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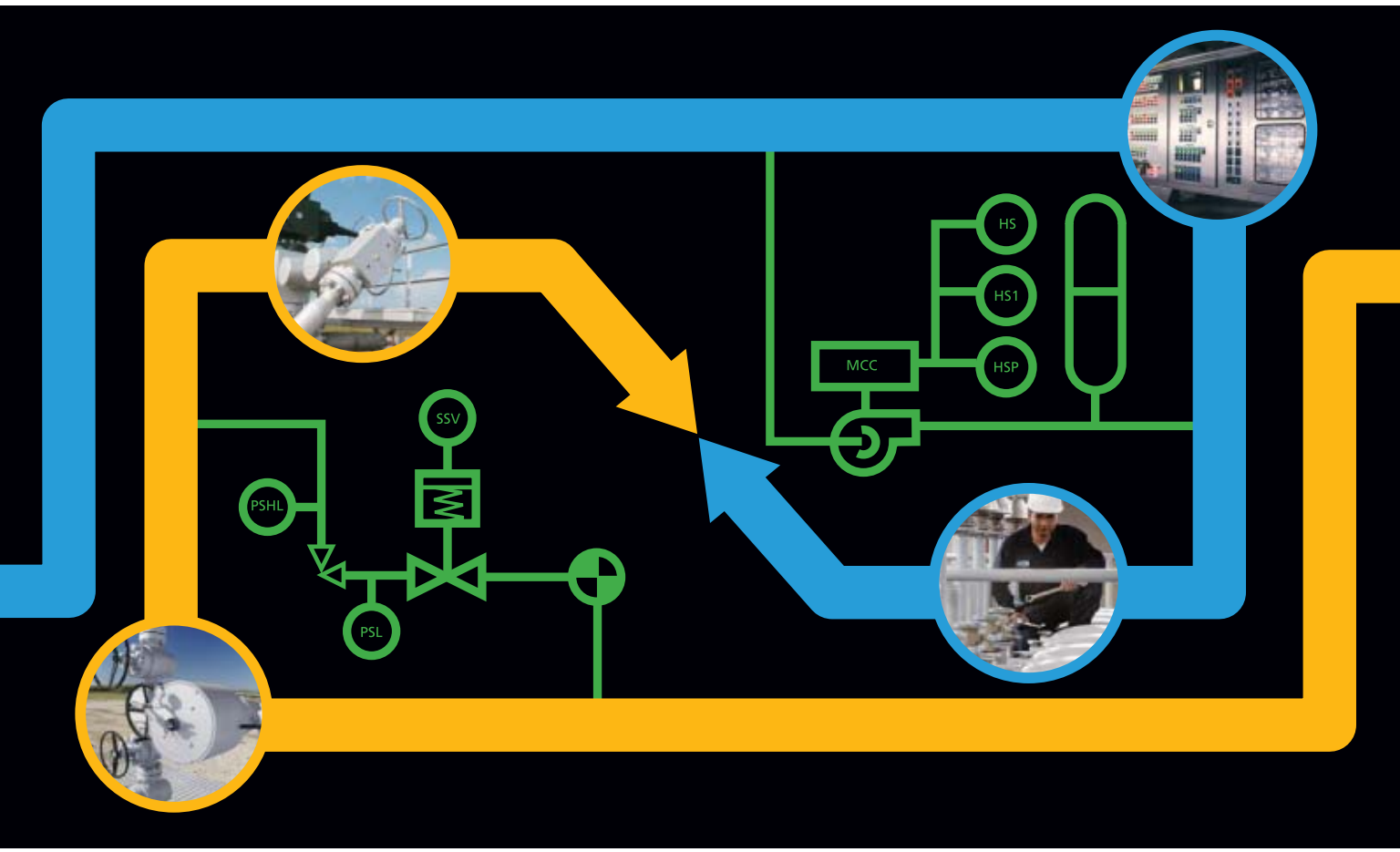

