova Scotia Resources (Ventures) Ltd. holds 50% interest.

The Rowan Gorilla III jack up drilled wells at both Cohasset and Panuke fields and served as the production processing facility, offloading to the moored Nordic Apollo storage tanker. Platform and facility decommissioning began in 2000 but was suspended temporarily in 2001 while the operator considered use of remaining facilities for the Deep Panuke development. In mid-2003, EnCana abandoned the 14 Cohasset Panuke production wells, but left subsea lines.

NS dry well

EnCana used the Rowan Gorilla VI to drill the Dominion J-14 exploration well, north of Deep Panuke, late last year (OGJ Online, Oct. 5, 2005). Marauder Resources East Coast Inc., which earned a 25% working interest in the EL 2357 (Grand Pre) block, announced Dec. 28 that the 3,700-m well was dry.

The partners drilled a sidetrack to test additional zones in the Abenaki reef margin formation, source of the Deep Panuke natural gas discovery, but announced Jan. 23 that the J-14a reached 4,440-m (measured depth) and was dry.

Orphan basin

Chevron Canada Resources is drilling what will be the most expensive well ever off eastern Canada, a deepwater wildcat off Newfoundland in the untested East Orphan basin.

In August, ExxonMobil Canada secured the fifth-generation Eirik Raude semisubmersible, under 2-year contract from Ocean Rig ASA, to drill the first exploration well in the Orphan basin, on the edge of the continental shelf. The Orphan basin is just north of the Jeanne D'Arc basin, which contains Newfoundland's three operating offshore developments: Hibernia, Terra Nova, and White Rose.

Four partners hold eight exploration licenses in the Orphan basin: Chevron Canada Resources (50%), ExxonMobil (15%), and Imperial Oil Ventures Ltd. (15%) were the original bidders on the licenses in 2003, and Shell Canada Ltd. farmed into 20% in 2005. Chevron is lead on four of the licenses and is designated operator for the drilling. ExxonMobil is lead on the other four licenses.

Chevron spudded the Great Barasway F-66 well from the Eirik Raude on Aug. 18 in about 2,350 m water. The well is in the EL-1076 license area; the 9-year exploration license began on Jan. 15, 2004, and cost $181.3 million (Can.).[3,4]

The F-66 well will cost about $140 million (Can.) and take about 4 months to drill in extremely harsh conditions (deep, cold, iceberg-prone waters and high winds).

The well will test Early Cretaceous and Late Jurassic sequences that may contain reservoir and source rocks similar to those in the Jeanne d'Arc and Flemish Pass basins.[3]

The partners are testing new controlled-source electromagnetic (CSEM) seabed logging technology in the Orphan basin; C-NLOPB approved surveys for all eight license areas.[5]

An array of electric field receivers is suspended about 50 m above the ocean floor, and a high-powered electro-magnetic source is towed through the water, transmitting a low-frequency signal. The technology was successfully tested in the UK North Sea in summer 2005 (OGJ, Oct. 2, 2006, p. 33).

Chevron and partners in the Great Barasway well are also the first Canadian participants in the "scientific and environmental ROV partnership using existing industrial technology" (SERPENT) project. This international collaborative program involves oil and gas operators, scientific partners, and academic institutions in furthering the understanding of deepwater ecosystems (www.serpentproject.com). The work off Newfoundland will center on the scientific use of an ROV during the deepwater drilling.

BP PLC, Subsea 7, and Transocean Inc. are founding project partners of SERPENT.

White Rose

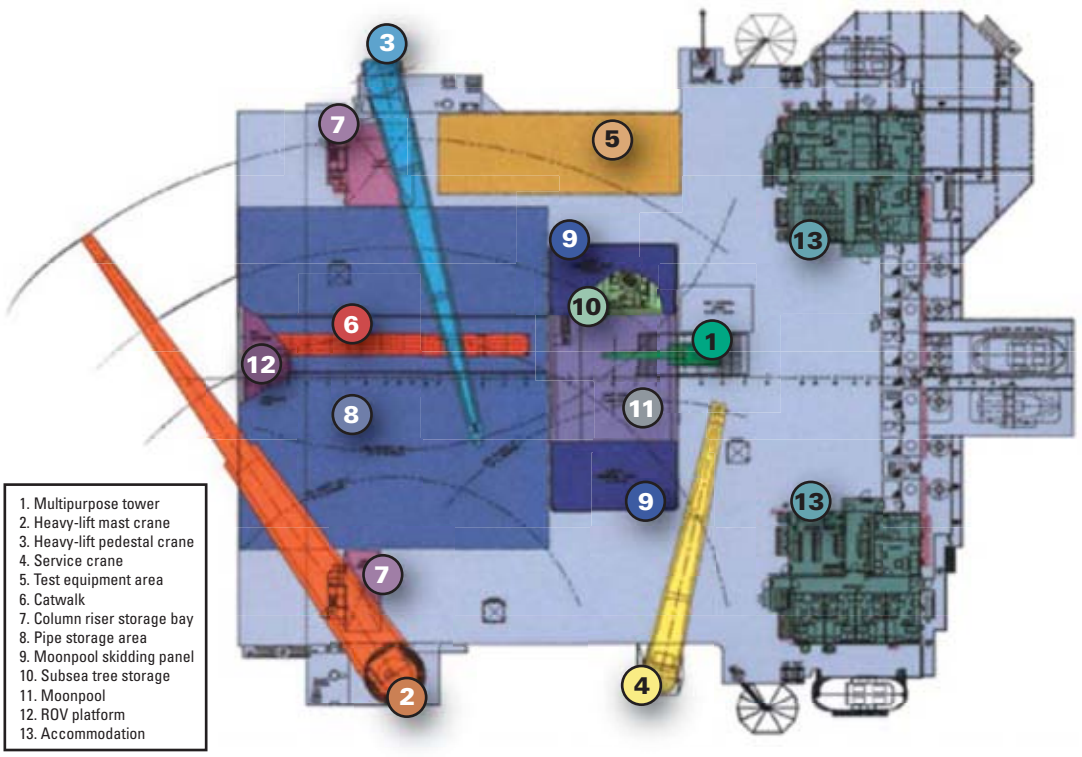
Husky Energy Inc. reported third-quarter results in October. The company spent about $20 million (Can.) using the Western Geco vessel Western Regent to record 850 sq km of 3D seismic data during its 2006 program. The 3D was shot near White Rose and Terra Nova oil fields to evaluate future exploration opportunities in the Jeanne d'Arc basin. Husky also has the Rowan Gorilla VI jack up drilling rig under contract for about $200,000/day through October.

Husky announced a discovery in June at the White Rose 0-28 delineation well, describing a 280-m oil column in the Ben Nevis Avalon formation. The company spudded the O-28X sidetrack on June 1; it was plugged and abandoned on June 26.

On July 1, the Rowan Gorilla VI spudded the F-12 well at the West Bonne Bay prospect in 100-m water. The well is about 15 km northeast of Terra Nova oil field and was drilled for Husky and Norsk Hydro Canada Gas &

AMEQUEST SEMISUBMERSIBLE SERVICE VESSEL

Fig. 2



Oil Inc. The F-12Z sidetrack was spudded on Aug. 31, reached 4,015 m, and on Oct. 20, Husky announced finding hydrocarbons in the Upper Hibernia reservoir.

In late October, the Rowan Gorilla VI rig was waiting on weather to be towed to BP's North Amethyst K-15 site in the UK North Sea, where it will work for Talisman at about $285,000/day until November 2007.

The White Rose field contains about 240 million bbl, proved and probable reserves.

Gross production at White Rose in the third quarter averaged 104,700 b/d, with 75,900 b/d net to Husky. The sixth production well, scheduled to come on stream at the end of 2006, will increase reservoir production to 125,000 bo/d.

Husky conducted throughput tests on the White Rose FPSO and plans are in place to debottleneck the facility to about 140,000 bo/d during the turnaround scheduled for summer 2007.

West Newfoundland

In mid-October, St. John's-based Vulcan Minerals Inc. announced that it would continue its $2.5-million exploration program in the Bay St. George basin on the west coast of Newfoundland with additional financing secured in September. Vulcan is operating its own RD10 land rig with a local crew.

The company began drilling a 900-m well in late October at Flat Bay No. 5, about 2 km east of Flat Bay No. 2, targeting Lower Carboniferous clastics and limestones, and expects to move to a second drillsite before the end of the year.

Canadian Imperial Venture Corp. (CIVC), also based in St. John's, announced Oct. 17 that it secured a land rig from Precision Drilling Trust to reenter the Port au Port sidetrack well in the Garden Hill South field, Port au Port Peninsula.

Precision moved the rig to the Garden Hill site from New Brunswick in early November. Drilling is expected to take 14 days, followed by production testing.

Ireland's PDI Production Inc. operates the Garden Hill development on behalf of partners CIVC, Enegi of St. John's, and UK-based Gestion Resources under a $4.4-million exploration program.

East Newfoundland

The Bull Arm industrial site in Trinity Bay, about 130 km from St. John's, will be reevaluated under a new board of directors, announced Oct. 17. The site was built for the Hibernia oil project in 1990 and later contributed to the Terra Nova and White Rose offshore projects.

The Bull Arm Site Corp. will take a more commercial focus under the new board of seven, including president and CEO Joan Cleary and a representative of the Department of Natural Resources.

New Brunswick

According to the New Brunswick Department of Natural Resources, petroleum companies planned to spend $20 million (Can.) on exploration and more than $80 million on development projects in 2006:

- Contact Exploration Inc. Stoney Creek project, Hillsborough area (oil, gas).
- Corridor Resources Inc. McCully field, southern New Brunswick (gas).
- PetroWorth Resources Inc. Southeastern New Brunswick (oil, gas).

On Nov. 7, the company said it had acquired two additional exploration permits covering 7,000 acres in Southern New Brunswick, and had nearly completed a 2D seismic program. In

Assessing the Financial

Opportunities and Operational Challenges

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Independent operators are playing a vital role in oil and gas exploration and production, and their increased participation in the international E&P arena has created information needs particular to that group.

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early October, Halifax-based Corridor Resources announced that it had assent from the New Brunswick Board of Commissioners of Public Utilities and would receive a permit to construct pipelines and related facilities to connect the McCully natural gas field with the Maritimes & Northeast pipeline.

Corridor plans to begin production during development Phase 2 by February 2007 and reach gas plant design capacity of 30 MMcfd by early spring.

New Brunswick is also considering a 145-km pipeline that would connect the Canaport LNG facility in Saint John to the Maritimes & Northeast pipeline at the US border near St. Stephen, NB.

The National Energy Board, an independent Canadian federal agency, held a prehearing planning session for the Emera Brunswick pipeline on Oct. 12 in Saint John, NB. The public hearing to consider Emera's application to build and operate the Brunswick pipeline project began Nov. 6 and will last several weeks.

New Brunswick's Department of Natural Resources expects provincial participation at the upcoming North American Prospect Expo in Houston, Feb. 1-2, 2007.

Quebec

An historical shipyard on the Saint Lawrence River may become a new source of jack up drilling rigs. In early October, Gilles Gagné, president of the privately-owned Industries Davie yard, said "Our firm designed and built 12 offshore platforms in the early 80s and is fully equipped to deliver jack-up drilling platforms."

Norway's Teco Management SA announced its $28.4 million (Can.) acquisition of the shipyard Oct. 13. Teco will provide $13 million and the province of Quebec will guarantee 50% of a $15.5-million loan to get the shipyard back in operation. Teco intends to build offshore drilling platforms at the shipyard, which had been in bankruptcy since 2001.[6]

Among other projects, the shipyard finished the conversion of Petrobras P-36 from a semisub drilling unit (Spirit of Columbus) into a floating production unit. Now working in 1,500 m water off Brazil, the P-36 is capable of processing 180,000 bo/d and 7.2 million cu m/day of natural gas.

Industries Davie is also promoting a new multiservice semisubmersible vessel design, the Amequest. The new semisub would be capable of well-intervention, completion, and pipelay activities in deep water.

The plans incorporate components from Netherlands-based Huisman-Itrec: a multipurpose tower (1.8-million-lb hook load); heavy-lift mast crane; and heavy-lift pedestal crane (Fig. 2). The Amequest semisub design also features Kongsberg Simrad dynamic positioning systems (main redundant system: SDP-21; backup system: SDP-11).

Amequest is based on Shipyard de Hoop Lobith BV's Amethyst design; only one was built, now the Pride South America (second-generation semisub).

Pride International Inc. operates four Megathyst-class (revised Amethyst design, fourth-generation semisub) drilling rigs, all working off Brazil for Petrobras. The Pride Carlos Walter and the Pride Brazil (delivered in 2001) began new, 2-year contracts in June 2006 at a base rate of $137,000/day plus a 15% performance bonus potential, for a maximum possible rate of $157,000/day.

The newer Pride Rio De Janeiro and Pride Portland were completed in early 2004 at the Cianbro Corp. shipyard, Pittsfield, Me. and are owned by Petrodrill Offshore Inc. (OGJ, Nov. 22, 2004, p. 51; Jan. 24, 2005, cover). Under new 5-year contracts that began in fall 2005, Pride said it will receive $9,000/day to manage each rig, and Petrobras will pay a base rate of $141,750/day in addition to a 15% performance bonus, for a maximum possible rate of $164,000/day.

Ahead

The market sees mixed signals from operators because of price fluctuations in natural gas. The two largest operators in Canada, EnCana and Canadian Natural Resources Inc., have both announced they are considering capital cutbacks for 2007. If this materializes, it's more likely to affect drilling plans in western Canada than off the east coast.

RBC Capital Markets analyst Angelo Guo said in September, "we expect to see a widespread reduction in gas drilling into 2007 before things turn better in late 2007 or 2008."

Sable's asset manager Janke said that operators will focus on efficiency and cost reduction for all projects and that creativity is necessary to maintain the momentum in Atlantic Canada. He said it's important to maintain infrastructure "or else the economics of the smaller offshore fields will be untenable." Janke stressed the government's role in providing an efficient, value-added regulatory system.

Rowan's chairman and CEO Danny McNeese noted that although there is very light drilling scheduled off Canada for 2007, he hopes for more activity in 2008, adding that "200 Canadians work for Rowan."

CORE.06 Chair Tom Hickey said, "Decisions taken now will significantly influence the nature and state of the industry to come." ✦

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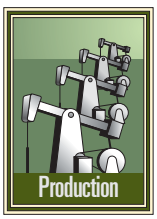
Shell's interest in enhanced oil recovery grows

As easy oil becomes more difficult to find and produce, Royal Dutch Shell PLC sees enhanced oil recovery (EOR) contributing more to the world's growing energy needs.

Primary and secondary production methods leave about two thirds of oil in the ground, said John Barry, vice-president for unconventionals and EOR for Shell, in a recent webcast. EOR methods could produce some of this oil.

Barry estimated that the world's existing oil fields might produce more than 500 billion bbl of oil with EOR methods that recover an additional 10% of the original oil in place.

Barry said Shell has more than 30 years of experiences in EOR processes that include:

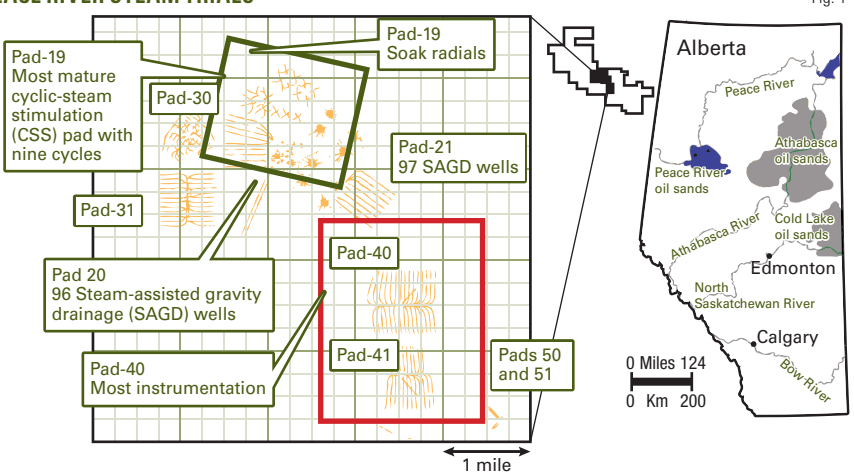


- Reducing the viscosity contrast between oil and water with steam injection. Heat added to the reservoir reduces the oil viscosity, thereby allowing it to flow easier.
- Reducing the surface tension between oil and other fluids in the reservoir by injecting surfactants or a solvent such as carbon dioxide, thereby allowing the oil to be swept easier from the reservoir.

Barry said by 2030, EOR methods may account for about 10-15% of Shell's oil production.

PEACE RIVER STEAM TRIALS

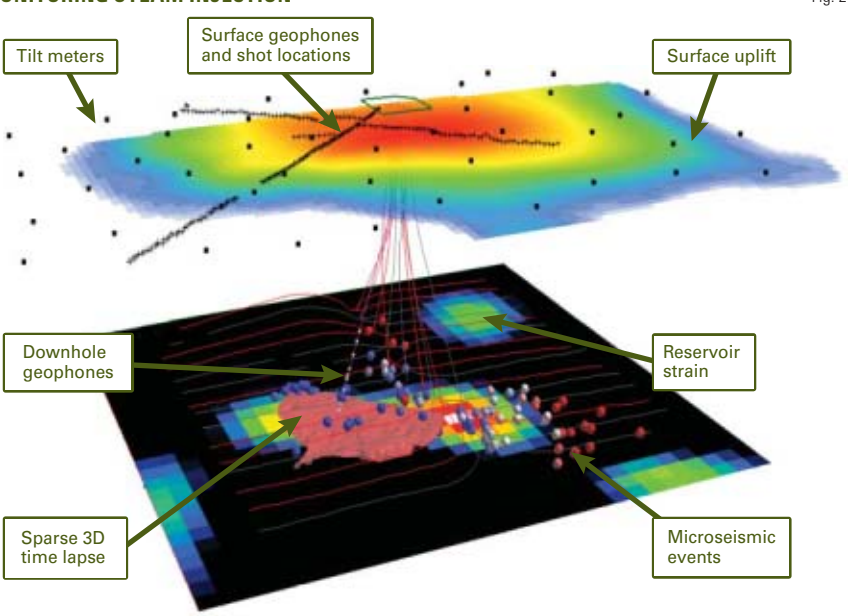
Fig. 1



Source: Shell Technology webcast, Sept. 28, 2006

MONITORING STEAM INJECTION

Fig. 2



Source: Shell Technology webcast, Sept. 28, 2006

Steam projects

Shell's EOR holdings include a 52% interest in AERA Energy LLC, which operates several steamfloods in California that produce about 100,000 b/d of oil (EOR survey OGJ, Apr. 17, 2006, p. 47). South Belridge is AERA's largest operation, recovering about 38,000 bo/d with steam injection.

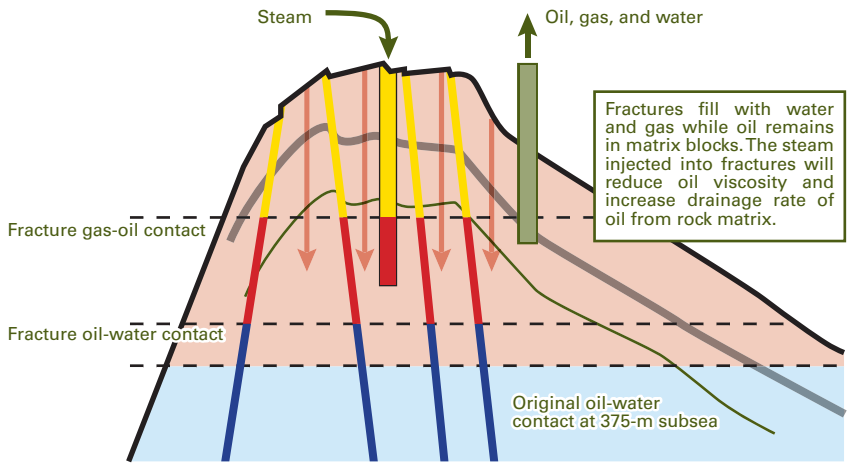
South Belridge first started producing in the 1940s with steam injection starting in the 1960s. Barry noted that the field is an example of "how long-term continuous application of emerging technologies and operational efficiency can maintain profitable EOR production."

In South Belridge, AERA has adopted a Toyota-like approach in its operations that are more commonly associated with manufacturing than the traditional oil industry. The approach allows AERA to drill about 800 wells/year in the field while maintaining very competitive operating costs, Barry said.

Also Shell Canada Ltd. operates thermal oil recovery projects in the Peace River area of Alberta. For many years, Shell has investigated many methods for economically producing the highly viscous, 7 billion bbl in place resource on its leases in Peach River (Fig. 1); but

QARN ALAM STEAM INJECTION

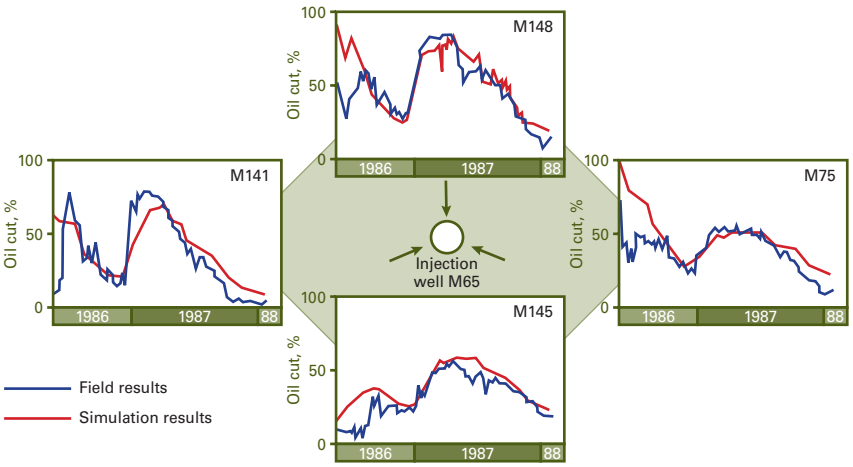
Fig. 3



Source: Shell Technology webcast, Sept. 28, 2006

MARMUL CHEMICAL FLOOD

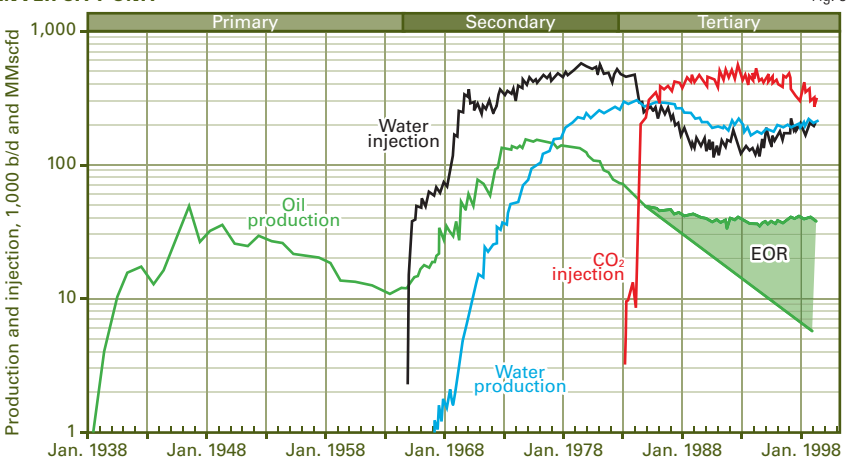
Fig. 4



Source: Shell Technology webcast, Sept. 28, 2006

DENVER CITY UNIT

Fig. 5



Source: Shell Technology webcast, Sept. 28, 2006

to date, it has recovered only a small amount of this oil, about 50 million bbl, Barry said.

To improve the economics for producing more oil from this resource, Shell has started using such technologies as time-lapsed seismic, tilt meters, and microseismic to detect where the injected steam goes (Fig 2).

Tilt meters can detect changes on the surface of only a few millimeters as injected steam heats the subsurface formations, while microseismic uses downhole geophones to listen to the events created by the injected steam. The small noises from rock and sand grains moving around and readjusting in response to heating can indicate the direction in which steam advances through the reservoir

These technologies provide Shell a better understanding of how to inject steam efficiently and will lead to expanding the production from the area, Barry said.

Shell also is involved with Petroleum Development Oman (PDO) in starting a steamflood in the fractured carbonate in Qarn Alam field. Most previous steamfloods have been in sandstones.