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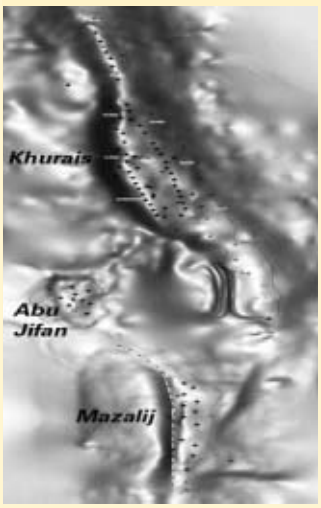
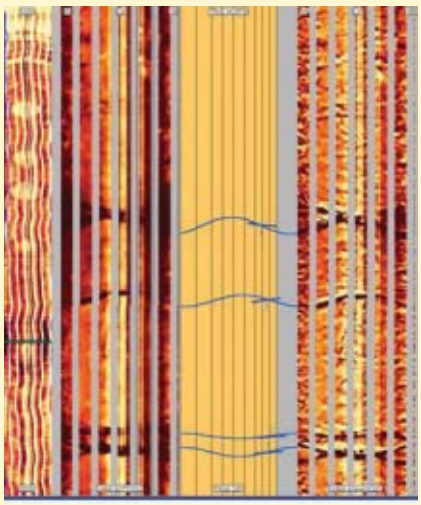
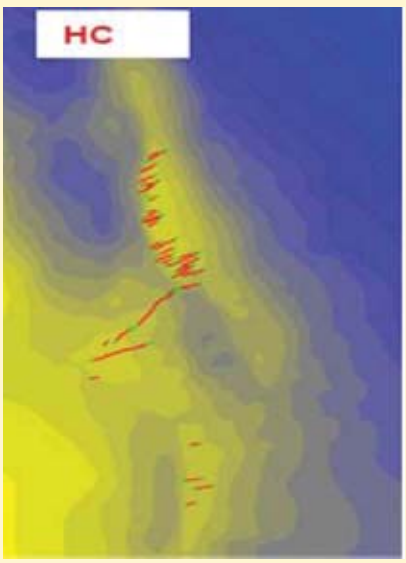
OGJ Focus: Drilling and Production







Regular Features

Cover

The crude stabilizer is at the central production facility of the Khurais complex in Saudi Arabia. Production from the fields in the complex started in mid-2009, and the complex has a capacity to produce 1.2 million b/d of Arabian Light crude. The article in the OGJ Focus: Drilling and Production section, p. 37, is the first of a two-part series that describes the work involved in designing the wells for producing crude from the fields in the complex. Photo from Saudi Aramco.

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PennWell, Houston office
1455 West Loop South, Suite 400, Houston, TX 77027
Telephone 713.621.9720/Fax 713.963.6285/Web site www.ogjonline.com
Editor Bob Tippee, bobt@ogjonline.com
Chief Editor-Exploration Alan Petzet, alanp@ogjonline.com
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Publisher Jim Klingele, jimk@pennwell.com
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PennWell, Tulsa office
1421 S. Sheridan Rd., Tulsa, OK 74112
PO Box 1260, Tulsa, OK 74101
Telephone 918.835.3161 / Fax 918.832.9290
Presentation/Equipment Editor Jim Stilwell, jims@pennwell.com
Associate Presentation Editor Michelle Gourd, michelleg@pennwell.com
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General Interest — Quick Takes

BLS cites rising energy prices in latest PPI

Rising energy prices were a major influence as the Producer Price Index for Finished Goods climbed 1.4% in January, the US Department of Labor's Bureau of Labor Statistics reported on Feb. 18. Energy goods accounted for about 75% of the broad-based advance in the finished goods, intermediate goods, and crude goods indexes, it said.