The viscous 220-cp oil in the field is mostly in the matrix that is surrounded by fractures. The field currently produces under gravity drainage that is a slow process. PDO fills the fractures with gas and the oil gradually flows from the matrix into the fractures.

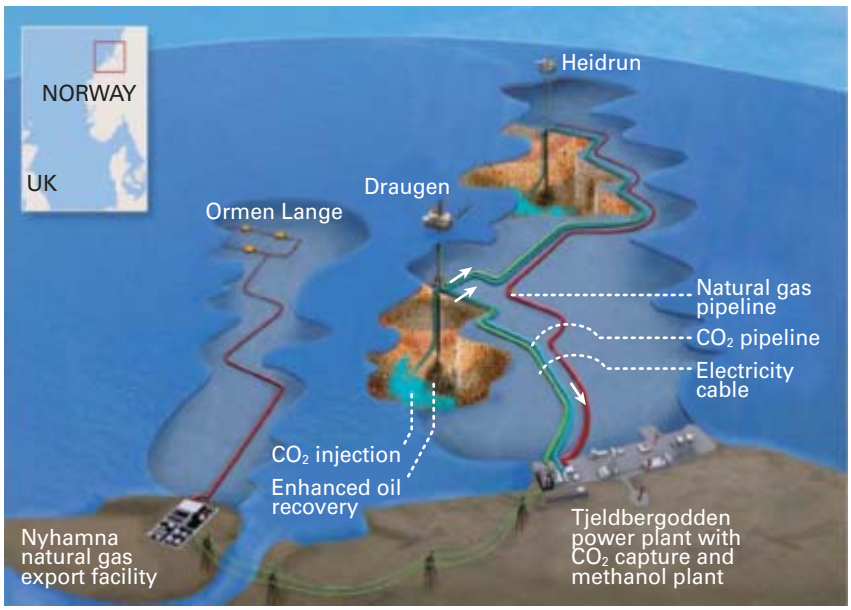
By injecting steam in the fractures, PDO expects to lower the oil viscosity by a factor of about 100 to accelerate oil flow (Fig. 3). Barry said the field's oil recovery factor should increase to 20-25% from the current 2-3% estimate.

Polymer injection

Another project in Oman will inject polymer and surfactant to enhance oil recovery in Marmul field. Barry said a pilot in the 1980s showed the effectiveness of polymer injection to increase oil recovery, but low oil prices forestalled the project's start-up. Now that the project has been dusted off, PDO plans

HALTEN CO_2 PROJECT

Fig. 6



Source: Shell Technology webcast, Sept. 28, 2006

a 27-well development, he said.

Marmul has slightly less viscous oil than Qarn Alam and its Al-Qalata reservoir has had water injected for several years. In the 1980s, a pilot in the Al-Qalata injected water viscosified with a polymer.

Fig. 4 shows the increased crude oil cut toward yearend 1986 in the four wells around the central injector. Barry said at that time oil prices decreased to less than $10/bbl and PDO deferred the project.

In the new project, PDO plans to start polymer injections on the field's flanks and then as soon as possible start injecting surfactants with polymer to reduce oil saturation. PDO expects to recover about 10% of the trapped oil from the field, Barry said.

Carbon dioxide

Shell was a pioneer in developing miscible CO_2 flooding in the Permian basin of West Texas. Its Denver City unit is a good example of the technology's effectiveness (Fig. 5). Shell no longer operates the flood, but CO_2 flooding continues to produce an estimated 29,000 bo/d from the unit (OGJ, Apr. 17, 2006, p. 49). Occidental Permian Ltd. currently operates the CO_2 flood in the unit.

Barry said Shell and Statoil ASA have announcement a CO_2 feasibility study on the Halten project off Norway (Fig. 6). Unlike the Denver City unit that uses naturally occurring CO_2, a power station built in Tjeldbergodden will supply CO_2 for the Hatten project.

Barry estimates that the Tjeldbergodden power plant will generate a little more than 2 million tonnes/year of CO_2, which than will be injected in offshore Draugen field to increase oil production. Later the CO_2 also may go to the Heidrun field further offshore.

Preliminary studies show that CO_2 injection will increase oil recovery from the field by several percent, or about 50 million bbl, he said. ✦

Lost manufacturing resulting in slower US petchem growth

Paul Bjacek
Accenture
Houston

The US petrochemical business is experiencing a lower level of growth due to lost manufacturing or "deindustrialization" trends. This situation is more prevalent during each down cycle, when downstream manufacturing moves into other countries even faster. Less demand causes lower profits and, in turn, the shutting down of finished-goods plants in the US.

Suppliers in lower-cost regions pick up the slack and expand production volumes. For instance, in the last worldwide olefins down cycle, whose low point occurred in 2001, domestic demand and exports for ethylene derivatives declined by about 8% and 33%, respectively. At the same time, China increased its imports of the same derivatives by 50%, as it gained market share in the downstream finished goods market using those materials (Fig. 1).

At that time, petrochemical producers took various reactive measures, such as shutting down high-cost plants. US producers must anticipate the next step change in lost manufacturing and proactively improve their businesses, as well as support legislation that favors free and competitive markets (especially for energy development).

These are some of the conclusions of a study conducted by Accenture Research for the American Chemistry Council (ACC), entitled "Lost US manufacturing—the impact on the business of chemistry" (www.americanchemistry.com/store).

Study overview

Our study for the ACC quantified the impact of lost downstream manufacturing (of 17 selected industries) on the future chemical industry. The study concluded that domestic demand for manufactured goods will outpace domestic industrial production; imports will fill this gap.

See the attached box for the study's methodology.

Although domestic production of finished goods will still increase, imports will rise faster. This implies that US manufacturers will lose market share and, therefore, chemicals manufacturers will lose the demand for chemicals associated with manufacturing these products (Fig. 2).

Total chemical sales-opportunity losses represent just 2.4% of the expected $8 trillion total manufacturing industry sales-opportunity losses (or cumulative net trade losses by 2015) caused by lost manufacturing.

Estimated cumulative opportunity losses (based on trade losses) during the next 10 years include:

- $188 billion in chemical sales, including $50 billion in sales from the top seven thermoplastic resins.
- $40 billion in capital expenditures

Study methodology

Accenture Research developed a high-level approach to identifying the value of chemicals in lost manufacturing. Building on the American Chemistry Council's (ACC) historical analysis of "Chemistry Sales by Industry" from the Guide to the Business of Chemistry–2005, we identified 17 relevant manufacturing sectors for analysis. Applying ACC's chemical use factors to Global Insight Inc.'s industrial production forecasts allowed us to identify future chemical use for each market.

Production forecasts alone, however, do not represent total domestic market potential for local producers. The total domestic market potential subtracts exports and adds imports.

Accenture Research identified historic product imports and exports for each segment and calculated historic total consumption in each market. Total consumption represents the amount of any product that is being purchased in the US, sourced either through imports or domestic production.

We then correlated historic consumption for each market to Global Insight Inc.'s broader economic assumptions. The resulting consumption forecast, per market, also represents the total market potential for domestic producers in each respective market and serves as a baseline from which to measure lost or gained manufacturing (or domestic market share changes).

The difference between this forecast consumption and Global Insights Inc.'s production forecasts equals "net trade," which, when negative, is called "lost manufacturing."

The lost manufacturing (sales) results were used to calculate, on the basis of historical relationships, the impact on research and development spending, capital expenditures, employment, and other values. Accenture Research also conducted interviews with industry experts in chemical companies, plastics processors, and other organizations to collect relevant facts and opinions to ensure the integrity of the study. Market sectors covered in the study include:

Market segment	NAICS code	Market segment	NAICS code
Food products	311	Nonmetallic mineral products	327
Textiles, fabrics	313	Primary metals	331
Textile mill products	314	Fabricated metal products	332
Wood products	321	Machinery	333
Paper products	322	Semiconductors, electronic components	3344
Printing	323	Motor vehicles, parts	3361, 2, 3
Petroleum products	324	Other transportation equipment	3364, 5, 6, 9
Business of chemistry	325	Furniture	337
Plastics, rubber products	326		

COST COMPONENTS FOR KEY US INDUSTRIES, 2004

Table 1

Industry[1,2]	Industry revenue, billion $	Direct input costs, billion $					Direct input costs, %				Natural gas, LPG, NGL share of total energy needs, %[5]
		Labor	Energy	Chemicals	Other materials, services	Total costs	Labor	Energy[4]	Chemicals	Other materials, services	
Chemicals[3]	520	65.7	14.0	119.3	99.4	298.4	22	5	40	33	74
Food products	510	58.7	9.5	4.6	272.5	345.3	17	3	1	79	45
Motor vehicles	507	65.3	2.3	6.2	292.2	366.1	18	1	2	80	39
Petroleum, coal products	306	11.6	5.0	3.7	258.2	278.6	4	2	1	93	14
Machinery	288	67.7	2.2	1.3	125.6	196.7	34	1	1	64	38
Fabricated metal products	271	77.4	4.1	4.5	132.1	215.1	35	2	2	61	42
Plastics, rubber products	190	35.7	3.8	41.0	44.5	125.1	29	3	33	36	32
Primary metals	182	30.0	4.4	2.6	111.1	148.2	20	3	2	75	31
Paper products	160	29.8	8.4	9.6	72.0	120.9	25	7	8	60	22
Semiconductor, electronic components	132	26.8	2.9	7.9	63.4	101.0	27	3	8	63	29
Wood products	107	23.7	1.8	1.5	63.6	90.6	26	2	2	70	19
Nonmetallic mineral products	98	27.5	3.9	3.2	32.3	66.9	41	6	5	48	37
Printing	92	34.4	8.4	2.9	24.1	69.9	49	12	4	35	37
Furniture, related products	81	23.9	0.9	1.0	37.3	63.1	38	1	2	59	35
Textile mills	43	9.0	1.3	8.4	15.2	33.9	27	4	25	45	32
Other transportation equipment	39	7.5	1.2	1.3	23.5	33.5	22	3	4	70	39
Textile products	33	6.1	0.4	6.3	11.6	24.5	25	2	26	48	42
Total, billion $, or weighted average, %	**3,559**	**597.9**	**74.7**	**225.4**	**1,679.7**	**2,577.7**	**23**	**3**	**9**	**65**	**39**

[1]Textiles and food products categories were estimated from BEA data using EIA data on sector usage from 2002. [2]Used "Computer and electronic products " (NAICS code 334) for energy requirements instead of "Semiconductors & electronic components " (NAICS 3344). [3]NAICS code 325. [4]Does not include raw materials of "feedstocks." calculated based on EIA data on energy used per segment including use as raw materials. Electricity use split on according to US average natural gas share. Motor vehicle and parts gas share based on "Total Transportation" data. [5]NGL = natural gas liquids; LPG = liquefied petroleum gases.
Source: Global Insights, US Bureau of Economic Analysis, US Energy Information Administration, Accenture Research estimates

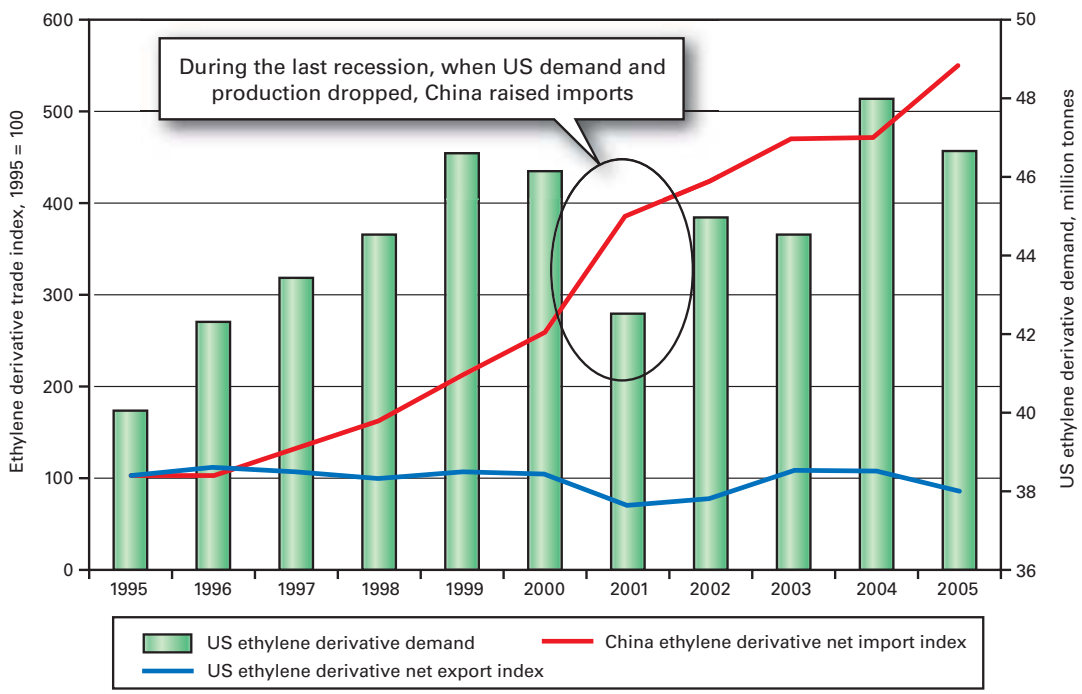
in chemicals, including $5.5 billion for new thermoplastics capacity.

- $30 billion in chemical research and development expenditures.
- $43 billion in US government tax revenue from chemical companies.
- $3 billion in charitable contributions from chemical companies.
- 157,000 chemical industry related jobs.

Chemicals are on the front line of lost manufacturing in the US. Coupled with

US RECESSION EFFECTS*

Fig. 1



*Accenture Research analysis. Based on Parpinelli Tecnon data. Ethylene derivatives include high-density polyethylene, low-density polyethylene, linear low-density polyethylene, ethylene glycol, ethylene dichloride, vinyl chloride monomer, styrene, ethylbenzene, vinyl acetate monomer, ethylene propylene diene monomer, and 2-ethylhexanol.

US THERMOPLASTICS INVESTMENT

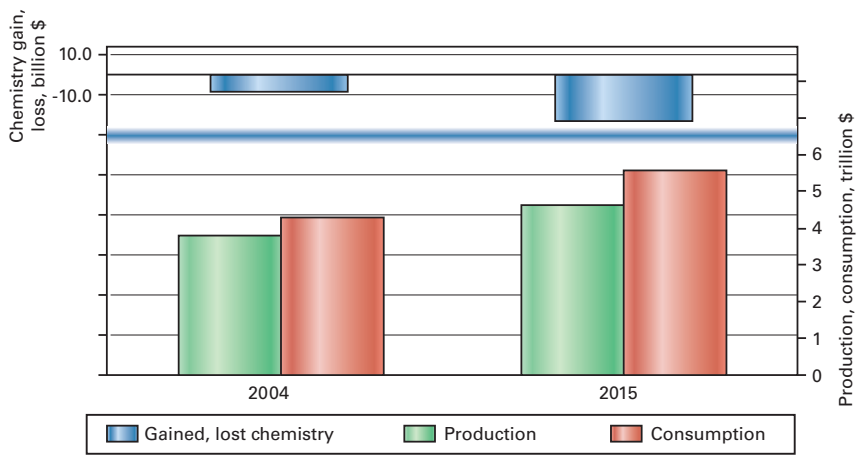
Table 2

Polymer	LDPE	LLDPE	HDPE	PP	PS	PVC	PET	Total
Total lost polymer production in 2015 baseline and potential, 1,000 tonnes	157	2,821	1,930	2,178	965	1,252	1,909	11,212
Number of world-scale polymer plants not built by 2015	0.5	9.4	4.3	6.6	5.4	3.8	5.5	35
Investment loss associated with polymer plants not built, million $	114	1,103	1,159	1,585	534	421	545	5,462
O&M job loss associated with polymer plants not built	39	705	482	544	241	313	477	2,803
Domestically produced polymer revenue opportunity lost in 2015, million $	284	4,479	2,978	3,649	1,637	1,739	3,030	17,797

Note: Investment/jobs/world-scale capacity size estimates based on Parpinelli Tecnon data/consultation. Revenue estimates based on prices from Plastics News for June 2006. All estimates based on prices from Plastics News for June 2006. All estimates reflect the situation in 2015 (not cumulative from prior years). All currency data in 2005 constant dollars. LDPE = low-density polyethylene, LLDPE = linear LDPE, HDPE = high-density polyethylene, PP = polypropylene, PS = polystyrene, PVC = polyvinylchloride, PET = polyethylene terephthalate

CHEMISTRY USE LOSSES*

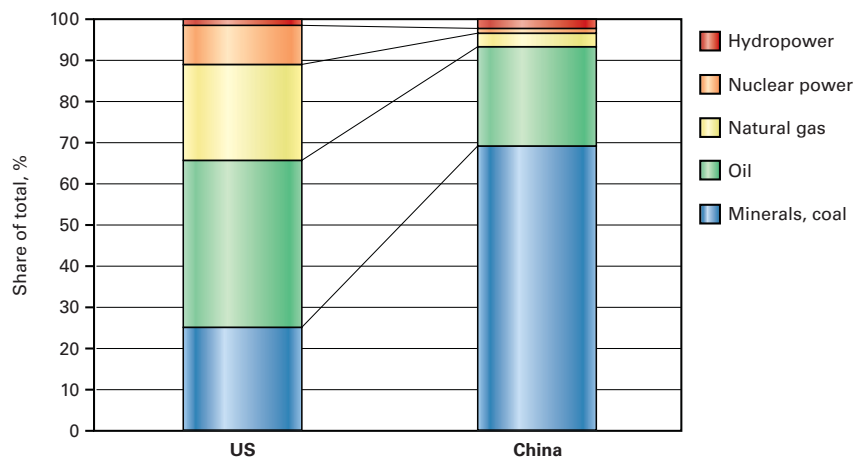
Fig. 2



*Aggregate of 17 industries. 2005 constant dollars.

PRIMARY ENERGY REQUIREMENTS

Fig. 3



Source: Parpinelli Tecnon

relatively higher production costs in the US, the movement out of the US for industries that consume industrial chemicals is causing a shift in chemicals investment focus overseas. The growth of overseas manufacturing in northern Asia, China in particular, has a cascade effect on those industries supplying industrial users, especially raw material manufacturers.

As a large supplier to other industries, the petrochemicals industry is one of the businesses most seriously affected by this trend.

Besides relatively higher labor and regulatory costs in the US, high energy prices are contributing to the decline of US industrial production. High and volatile US natural gas prices and unreliable supplies affect electricity costs and, in the case of chemicals, raw material costs as well (Fig. 3).

Volatility also causes uncertainty in production planning and volume expansion. Energy is the largest input factor for most base chemicals; therefore, reliable, low-cost energy supplies are critical to ensuring chemical industry competitiveness.

Chemicals and energy represent 10% of the costs of the 17 industries analyzed in this study (Table 1). Because these industries have total revenues of nearly $4 trillion, it is imperative that the US chemical industry remains viable. Making hydrocarbons available at competitive prices and encouraging legislation that favors domestic chemicals investment would go a long way to ensuring the industry's future.

Olefins end markets

The lost-manufacturing study determined that by 2015, about 11 million tonnes of the top seven thermoplastics will be imported instead of produced

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domestically (Table 2). The associated losses in new thermoplastic resin plant investments are about $5.5 billion. Thermoplastics consumed in industries that are easily moved "offshore" (such as consumer products or furniture production) will suffer the most.

The study also concluded (based on Accenture Research discussions with plastics processors accounting for up to $3.5 billion in sales) that, although lower labor costs in other regions have drawn labor-intensive manufacturing away from the US, the downstream industry has been engaged in development of highly innovative and leading practices, resulting in new products, process improvements, and supply chain enhancements just to stay in business.

They are working against increasing cost pressures in transportation and plant direct costs, many of which are related to rising energy prices. This may dampen the competitive edge they have achieved through technological innovation. For steam cracker operators, this means eventual erosion of downstream markets for derivatives.

Olefins production effects

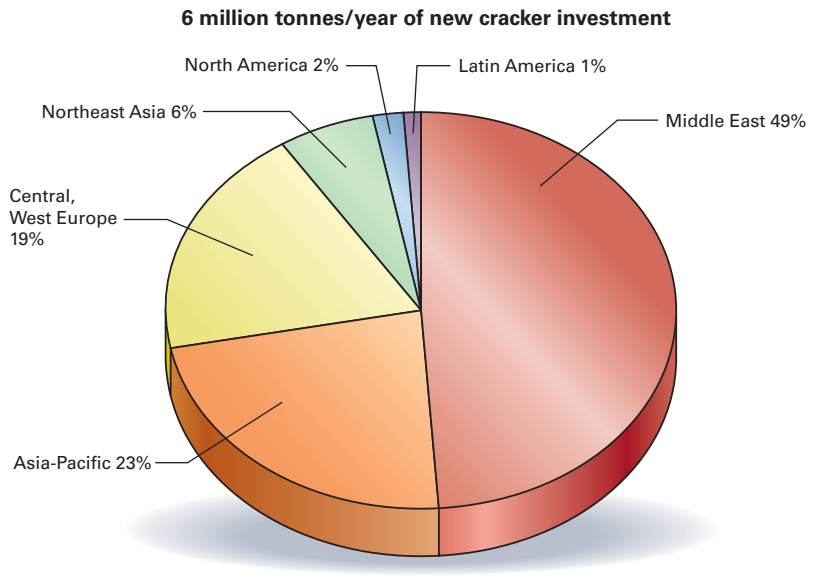
Some 65% of US ethylene production capacity is based on natural gas feed. Most European and Asian ethylene production, in contrast, is based on liquids that are related to oil prices. The correlation of gas prices to oil prices, therefore, directly affects US ethylene operating rates and profitability.

Relatively higher gas prices can reduce the competitiveness of US ethylene production (in aggregate, because some plants are liquids-based or have some feed flexibility). A low, steady gas-to-oil price ratio is critical to maintaining the US competitive position in ethylene and its related derivatives and coproducts or by-products.

To date, no greenfield ethylene (the most important base organic chemical) plants are scheduled for completion in the continental US. US domestic producers are reluctant to invest because of uncertainty surrounding environmental legislation and energy policy. Instead, US-based ethylene producers have announced construction plans for about 6 million tonnes of new ethylene capacity investment (equivalent to about $15 billion) during the next 10 years in other regions (Fig. 4).

US ETHYLENE PRODUCERS' INVESTMENTS, 2005-15*

Fig. 4



*Accenture Research analysis. Based on Parpinelli Tecnon data.

This lack of cracker investment in the US has implications not only for the obvious commodity derivatives, but also for a large number of downstream industries that depend on various cracker coproducts and by-products, including those in specialty markets with few alternative sources of supply.

Strategic alternatives

US olefins producers must act now, during this period of high margins, to prepare for a period of strong competition in "traditional" downstream markets. Although foreign investment is still essential for global players, petrochemical companies should carefully consider realigning their US assets, which have a total current replacement value of about $65 billion (steam cracking alone), instead of targeting 100% of expansion funds overseas

Portfolio and business structure realignment may be necessary for these assets to compete in the future. Producers must determine which markets have the most growth potential and then develop plans to re-align their derivative businesses to best serve those customers.

The lost manufacturing study determined that large-end market industrial sectors are still growing in the US. To serve these growing markets in the long term, chemical companies must innovate in the supply chain, in manufacturing operations, and in the end products themselves. The appropriate changes will depend on each company's business model and market drivers.

Some strategies may include:

- Focusing product portfolio to end markets with the best prospects (based on the company's current position).
- Differentiating derivatives to meet developing needs of the highest potential growth segments.
- Searching for service value opportunities in customer industries.

The precepts of any strategy must aim to develop close, selective customer collaboration, where the producer joins with the customer to compete

for the future of the market segment. There must be a strategic shift from the traditional "cost plus" model towards "output value" model, which requires a deep understanding of a customer's value chain and its value extraction.

Some tools rising in importance in this respect are in the areas of customer relationship management and research and development (such as high-throughput chemistry). Outsourcing various back-office processes or developing other business process efficiencies can enhance domestic competitiveness. ✦

The author

Paul Bjacek (paul.bjacek@accenture.com) is the global chemicals-natural resources strategic research lead for Accenture, Houston. He has 20 years' experience in the chemicals industry, 7 of which were with Chevron Chemical Co. Bjacek is currently engaged in assessing high-performance businesses and practices in the chemicals industry. He hold and MS from the London School of Economics and a BS in chemistry and business from the University of Scranton, Pa. He is past president of the Commercial Development & Marketing Association.