"The index for finished energy goods rose 5.1% in January, its fourth consecutive monthly increase," BLS said. About two thirds of the advance can be attributed to an 11.5% jump in gasoline prices, it added. Increases in the liquefied petroleum gas and home heating indexes also were major factors, it said.

The PPI for intermediate materials, supplies, and components climbed 1.7% in January—its largest increase since a similar advance in August 2009, according to BLS. It noted that the index for intermediate energy goods rose 6.9% in January, its biggest increase since a 9.6% jump in November 2007. A 20.4% surge in diesel fuel prices was a major factor in the January advance, with gasoline and jet fuel indexes also making a major contribution.

BLS said its crude energy materials PPI jumped 16.8% in January. "From October through January, prices for crude energy materials climbed 27.5%, following a 9.4% gain for the 3 months ended October 2009," it added. Two thirds of January's monthly increase can be traced to a 25.5% surge in the natural gas index, with oil prices also contributing, DOL's statistical service said.

The latest PPI did not surprise American Petroleum Institute Chief Economist John C. Felmy, who noted that other reports have shown that oil prices rose from December to January. "Gasoline prices also climbed. It shouldn't be such a surprise, since retail sales figures prices which have been released also were affected by increased gasoline prices," he told OGJ.

Felmy cautioned that BLS price indexes are a point-to-point index on a certain day each month. "If you were trying to compare the average for the month, we've seen prices come down since the end of January," Felmy said.

Pertamina fails to clear environmental hurdles

The development of some 16 oil and gas blocks owned by Indonesia's state-run PT Pertamina has been postponed due to the company's failure to obtain recommendation from the environmental office.

The Energy and Mineral Resources Ministry could not issue the necessary permits for the development of the 16 oil and gas blocks because a recommendation from the environmental office had not been obtained.

"Eight of the required licenses have been proposed since 2008 but have not been issued so far," said Sahala Lumbangaol, the state-owned Enterprises Ministry's deputy for mining and strategic industries, energy, and telecommunications.

Meanwhile, the Indonesian government drafted a regulation that would grant Pertamina the right of first refusal for oil and gas blocks when their existing contracts expire.

According to Edi Hermantoro, director of upstream oil and gas at the Ministry of Energy and Mineral Resources, Pertamina prior to any decision to extend the contract with the existing operator would have the chance to submit a proposal to develop the block, which would then be evaluated by a government-formed team.

Under the proposed regulations, the government would earn 85% of production revenue from a block compared with the present 60%. The final draft of the new regulations is said to be awaiting the approval of Energy Minister Darwin Saleh.

Analyst BMI said the regulations will be "worrisome" for foreign investors hoping for long-term returns on their investments, while "there are some doubts as to whether Pertamina's increasing upstream influence at the expense of IOCs will improve Indonesia's ability to efficiently exploit its resource base."

AED Oil acquires acreage in Indonesia

AED Oil Ltd. has agreed to purchase two wholly owned subsidiaries of Nations Petroleum Co. Ltd. that hold interests in oil and gas contract areas in Indonesia.

AED said it will pay Calgary-based NPC $1.5 million and will issue the firm 12 million shares of AED for 100% and 60% respective stakes in permits in West Papua and Madura Island.

The Rombebai area covers 5,795 sq km and lies in northern coastal Papua, while the South Madura area is primarily onshore and covers the southern part of Madura Island.

AED said four wells drilled in the Rombebai contract area in the 1950's by Royal Dutch Shell PLC encountered natural gas, but the reserves were not developed as the firm was exploring for oil.

Further testing by NPC indicates that the permit's Gesa reservoir could contain 5 tcf of gas, but an AED executive acknowledged that the firm faces a large range of uncertainties as the reservoir sands have yet to be drilled, AED said.

Analyst IHS Global Insight agreed, saying, "AED has high hopes of building an LNG plant at Rombebai to monetize any reserves discovered" but that, "significant uncertainties as to the potential of the area remain, particularly as reservoir sands have not yet been penetrated through drilling."

Last November, AED signed a letter of intent with NPC to buy its wholly owned subsidiary that holds a 50% operating interest in the Brunei Block L oil and gas permit, which comprises a large production-sharing agreement covering about 2,200 sq km both onshore and offshore.

In the preceding 12 months, NPC had undertaken a $20 million 3D seismic program over a large part of Block L, delineat-

Industry Scoreboard

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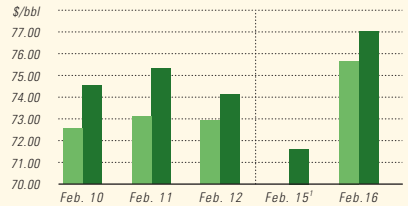
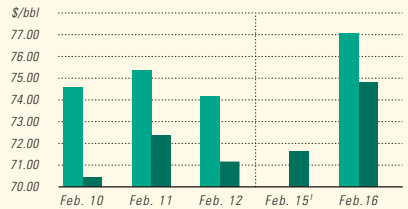
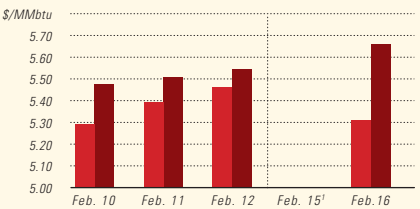


WTI CUSHING / BRENT SPOT



NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



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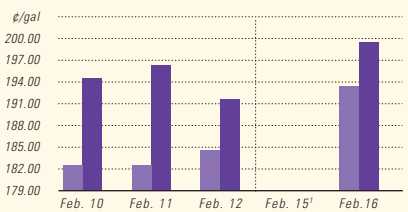

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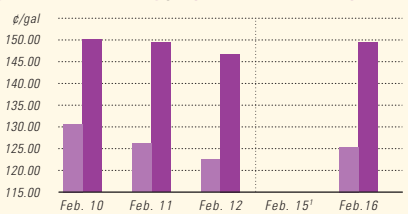
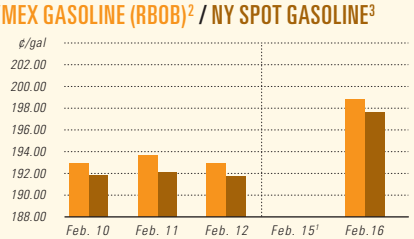


NYMEX GASOLINE (RBOB)[2] / NY SPOT GASOLINE[3]



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

US INDUSTRY SCOREBOARD — 2/22

Latest week 2/5	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	8,650	8,708	–0.7	8,680	8,753	–0.8
Distillate	3,726	4,052	–8.0	3,677	3,995	–8.0
Jet fuel	1,372	1,355	1.3	1,396	1,349	3.4
Residual	543	672	–19.2	522	603	–13.5
Other products	4,615	4,278	7.9	4,562	4,216	8.2
TOTAL DEMAND	18,906	19,065	–0.8	18,836	18,916	–0.4
Supply, 1,000 b/d						
Crude production	5,426	5,238	3.6	5,451	5,252	3.8
NGL production[2]	2,086	1,804	15.6	2,054	1,821	12.8
Crude imports	8,294	9,760	–15.0	8,404	9,545	–12.0
Product imports	2,957	3,273	–9.7	2,859	3,162	–9.6
Other supply[3]	1,657	1,651	0.4	1,754	981	78.7
TOTAL SUPPLY	20,420	21,726	–6.0	20,522	20,761	–1.2
Refining, 1,000 b/d						
Crude runs to stills	13,625	13,945	–2.3	13,716	14,114	–2.8
Input to crude stills	13,865	14,484	–4.3	13,993	14,451	–3.2
% utilization	78.4	82.0	—	79.1	81.8	—