Correction

Aziem

Publication of "New method improves back-allocation for gas, condensate at processing plants" (OGJ, Oct. 2, 2006, p. 48) by Mahmoud Abu El Ela, Ismaiel Mahgoub, Mostafa Nabawi, and Mohamed Abdel Aziem, inadvertently omitted the photograph of Aziem.

Historical data provide low-cost estimating tool

Mariano Gurfinkel
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Center for Energy Economics
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Historical data can help develop surrogate cost estimates for pipeline construction, potentially replacing a more costly full engineering study.

A complete engineering package likely provides the best cost estimate, but such packages are expensive and sometimes this investment is unwarranted. And even with such an effort, construction surprises, delays, and shortages of materials or labor can still add unexpected costs.

Uncertainty surrounds any advance estimate of pipeline construction costs. But the ability to calculate reasonably accurate cost estimates for large pipeline projects without the cost of an engineering effort can help in decision making both in terms of policy and regulatory processes. Such calculations may also serve as a screening criterion for prospective projects. Table 1 provides publicly available cost estimates for a variety of currently discussed pipeline projects.

The database of natural gas pipeline construction-permit application filings of the US Federal Energy Regulatory Commission (FERC) provides a useful source of both historical and forecast data. Rigorous engineering efforts typically provide the basis for these filings, making them usable for deriving average estimates of construction costs and providing a basis for cost projection of future pipeline projects.

These data provided the basis for a surrogate to estimate construction costs for large-diameter natural gas pipelines. Recent filings have the added benefit of capturing recent trends in construction costs. The structure of construction costs, however, can evolve rapidly. Preconstruction filing data can also differ from actual costs.

Nevertheless, the technique, though fairly simple, yields accurate cost estimates when compared with actual costs of proposed international pipelines.

PIPELINE PROJECT ESTIMATED COST INFORMATION

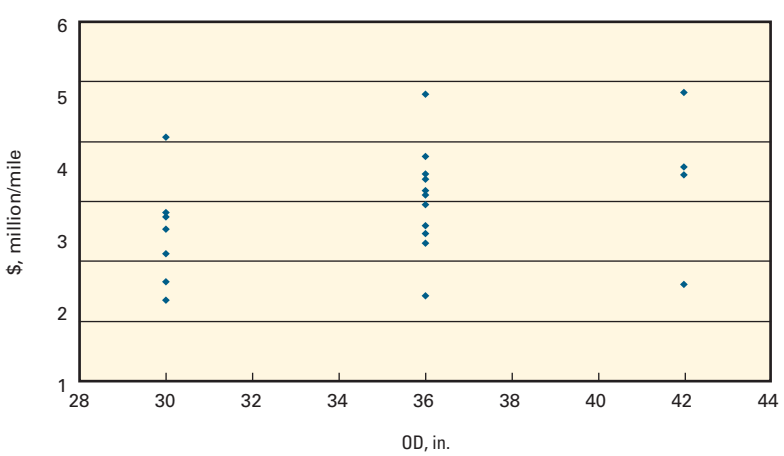
Table 1

Project	Cost, $ million*	Length, miles	OD, in.
Mackenzie Valley	3,500	812.5	30
Rockies Express System	4,000	1,300	40
Rockies Express West	1,600	713	42
Foothills Pipe Lines Ltd.	8,000	1,750	42
North European Gas Pipeline	4,800	744	56
Iran-to-India	4,200	1,000	28
Venezuela-to-Colombia	330	144	26
Great Southern Gas Pipeline	23,000	5,000	52

*Cost estimates culled from a variety of public sources, including Oil & Gas Journal's Worldwide Construction Update, Apr. 24, 2006, www.ogjonline.com.

INFERRED CONSTRUCTION COSTS

Fig. 1



Onshore construction cost

US FERC construction permit applications from July 1, 2004, and June 30, 2005 (OGJ, Sept. 12, 2005, p. 50), provide the basis for developing a simple approach to estimating natural gas pipeline-construction costs. Using a subset of onshore pipelines with nominal OD greater than or equal to 30 in. avoids including modeling biases from small-diameter natural gas pipelines when developing a model for large natural gas pipelines with high flow rates and great lengths.

Fig. 1 shows the construction costs per mile of natural gas pipeline inferred from the OGJ data.

CEE separated the construction costs into three groups: high project costs, mean project costs, and low project costs, using the data set's maximum, mean, and minimum values for each diameter. Fig. 2's three lines represent high, mean, and low project cost estimates.

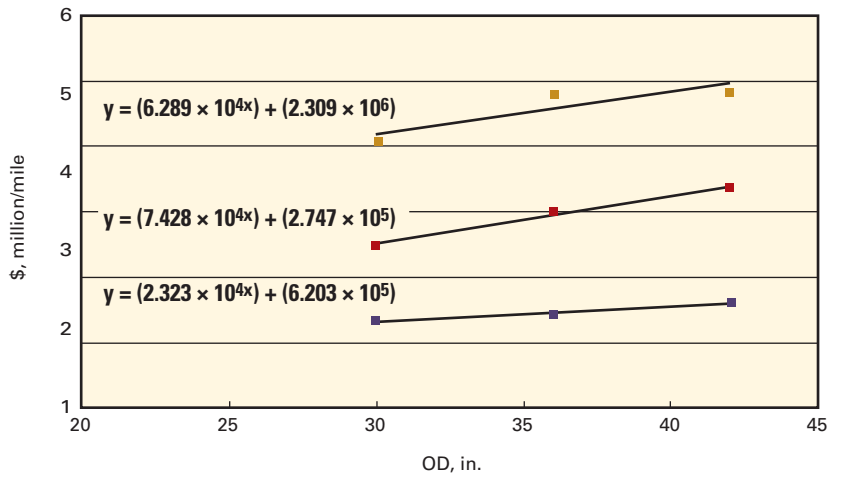
The high-cost line captures projects that were affected by higher material costs, more expensive rights-of-way (ROW), higher construction costs, or other factors. Some or all of these variables could reflect environmentally sensitive locations along the pipeline route or related conditions that affect pipeline approvals and development.

Per-mile natural gas pipeline costs increase in near linear fashion with pipeline diameter. This near-linear relationship, at least within the range of diameters (and projects) used, indicates that pipeline diameter is an appropriate scaling factor for total costs.

The data represent total costs. A model could also break pipeline project costs into different categories (materials, rights-of-way, labor, etc.) and then scale these according to specific models. The good correlation of total costs to OD implies that discrete costs can be assumed to scale similarly with the same variables (pipeline length and pipeline diameter) and that any discrepancies cancel each other out, save for exceptional situations.

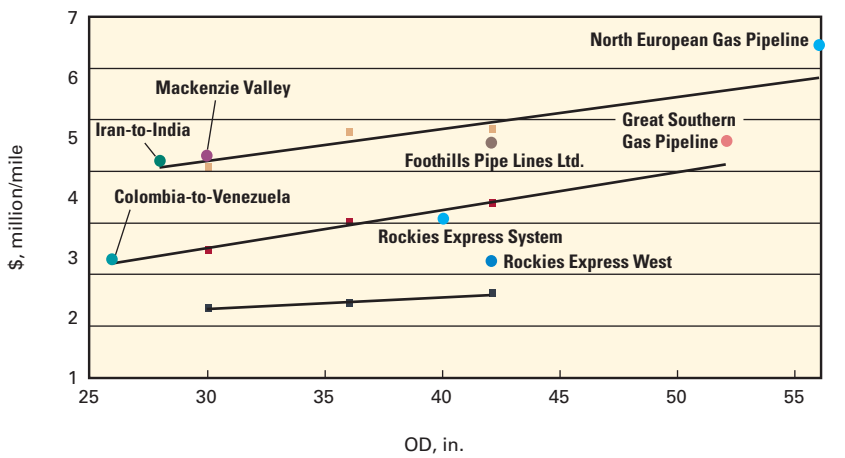
CONSTRUCTION COST ESTIMATES; HIGH, MEAN, LOW

Fig. 2



COST ESTIMATES, ANALOGS

Fig. 3



REPORTED COST ESTIMATES VS. MODEL PREDICTIONS

Table 2

Project	Reported cost estimate	Mean-cost model prediction	High-cost model prediction
	$/mile		
Mackenzie Valley	4,307,692.31	2,503,100.00	4,195,700.00
Rockies Express System	3,076,923.08	3,245,900.00	4,824,600.00
Rockies Express West	2,244,039.27	3,394,460.00	4,950,380.00
Foothills Pipe Lines Ltd.	4,571,428.57	3,394,460.00	4,950,380.00
North European Gas Pipeline	6,451,612.90	4,434,380.00	5,830,840.00
Iran-to-India	4,200,000.00	2,354,540.00	4,069,920.00
Venezuela-to-Colombia	2,295,652.17	2,205,980.00	3,944,140.00
Great Southern Gas Pipeline	4,600,000.00	4,137,260.00	5,579,280.00

Cost analogs

The historical data model must address the applicability of continental US data from FERC filings to other projects, including those of different scales. CEE compared model-estimated pipeline costs for a series of analog pipelines presented in Table 2 and also included for visual reference in Fig. 3. Projects that cross international boundaries, traverse complicated terrains, or are subject to severe-weather environments

ESTIMATED TRANS-ALASKA GAS PIPELINE COSTS, HIGH-COST MODEL*

Table 3

OD, in.	Cost, $/mile	Total, Prudhoe Bay-to-Alberta, $	Total, Alberta -to-Chicago, $
52	5,579,280	11,939,659,200	8,368,920,000

*Higher $/mile costs can result from harsh environments, higher labor costs, etc. This will likely be the case for Arctic pipelines such as the Alaska-to-Alberta segment of this project.

ESTIMATED TRANS-ALASKA GAS PIPELINE COSTS, MEAN-COST MODEL

Table 4

OD, in.	Cost, $/mile	Total, Prudhoe Bay -to-Alberta, $	Total, Alberta -to-Chicago, $
52	4,137,260	8,853,736,400	6,205,890,000

tend to lie near the high-cost project limit.

This set of guidelines provided the basis for an estimate of the construction cost of the proposed Great Southern Gas Pipeline, running from Venezuela to Argentina. Publicly available cost estimates fall short of our estimated costs, given that the pipeline would go through extremely environmentally sensitive areas.

Projects being constructed using existing rights of way or that do not have to be built in environmentally sensitive or physically challenging areas tend to fall in the mean cost estimate (e.g., the Rockies Express Pipeline LLC project).

Alaska pipeline

Using the agreement between the model and the different reported cost estimates for large pipelines, CEE applied the model to estimate the cost of the proposed Trans-Alaska Gas Pipeline. In May 2006, Alaska's Department of Revenue published its Preliminary Findings and Estimations, which included new materials and be subject to strict environmental construction limitations, such as limited schedules in periods of melting permafrost.

Based on these observations, CEE suggests that the high-cost model be used for the stretch from Alaska to Alberta (Table 3).

Significant pipeline networks, however, are operating in or near the proposed Alberta-to-Chicago natural gas pipeline right-of-way. If the high-cost model is used for the Alaska-to-Alberta segment, there may be opportunities for cost reduction in the Alberta-to-Chicago leg.

Several options currently under consideration include the use of significant portions of existing infrastructure. Even where existing pipeline cannot be used, however, both the breadth of the region's network and lessons learned from laying the existing pipe can be applied to obtain costs closer to that of the mean-cost model (Table 4).

CEE used functions for the high and mean construction costs to estimate the construction cost of the proposed 52-in. pipeline. The model predictions can serve as a guide for the overall construction cost of the pipeline, given that different segments will most likely have different per mile costs.

TRANS-ALASKA GAS PIPELINE EXPECTED, LOWER-BOUND COSTS

Table 5

OD, in.	Expected cost, Alaska-to-Alberta	Expected cost, Alberta-to-Chicago	Lower-bound cost, Alberta-to-Chicago	Expected total cost	Lower-bound total cost
	Billion $				
52	11.940	8.369	6.206	20.309	18.146

$18.4 billion for the pipeline portion of the project.

The pipeline can be divided into two segments, one from Prudhoe Bay to Alberta (2,140 miles) and one from Alberta to Chicago (1,500 miles). The pipeline also crosses different environments. The segment from Prudhoe Bay to Alberta would be the first natural gas pipeline constructed along that right-of-way. It would most likely also use

Uncertainty, overruns

Uncertainty in material costs, labor costs, project time lines, and, in general, the risk of cost overruns must all be considered when evaluating the economics of a major pipeline project.

Because projects as large as the Alaska natural gas pipeline are few, a track record of cost estimation and actual construction costs is not readily available. Other pipeline projects, however, can serve as analogs for estimating the potential for and extent of cost overruns. For example, the BP-operated Baku-Tbilisi-Ceyhan pipeline cost nearly $3 billion. Cost overruns totaled an estimated $1 billion, or 33% of the overall project cost.

Costs for the Shell-led Sakhalin Energy Investment Co. Ltd.'s Sakhalin II project, with similar weather conditions to Alaska (but also with offshore upstream facilities), have grown to an estimated $20 billion from $10 billion: a 100% cost overrun. Many other examples of mega-projects exist with considerable cost overruns.

It is doubtful costs for the Alaska natural gas pipeline can fall below the mean estimated cost example. Cost overruns, however, have no predefined limit other than those set in advance by the developers.

No construction-cost reduction is expected, apart from those inherent in the Alberta-to-Chicago segment. It is also unlikely that all cost-reduction opportunities will be captured, creating a hard lower bound for the total cost estimate of $18.1 billion (Table 5).

The most probable construction cost is that shown by the mean-construction-cost model: $20.3 billion. But cost-overrun probabilities for the Alaska-to-Alberta portion are high and could have a significant impact.

Further testing with actual pipeline

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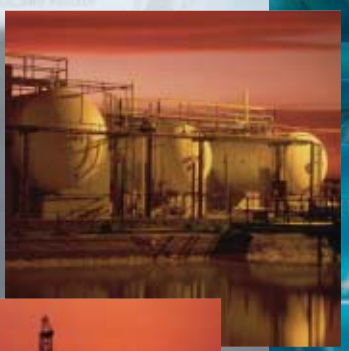

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E1271 $995.00 US

International Refining Catalyst Compilation — Refining catalysts with information on vendor, characteristics, application, catalyst form, active agents, etc.
CATALYST $295.00 US Current

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E1077 $495.00 US Current E1077C $1,495.00US Historical, 1980 to current

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Worldwide Gas Processing Survey — All gas processing plants worldwide with detailed information on capacities and location. Updated annually in July.
E1209 $395.00 US Current E1219C $1,195.00 US Historical, 1985 to current

International Ethylene Survey — Information on country, company, location, capacity, etc. Updated in March.
E1309 $350.00 US Current E1309C $1,050.00 US Historical, 1994 to current

LNG Worldwide — Facilities, Construction Projects, Statistics LNGINFO $395.00 US

Worldwide Construction Projects — List of planned construction products updated in May and November each year.

	Current	Historical 1996–Current
Refinery	E1340 $395.00 US	E1340C $1,495.00 US
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Petrochemical	E1341 $395.00 US	E1341C $1,495.00 US
Gas Processing	E1344 $195.00 US	E1344C $ 795.00 US

U.S. Pipeline Study — There are 14 categories of operating and financial data on the liquids pipeline worksheet and 13 on the natural gas pipeline worksheet.
E1040 $545.00 US

Worldwide Survey of Line Pipe Mills — Detailed data on line pipe mills throughout the world, process, capacity, dimensions, etc.
PIPEMILL $695.00 US

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E1345 $395.00 US Current E1145C $1,695.00 US Historical 1989 to current

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Production Projects Worldwide — List of planned production mega-projects Location, Project Name, Year, Production Volume, Operator and Type
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cost data should be performed to fully calibrate our technique. Comparison with older but comparable data sets could also be done to develop cost-escalation models.

The construction-cost models illustrated here by FERC data can provide estimates of natural gas pipeline costs in other regions of the world, so long as the distinction can be made between challenging and higher cost projects and more routine pipeline projects, suggesting that the cost structure for large natural gas pipeline projects reflects global (rather than regional or local) prices of materials, engineering and construction, capital, and other variables, especially for the largest projects. ✦

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Drilling, completion software can be shared among users

Newly released PetrisWINDS DrillNET is an advanced drilling and completion engineering software framework that combines capabilities of Maurer drilling programs into one easy-to-use, integrated package that permits data to be captured, reused, and shared among users.

The software's intuitive user interface and integrated database are coupled with context-sensitive help and a novel traffic light approach to check that all data are complete for a calculation. Output reports can be generated from the results, and the data exported to Microsoft Office products. Additionally, DrillNET is available in multiple languages, including English, Russian, Spanish, and Chinese, and can be configured for each user to allow the use of one language for the program operation and another one for report generation.

DrillNET allows a user to focus on the specific drilling program of interest and does not require that data for the entire well be present to run the calculations. It allows users to models various outcomes based upon variations in inputs using the intuitive user interface for quick assessments on potential program outcomes using data from drilling operations in real time.

Source: **Petris Technology Inc.**, 1900 St. James Pl., Suite 700, Houston, TX 77056.

New engine cylinder lubricating system

The pulse lubricating system (PLS) is a new, electronically controlled cylinder lubricating system to meet the demand for lower cylinder oil feed rates.

Developed for application in RTA and RT-flex low-speed marine diesel engines, it delivers reduced cylinder oil consumption without compromising piston-running reliability, the company says.

PLS helps make it possible to reduce the cylinder oil feed rate compared with the existing accumulator system through an improved distribution of cylinder lubricating oil to the cylinder liner, and the fully flexible, precise timing of oil delivery.

The guide feed rate for RTA and RT-flex engines equipped with PLS as original equipment is 0.7 g/kw-hr of cylinder lubricating oil. The system promises to deliver accurately metered, load-dependent volumes of lubricating oil to the cylinder liner running surface at the precise timing required. Electronic control helps ensure the accurate dosage and timing, with full flexibility in settings.

The cylinder lubricating oil is sprayed as a pulse of multiple jets on to the liner surface from a single row of lubricators arranged around the liner, each lubricator having a number of nozzle holes. The oil jet sprays ensure better distribution of the oil over the liner running surface than with the existing accumulator system, the firm points out. There is no atomization and no loss of lubricating oil to the scavenge air.

Source: **Wartsila Corp.**, John Stenbergin ranta 2, Box 196, Fl-00531 Helsinki, Finland.

Services/Suppliers

Sondex PLC

London, has announced its acquisition of Houston-based Ultima Labs Inc.

Ultima Labs has a wide range of IP and products related to LWD and wireline applications. Their primary LWD product involves multiple resistivity measurements of rocks and their fluid contents, which is a next-step for Sondex's Drilling Div. and LWD line of tools.

Sondex PLC designs, manufactures, and markets downhole instrumentation and tools for oil field service companies. The company has offices in the UK, UAE, Russia, Venezuela, China, Australia, Canada, and the US.

Schlumberger Ltd.

Houston, has completed the relocation of its US corporate office from New York to the Houston Galleria area. While Schlumberger maintains corporate offices in Paris and The Hague, the Houston corporate office will consolidate the company's presence in that city.

Schlumberger Ltd. is a leading oil field services company supplying technology, information solutions, and integrated project management to optimize reservoir performance for customers in the global oil and gas industry.

Intec Engineering

Houston, has announced the appointment of Marc Mellema to the position of chief financial officer. Mellema brings expertise as an international tax lawyer with four large accountancy firms in Europe and a specialty in multinational companies in the onshore and offshore oil and gas industry. He most recently served as manager of taxation for Heerema Marine Contractors.

Intec Engineering, a division of the Heerema Group, is a leading engineering and project management company serving the international oil and gas industry. Its technical disciplines include marine pipelines and risers, subsea systems, systems engineering, flow assurance, floating systems, LNG terminals, and marine installation management.

InterMoor Inc.

Houston, has named Brent Boyce as subsea installation manager, with responsibility for management of InterMoor's compensated anchor-handler subsea installation method (CASIM) and other installation activities.

Boyce has more than nine years of experience in management of subsea intervention and completion systems, most recently serving as project manager for Saipem America.

InterMoor Inc., an Acteon company, is an industry leader in innovative mooring and installation technology.

Enidine Inc.

Buffalo, NY, has announced its acquisition of Ameritool Manufacturing LLC. Ameritool is a major manufacturer of stainless steel gas springs and dampers.

Enidine Inc. is part of the Energy Absorption Group of International Motion Control.

API IMPORTS OF CRUDE AND PRODUCTS

	Districts 1-4		District 5		Total US		
	11-10 2006	[1]11-3 2006	11-10 2006	[1]11-3 2006	11-10 2006	[1]11-3 2006	11-11 2005
	1,000 b/d						
Total motor gasoline	413	625	14	18	427	643	373
Mo. gas. blending comp.	450	502	7	9	457	511	730
Distillate[2]	299	261	57	10	356	271	363
Residual	88	287	22	28	110	315	814
Jet fuel-kerosine	41	57	128	128	169	185	195
LPG	356	361	—	—	356	361	338
Unfinished oils	664	585	78	25	742	610	522
Other	204	452	15	11	219	463	514
Total products	**2,515**	**3,130**	**321**	**229**	**2,836**	**3,359**	**3,849**
Canadian crude	1,790	1,793	235	73	2,025	1,866	1,872
Other foreign	6,803	7,201	892	988	7,695	8,189	8,269
Total crude	**8,593**	**8,994**	**1,127**	**1,061**	**9,720**	**10,055**	**10,141**
Total imports	**11,108**	**12,124**	**1,448**	**1,290**	**12,556**	**13,414**	**13,990**

[1]Revised. [2]Includes No. 4 fuel oil.
Source: American Petroleum Institute.
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.

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OGJ CRACK SPREAD

	*11-10-06	*11-11-05	Change	Change, %
	$/bbl			
SPOT PRICES				
Product value	67.31	66.26	1.05	1.6
Brent crude	59.83	56.41	3.42	6.1
Crack spread	7.48	9.85	–2.37	–24.1
FUTURES MARKET PRICES				
One month				
Product value	68.18	68.25	–0.07	–0.1
Light sweet crude	59.91	58.69	1.22	2.1
Crack spread	8.28	9.57	–1.29	–13.5
Six month				
Product value	76.91	73.59	3.32	4.5
Light sweet crude	32.53	60.71	–28.18	–46.4
Crack spread	44.38	12.88	31.50	244.5

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

API CRUDE AND PRODUCT STOCKS

	Crude oil	Motor gasoline		Jet fuel	Fuel oils		Unfinished oils
		Total	Blending comp.[1]	Kerosine	Distillate	Residual	
	1,000 bbl						
PAD I	14,854	54,578	25,605	10,198	67,656	18,951	7,650
PAD II	68,912	49,422	15,573	7,064	23,704	2,147	14,476
PAD III	180,263	66,631	28,064	13,502	34,094	17,414	43,011
PAD IV	14,397	5,901	1,788	371	2,386	428	3,382
PAD V	[2]61,501	27,162	19,925	8,877	10,878	6,088	20,537
Nov. 10, 2006	**[2]339,927**	**203,703**	**90,955**	**40,012**	**138,718**	**45,028**	**89,056**
Nov. 3, 2006[3]	**333,246**	**205,109**	**93,131**	**40,376**	**141,034**	**43,941**	**89,893**
Nov. 11, 2005	**322,615**	**201,349**	**68,520**	**39,535**	**126,235**	**37,974**	**91,307**

[1]Included in total motor gasoline. [2]Includes 5.880 million bbl of Alaskan crude in transit by water. [3]Revised.
Source: American Petroleum Institute.
Data available in OGJ Online Research Center.