Latest week 2/5	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	331,418	328,994	2,424	350,768	–19,350	–5.5
Motor gasoline	230,445	228,121	2,324	217559	12,886	5.9
Distillate	156,192	156,548	–356	141,565	14,627	10.3
Jet fuel–kerosine	42,374	43,239	–865	41,000	1,374	3.4
Residual	39,431	39,652	–221	35,050	4,381	12.5
Stock cover (days)[4]			Change, %		Change, %	
Crude	24.3	24.0	1.3	24.7	–1.6	
Motor gasoline	26.6	26.4	0.8	24.6	8.1	
Distillate	41.9	42.3	–0.9	34.0	23.2	
Propane	20.4	20.7	–1.4	26.2	–22.1	
Futures prices[5] **2/12**			**Change**		**Change**	**%**
Light sweet crude ($/bbl)	73.91	74.59	–0.68	40.50	33.41	82.5
Natural gas, $/MMbtu	5.37	5.45	–0.08	4.62	0.75	16.3

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

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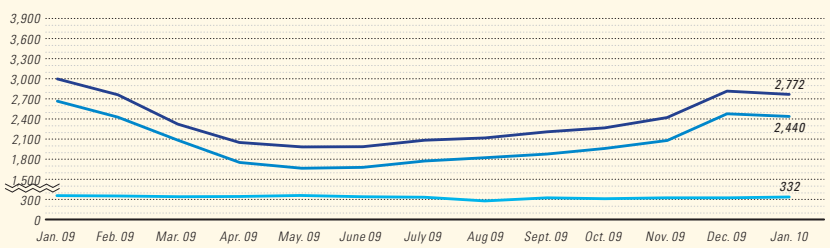

Note: Monthly average count

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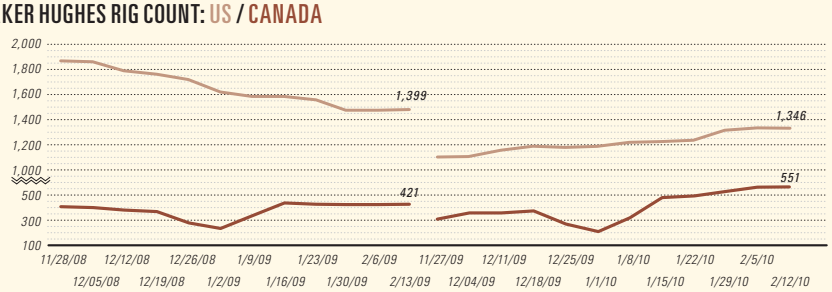

Note: End of week average count

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ing several drill-ready prospects. AED also said that planning had reached "advanced stages" for a two-well drilling campaign for early 2010.

At the time, AED managing director Pedro De Souza said the firm was "also evaluating Asian assets held by other Nations' wholly owned subsidiaries" and that "an exclusivity period has been agreed over these assets."

Around the same time, a leak was reported at Puffin field, which had been suspended since May after Sinopec and AED terminated the charter contract of Sea Production for the use of the Front Puffin floating production, storage, and offloading vessel at the field for alleged breaches related to occupational health, safety, and the environment (OGJ, Nov. 2, 2009). ✦

Exploration & Development — *Quick Takes*

Mozambique Rovuma wildcat is gas discovery

The Windjammer deepwater exploration well in the frontier Rovuma basin off Mozambique cut more than 480 net ft of natural gas pay in high-quality reservoir sands with 4,100 ft remaining to be drilled.

Anadarko Petroleum Corp., operator of the discovery, said the net gas pay lies within a gross column of more than 1,200 ft. The well is at intermediate casing point of about 14,000 ft and is projected to 18,100 ft.

So far, the well has tested one of the seven identified play types in Anadarko's operated acreage off Mozambique, and the results are a strong indication of the basin's potential, Anadarko said.

Windjammer is in Offshore Area 1 in 4,800 ft of water in the Mozambique Channel 30 miles east of Mozambique's coast and slightly farther south of the border with Tanzania. After testing deeper objectives, Anadarko plans to move the Bedford Dolphin drillship to its Collier prospect about 50 miles south-southeast on the block.