API REFINERY REPORT—NOV. 10, 2006

	REFINERY OPERATIONS					REFINERY OUTPUT			
District	Total refinery input	Crude runs	Input to crude stills	Operable capacity	Percent operated	Total motor gasoline	Jet fuel, kerosine	Fuel oils: Distillate	Fuel oils: Residual
	1,000 b/d								
East Coast	2,993	1,433	1,446	1,618	89.4	1,799	76	502	112
App. Dist. 1	104	95	95	95	100.0	14	—	26	1
Dist. 1 total	**3,097**	**1,528**	**1,541**	**1,713**	**90.0**	**1,813**	**76**	**528**	**113**
Ind., Ill., Ky.	2,137	2,034	2,100	2,355	89.2	1,194	126	556	46
Minn., Wis., Dak.	420	398	409	442	92.5	218	28	113	14
Okla., Kan., Mo.	850	694	696	786	88.6	436	26	267	5
Dist. 2 total	**3,407**	**3,126**	**3,205**	**3,583**	**89.5**	**1,848**	**180**	**936**	**65**
Inland Texas	927	607	621	647	96.0	404	54	165	6
Texas Gulf Coast	4,141	3,612	3,666	4,031	91.0	1,295	369	911	137
La. Gulf Coast	3,405	3,014	3,256	3,264	99.8	1,286	342	753	133
N. La. and Ark.	228	191	198	215	92.1	85	9	51	6
New Mexico	117	93	93	113	82.3	98	1	28	0
Dist. 3 total	**8,818**	**7,517**	**7,834**	**8,270**	**94.7**	**3,168**	**775**	**1,908**	**282**
Dist. 4 total	**680**	**564**	**569**	**596**	**95.5**	**290**	**24**	**173**	**17**
Dist. 5 total	**2,647**	**2,307**	**2,439**	**3,173**	**76.9**	**1,772**	**349**	**530**	**120**
Nov. 10, 2006	**18,649**	**15,042**	**15,588**	**17,335**	**89.9**	**8,891**	**1,404**	**4,075**	**597**
Nov. 3, 2006*	**18,629**	**15,218**	**15,736**	**17,335**	**90.8**	**8,904**	**1,434**	**4,039**	**653**
Nov. 11, 2005	**16,320**	**14,449**	**14,613**	**17,115**	**85.4**	**8,668**	**1,421**	**3,744**	**624**

*Revised.
Source: American Petroleum Institute.
Data available in OGJ Online Research Center.

OGJ GASOLINE PRICES

	Price ex tax 11-8-06	Pump price* 11-8-06	Pump price 11-9-05
	¢/gal		
(Approx. prices for self-service unleaded gasoline)			
Atlanta	171.4	211.1	245.1
Baltimore	171.9	213.8	227.7
Boston	176.5	218.4	217.8
Buffalo	176.7	236.8	234.9
Miami	184.2	234.5	228.8
Newark	178.9	211.8	233.4
New York	172.3	232.4	240.7
Norfolk	172.1	209.7	248.8
Philadelphia	180.8	231.5	243.5
Pittsburgh	172.4	223.1	233.7
Wash., DC	188.7	227.1	244.3
PAD I avg.	176.9	222.8	236.3
Chicago	200.7	251.6	248.5
Cleveland	171.8	218.2	226.5
Des Moines	166.2	206.6	223.1
Detroit	176.7	225.9	228.4
Indianapolis	175.6	220.6	223.2
Kansas City	173.9	209.9	221.9
Louisville	178.0	214.9	224.1
Memphis	173.1	212.9	240.2
Milwaukee	179.1	230.4	251.2
Minn.-St. Paul	180.2	220.6	221.3
Oklahoma City	172.5	207.9	212.4
Omaha	176.2	222.6	218.3
St. Louis	179.2	215.2	244.2
Tulsa	172.8	208.2	209.6
Wichita	172.2	215.6	213.2
PAD II avg.	176.5	218.7	227.1
Albuquerque	181.2	217.6	241.6
Birmingham	174.2	212.9	231.0
Dallas-Fort Worth	172.8	211.2	239.1
Houston	169.5	207.9	235.7
Little Rock	172.4	212.6	224.1
New Orleans	175.8	214.2	265.9
San Antonio	171.8	210.2	233.3
PAD III avg.	174.0	212.4	238.7
Cheyenne	186.9	219.3	238.6
Denver	177.3	217.7	247.7
Salt Lake City	186.5	229.4	252.8
PAD IV avg.	183.6	222.1	246.4
Los Angeles	190.1	248.6	275.1
Phoenix	190.3	227.7	253.6
Portland	207.0	250.3	238.0
San Diego	195.6	254.1	272.7
San Francisco	211.9	270.4	277.1
Seattle	207.9	260.3	258.2
PAD V avg.	200.5	251.9	262.4
Week's avg.	**180.1**	**223.7**	**237.8**
Oct. avg.	**183.8**	**228.0**	**263.9**
Sept. avg.	**208.9**	**253.3**	**282.5**
2006 to date	**216.8**	**260.4**	—
2005 to date	**182.1**	**224.1**	—

*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

	11-3-06 ¢/gal		11-3-06 ¢/gal
Spot market product prices			
Motor gasoline (Conventional-regular)		Heating oil No. 2	
New York Harbor	151.95	New York Harbor	162.21
Gulf Coast	153.70	Gulf Coast	162.71
Los Angeles	170.70	Gas oil	
Amsterdam-Rotterdam-Antwerp (ARA)	138.81	ARA	167.77
Singapore	144.17	Singapore	160.24
Motor gasoline (Reformulated-regular)		Residual fuel oil	
New York Harbor	148.95	New York Harbor	101.50
Gulf Coast	150.70	Gulf Coast	86.31
Los Angeles	178.70	Los Angeles	113.83
		ARA	93.47
		Singapore	103.75

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

BAKER HUGHES RIG COUNT

	11-10-06	11-11-05
Alabama	5	6
Alaska	6	9
Arkansas	26	14
California	37	33
Land	33	28
Offshore	4	5
Colorado	90	82
Florida	0	1
Illinois	0	0
Indiana	0	0
Kansas	7	6
Kentucky	12	5
Louisiana	186	177
N. Land	58	51
S. Inland waters	19	21
S. Land	37	35
Offshore	72	70
Maryland	0	0
Michigan	2	2
Mississippi	14	10
Montana	18	24
Nebraska	0	0
New Mexico	83	89
New York	11	2
North Dakota	36	25
Ohio	8	9
Oklahoma	176	156
Pennsylvania	15	12
South Dakota	1	3
Texas	780	663
Offshore	9	6
Inland waters	2	1
Dist. 1	18	15
Dist. 2	24	30
Dist. 3	57	66
Dist. 4	98	71
Dist. 5	133	117
Dist. 6	127	101
Dist. 7B	39	23
Dist. 7C	44	33
Dist. 8	101	80
Dist. 8A	24	28
Dist. 9	40	29
Dist. 10	64	63
Utah	49	29
West Virginia	31	25
Wyoming	92	92
Others—HI-1; ID-1; NV-1; OR-1; TN-2; VA-1; WA-1	8	6
Total US	**1,693**	**1,479**
Total Canada	**446**	**569**
Grand total	**2,139**	**2,048**
Oil rigs	310	241
Gas rigs	1,422	1,232
Total offshore	95	82
Total cum. avg. YTD	**1,639**	**1,369**

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	11-10-06 Percent footage*	Rig count	11-11-05 Percent footage*
0-2,500	50	—	22	—
2,501-5,000	93	49.4	75	32.0
5,001-7,500	232	18.5	165	19.3
7,501-10,000	412	2.4	326	5.5
10,001-12,500	448	1.7	319	1.5
12,501-15,000	246	0.8	289	0.3
15,001-17,500	119	—	110	—
17,501-20,000	70	—	49	—
20,001-over	32	—	16	—
Total	**1,702**	**6.4**	**1,371**	**5.8**
INLAND	39		30	
LAND	1,604		1,301	
OFFSHORE	59		40	

*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]11-10-06	[2]11-11-05
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	20	22
Alaska	793	868
California	705	700
Colorado	58	63
Florida	7	7
Illinois	30	27
Kansas	95	93
Louisiana	1,390	812
Michigan	16	16
Mississippi	52	50
Montana	93	97
New Mexico	165	165
North Dakota	105	104
Oklahoma	175	170
Texas	1,372	1,229
Utah	46	48
Wyoming	140	144
All others	67	74
Total	**5,329**	**4,689**

[1]OGJ estimate. [2]Revised.

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

US CRUDE PRICES

$/bbl*	11-10-06
Alaska-North Slope 27°	56.72
South Louisiana Sweet	55.25
California-Kern River 13°	47.75
Lost Hills 30°	55.10
Southwest Wyoming Sweet	57.09
East Texas Sweet	57.33
West Texas Sour 34°	47.50
West Texas Intermediate	56.25
Oklahoma Sweet	56.25
Texas Upper Gulf Coast	53.00
Michigan Sour	53.50
Kansas Common	55.25
North Dakota Sweet	45.25

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

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

WORLD CRUDE PRICES

$/bbl[1]	11-3-06
United Kingdom-Brent 38°	57.74
Russia-Urals 32°	54.36
Saudi Light 34°	54.05
Dubai Fateh 32°	56.02
Algeria Saharan 44°	58.49
Nigeria-Bonny Light 37°	59.52
Indonesia-Minas 34°	53.06
Venezuela-Tia Juana Light 31°	52.50
Mexico-Isthmus 33°	52.39
OPEC basket	55.15
Total OPEC[2]	55.00
Total non-OPEC[2]	52.14
Total world[2]	53.32
US imports[3]	50.65

[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]

	11-3-06	10-27-06	Change
	Bcf		
Producing region	1,010	1,008	2
Consuming region east	1,966	1,976	–10
Consuming region west	469	468	1
Total US	**3,445**	**3,452**	**–7**
	Aug. 06	**Aug. 05**	**Change, %**
Total US[2]	**2,969**	**2,662**	**11.5**

[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. 2006 Land	Oct. 2006 Off.	Oct. 2006 Total	Oct. 05 Total
WESTERN HEMISPHERE				
Argentina	86	—	86	74
Bolivia	3	—	3	3
Brazil	13	18	31	24
Canada	427	4	431	541
Chile	1	—	1	—
Colombia	22	—	22	18
Ecuador	10	—	10	12
Mexico	58	24	82	92
Peru	5	1	6	4
Trinidad	3	3	6	2
United States	1,315	72	1,387	1,479
Venezuela	62	17	79	64
Other	2	—	2	2
Subtotal	**2,007**	**139**	**2,146**	**2,315**
ASIA-PACIFIC				
Australia	12	11	23	16
Brunei	—	5	5	2
China-offshore	—	17	17	16
India	51	32	83	84
Indonesia	33	17	50	57
Japan	2	—	2	3
Malaysia	—	10	10	13
Myanmar	8	1	9	10
New Zealand	3	1	4	6
Papua New Guinea	1	—	1	2
Philippines	2	—	2	2
Taiwan	—	—	—	—
Thailand	3	6	9	8
Vietnam	—	10	10	10
Other	3	2	5	4
Subtotal	**118**	**112**	**230**	**233**
AFRICA				
Algeria	29	—	29	21
Angola	—	4	4	3
Congo	2	1	3	2
Gabon	2	1	3	2
Kenya	—	—	—	—
Libya	10	—	10	7
Nigeria	2	8	10	7
South Africa	—	—	—	—
Tunisia	2	1	3	2
Other	3	3	6	2
Subtotal	**50**	**18**	**68**	**46**
MIDDLE EAST				
Abu Dhabi	9	6	15	14
Dubai	1	—	1	3
Egypt	34	7	41	29
Iran	—	—	—	38
Iraq	—	—	—	—
Jordan	1	—	1	1
Kuwait	14	—	14	15
Oman	41	—	41	34
Pakistan	18	—	18	12
Qatar	1	7	8	11
Saudi Arabia	69	7	76	42
Sudan	—	—	—	19
Syria	23	—	23	24
Yemen	17	—	17	14
Other	2	—	2	3
Subtotal	**230**	**27**	**257**	**259**
EUROPE				
Croatia	1	—	1	3
Denmark	—	4	4	2
France	1	—	1	—
Germany	4	1	5	3
Hungary	3	—	3	1
Italy	5	2	7	4
Netherlands	—	4	4	4
Norway	—	14	14	21
Poland	2	—	2	2
Romania	2	—	2	3
Turkey	4	—	4	5
UK	1	27	28	19
Other	5	—	5	3
Subtotal	**28**	**52**	**80**	**70**
Total	**2,433**	**348**	**2,781**	**2,923**

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	260	1.88
Caribbean	Houston	Resid.	380	181	1.45
Caribbean	Houston	Resid.	500	219	1.76
N. Europe	New York	Dist.	200	276	3.15
N. Europe	Houston	Crude	400	192	3.26
W. Africa	Houston	Crude	910	152	2.78
Persian Gulf	Houston	Crude	1,900	73	2.47
W. Africa	N. Europe	Crude	910	163	2.23
Persian Gulf	N. Europe	Crude	1,900	81	2.01
Persian Gulf	Japan	Crude	1,750	72	1.46

*October 2006 average.
Source: Drewry Shipping Consultants Ltd. Data available in OGJ Online Research Center.

US LNG IMPORTS

Country	Aug. 2006	July 2006	Aug. 2005	Change from a year ago, %
	MMcf			
Algeria	—	3,028	3,170	—
Brunei	—	—	—	—
Malaysia	—	—	—	—
Nigeria	6,199	6,129	2,574	140.8
Oman	—	—	—	—
Qatar	—	—	—	—
Trinidad and Tobago	37,043	33,390	26,759	38.4
Others	8,880	15,004	11,127	–20.2
Total	**52,122**	**57,551**	**43,630**	**19.5**

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

BAKER OIL TOOLS WORKOVER RIG COUNT*

Region	Oct. 2006	Oct. 2005	Change, %
Gulf Coast	316	261	21.1
Midcontinent	274	250	9.6
Northeastern	81	81	0.0
Rocky Mountains	224	215	4.2
Southeastern	186	202	–7.9
West Texas	348	282	23.4
Western	133	140	–5.0
Total US	**1,562**	**1,431**	**9.2**
Canada	627	750	–16.4
Total N. America	**2,189**	**2,181**	**0.4**

*Wells over 1,500 ft deep and tubing out of the wellbore. Excludes rigs on rod jobs. Definitions, see OGJ Sept. 18, 2006, p. 42. Source: Baker Hughes Inc. Data available in OGJ Online Research Center.

PROPANE PRICES

	Sept. 2006	Oct. 2006	Sept. 2005	Oct. 2005
	¢/gal			
Mont Belvieu	101.18	93.82	113.05	113.66
Conway	97.58	93.46	112.25	114.01
Northwest Europe	104.76	95.94	97.28	108.98

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					
October 2006						
Product revenues	69.50	65.69	68.88	71.71	65.70	62.55
Feedstock costs	–57.64	–62.80	–51.66	–51.76	–57.14	–59.68
Gross margin	11.86	2.89	17.22	19.95	8.56	2.87
Fixed costs	–2.02	–2.34	–2.28	–2.66	–2.28	–1.77
Variable costs	–1.49	–1.10	–1.35	–2.28	–2.04	–0.75
Cash operating margin	**8.35**	**–0.55**	**13.59**	**15.01**	**4.24**	**0.35**
September 2006	6.02	0.53	10.27	11.99	3.61	0.57
YTD avg.	13.33	15.78	6.59	24.83	6.21	1.22
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
2003 avg.	2.92	2.22	4.84	5.43	2.35	–0.31

Source: Muse, Stancil & Co. See OGJ, Jan. 15, 2001, p. 46.
Data available in OGJ Online Research Center.
NOTE: The refining models that comprise the basis for the Muse refining margins have been updated to reflect changing crude slates, product specifications, and market pricing. All current and historical margin series have been revised.

MUSE, STANCIL & CO. GASOLINE MARKETING MARGINS

September 2006	Chicago*	Houston	Los Angeles	New York
	¢/gal			
Retail price	275.13	238.02	292.00	276.29
Taxes	55.10	38.40	58.95	50.31
Wholesale price	183.20	174.88	200.65	179.99
Spot price	166.54	166.79	179.83	140.70
Retail margin	37.04	24.74	32.40	45.99
Wholesale margin	16.66	8.09	20.82	39.29
Gross marketing margin	**53.70**	**32.83**	**53.22**	**85.28**
August 2006	37.64	42.46	32.88	54.32
YTD avg.	18.22	20.53	15.09	34.36
2005 avg.	19.77	16.26	17.32	27.13
2004 avg.	22.49	17.49	20.53	30.38
2003 avg.	22.69	19.10	28.58	31.42

*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: Effective April 2003, Los Angeles margins include ethanol blending.

MUSE, STANCIL & CO. ETHYLENE MARGINS

	Ethane	Propane	Naphtha
	¢/lb ethylene		
October 2006			
Product revenues	57.05	88.40	105.63
Feedstock costs	–25.72	–53.20	–82.19
Gross margin	31.33	35.20	23.44
Fixed costs	–5.38	–6.36	–7.19
Variable costs	–3.38	–3.93	–5.17
Cash operating margin	**22.57**	**24.91**	**11.08**
September 2006	23.43	27.14	15.15
YTD avg.	20.41	23.53	2.21
2005 avg.	14.43	20.68	1.28
2004 avg.	9.00	12.03	0.51
2003 avg.	8.33	11.36	3.72

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

October 2006	Gulf Coast	Mid-continent
	$/Mcf	
Gross revenue		
Gas	5.38	4.68
Liquids	0.98	2.66
Gas purchase cost	5.99	6.28
Operating costs	0.07	0.15
Cash operating margin	**0.31**	**0.91**
September 2006	0.43	1.30
YTD avg.	0.28	1.05
2005 avg.	–0.06	0.25
2004 avg.	0.07	0.33
2003 avg.	–0.08	–0.06
Breakeven producer payment, % of liquids	66%	64%

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

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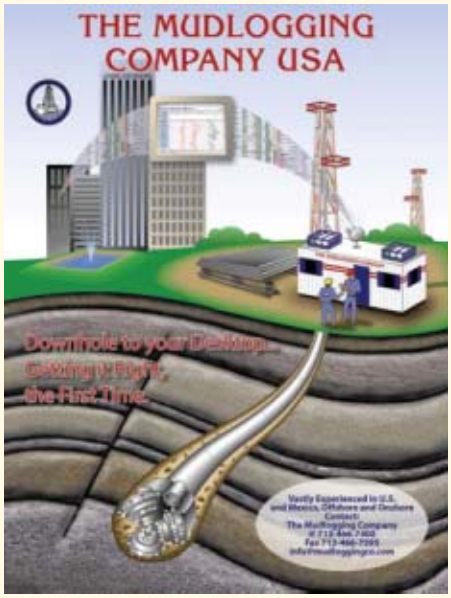

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Republicans let federal subsidy programs multiply

The Editor's Perspective

by Bob Tippee, Editor

Part of the reason the Republican Party lost control of Congress on Nov. 7 is that too many of its incumbents abandoned their principles.

Republicans once championed limits on government. In power, though, they expanded the role of the state, too often to dispense political favors.

Chris Edwards, director of tax policy studies at the libertarian Cato Institute, last month reported a revealing measure of this malpractice.

He assembled data on federal subsidy programs from a government periodical called the Catalog of Federal Domestic Assistance.

He found 1,696 subsidy programs in the federal budget this year. The number lately has zoomed. In 2000 it was 1,425. In 1990 it was 1,176; in 1980, 1,123; in 1970, 1,019.

"In recent years, the scope of federal control over society has widened as politicians of both parties have favored nationalizing many formerly state, local, and private activities," Edwards observes.

Energy is one of two federal agencies for which the number of subsidy programs fell during 1996-2000, dropping by 11 to 27. Subsidy programs in the Department of Education fell by 6 during the period to 146.

But subsidies and incentives in the tax code, as opposed to agency programs, increased in both areas.

"The number of energy incentives in the income tax code increased from 9 in 1990 to 26 by 2006," Edwards points out.

Big department gainers in subsidy programs during 1996-2000 were Interior, up 88 to 134; Agriculture, up 78 to 198; and Health and Human Services, up 77 to 334.

"As time has passed, more farm crops are receiving federal subsidies, more local police services are being paid for with federal grants, and more cradle-to-grave health services are being created by Congress," Edwards says.

The trend, he argues, violates the constitutional principle of federalism, which aims to limit the reach of the federal government into state, local, and private affairs.

It also represents an institutional breech of faith by Republicans. Democrats shouldn't misinterpret their victory as a sign of popular craving for exuberant governance.

Americans don't seem any less wary of Big Government than ever. Republicans learned that lesson the hard way.

(Online Nov. 10, 2006; author's e-mail: bobt@ogjonline.com)

Market Journal

by Paula Dittrick, Senior Staff Writer

Crude prices dip on IEA demand forecast

Energy prices on futures markets have swung widely recently.

Comments about possible additional production quota cuts by the Organization of Petroleum Exporting Countries drove prices higher on Nov. 6. But later in the week, the International Energy Agency cut its world oil demand growth estimates, and prices dropped.

The December contract for benchmark US sweet, light crudes increased $1.33/bbl on Nov. 9 on the New York Mercantile Exchange to $61.16/bbl—the highest front-month price in 2 weeks.

But oil prices retreated Nov. 10 after release of the IEA's monthly report in which it trimmed its 2006 global oil demand growth to 1.1%, or an average of 84.5 million b/d, from its previous forecast of 1.2% oil demand growth. EIA kept its 2007 demand growth forecast at 1.7%.

The IEA estimate of oil inventories in Organization for Economic Cooperation and Development member countries was high, representing 55 days of forward demand cover. Analysts said this was the highest figure for the third quarter since 1991.

On Nov. 6, the December NYMEX crude contract broke above $60/bbl for the first time in days, settling at $60.02/bbl after Saudi Oil Minister Ali al-Naimi said OPEC was likely to trim production if global inventories remain "very high" when the cartel meets Dec. 14.

Separately, Qatari Oil Minister Abdullah al-Attiyah said markets were oversupplied. "If the market is still unbalanced, we will make another cut, but I cannot predict what the quantity will be," he told Reuters.

On Nov. 7, OPEC Pres. and Nigerian Oil Minister Edmund Daukoru told reporters that the cartel has no target price band.

"OPEC doesn't have a rigid floor," Daukoru said during a visit to South Korea. Setting a target price band "is not really applicable to the fluid, free market," he added.

Crude prices fell $1.09 to $58.93/bbl Nov. 7, wiping out gains from the previous market session. Traders said they were unsure whether OPEC would cut production.

Meanwhile, the US Energy Information Administration said Nov. 8 that commercial US crude inventories inched up by 400,000 bbl to 334.7 million bbl during the week ended Nov. 3.

US gasoline stocks declined by 600,000 bbl to 204 million bbl during the same period. Distillate fuel inventories dropped 2.7 million bbl to 138.6 million bbl, with a slight increase in heating oil offset by a slump in conventional diesel fuel.

"US oil inventories have fallen heavily relative to their 5-year average for a fourth straight week, bringing the total fall over that period up to 32.5 million bbl or more than 1.1 million b/d," said Paul Horsnell at Barclays Capital Inc., London.

"Gasoline has tightened the fastest, together with diesel. With both gasoline and diesel demand posting strong numbers for October and starting November well, the worries about falling oil demand from a slowing economy do seem to be very horribly wide of the mark," Horsnell said.

US imports of crude fell by 306,000 b/d to 9.8 million b/d during the week ended Nov. 3.

A Nov. 8 report from the Houston office of Raymond James & Associates Inc. said high seas from several storm systems made conditions unsafe for very large crude carriers and ultralarge crude carriers to moor to the Louisiana Offshore Oil Port (LOOP) buoy. The carriers were unable to offload crude cargoes 20 miles off the Louisiana during Nov. 4-6, said the analysts.

LOOP began receiving tanker cargoes Nov. 7, and all waiting tankers were expected to have offloaded their cargoes by Nov. 11, the analysts said.

Natural gas storage

Meanwhile, natural gas reached its highest price in more than 3 months on Nov. 9. Analysts attributed the gas price gain to the EIA's reporting storage levels fell more than had been expected.

The EIA reported a 7 bcf withdrawal from gas storage for the week ended Nov. 2 after a 9 bcf injection the previous week. Total underground gas storage was 3.4 tcf vs. 3.3 tcf for the same time last year.

EIA statistics for the same week last year show an injection of 61 bcf. The 5-year average for the week is an injection of 24 bcf.

"The year-over-year storage surplus fell to 216 bcf vs. a 284 bcf surplus in the prior week and a 406 (bcf) surplus as of Oct. 6," said Ronald J. Barone, UBS Securities LLC analyst in New York. "Given overall market dynamics so far this week, we estimate the EIA to report a 5 bcf injection next week."

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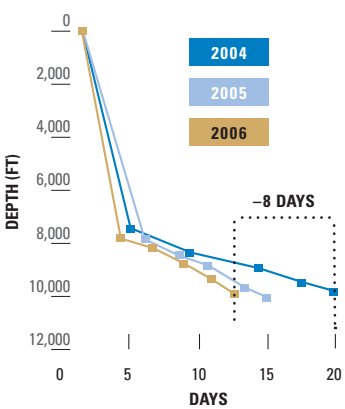

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