The Anadarko-led group will drill two to four more wildcats in the basin this year. It will use results from Windjammer and Collier to determine which prospects are drilled next.

Interests in the well are Anadarko 43%, BPRL Ventures Mozambique BV 11.75%, Cove Energy Mozambique Rovuma Offshore Ltd. 10%, Mitsui E&P Mozambique Area 1 Ltd. 23.5%, Videocon Mozambique Rovuma 1 Ltd. 11.75%. Mozambique's Empresa Nacional de Hidrocarbonetos' 15% interest was carried through the exploration phase.

KOC to tap Shell nonassociated gas expertise

Kuwait Oil Co. has signed a 5-year service contract with Royal Dutch Shell PLC to manage the further development of nonassociated gas-condensate fields in northern Kuwait.

Shell is expected to provide technical advisors because the fields involve "unconventional geological formations, difficult reservoir conditions, and complex gas compositions," Shell said. Geologic and engineering details were not immediately available.

Deep gas exploration that started last decade has resulted in production of 140 MMcfd of nonassociated gas, short of Kuwait's goal of 175 MMcfd by this time, officials said. The ultimate goal is 2.5 bcfd of nonassociated gas output by 2030.

Kuwaiti sources reported the country's first nonassociated gas discovery at the MU-12 well below Mutriba oil field, southwest of Raudhatain (OGJ, May 10, 2004, p. 34). The well produced gas-condensate from the Permo-Triassic Sudair formation at 19,000 ft. At least one Mutriba well has been drilled as deep as 23,000 ft.

Kuwait also has deep nonassociated gas production in Umm Niga field and from the Lower Jurassic Marrat formation in Sabriyah field. Kuwait has claimed that 35 tcf is recoverable from those two fields. Flows have also been reported from the Middle Jurassic Sargelu formation in northern Kuwait.

The emirate hopes to boost nonassociated gas output to 1.5 bcfd by 2015. The original plan called for as few as 85-90 wells, but lately officials have begun talking in terms of nearly 200 wells.

Associated gas production is also expected to rise to 1.5 bcfd from the present 1 bcfd as Kuwait hikes oil output to a goal of 4 million b/d from 3.15 million b/d currently.

TransAtlantic to start Thrace basin gas sales

TransAtlantic Petroleum Ltd., Dallas, plans to begin gas sales through a 30-km gathering system into the Botas pipeline by early March from its Thrace basin Edirne license in northwestern Turkey.

TransAtlantic resumed drilling at Edirne in January and has spud Yolboyu-1, third well in its five to seven-well campaign. Yolboyu-1 is a 6,500-ft exploratory well that targets deeper gas potential south of the existing 3D seismic survey.

The company logged and cased the first two wells, Kumluk-1 and Kartal-1, where logs indicate net pay. All wells will be completed in a batch. On western Edirne, the company shot a further 81 sq km of 3D seismic and has begun interpretation.

TransAtlantic is operator with 55% interest in more than 119,000 gross acres. ✦

Drilling & Production — *Quick Takes*

Apache starts up Van Gogh off W. Australia

Apache Corp., Houston, started production from the Van Gogh development on Production License WA-35-L in the Exmouth basin off Western Australia.

Van Gogh, discovered in 2003, is Apache's first field development with a floating production, storage, and offloading vessel. The wells are completed subsea and include 19 horizontal production laterals, 2 water injection wells, and 1 gas injection well.

Apache said the total horizontal interval drilled for all of the production wells exceeds 106,000 ft.

The Ningaloo Vision FPSO has capacity to process 150,000 b/d of liquids, including 63,000 bo/d, and store 540,000 bbl of oil.

Van Gogh is 32 miles north-northwest of Exmouth.

Apache is the operator of Van Gogh and has a 52.5% interest.

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Inpex Australia holds the remaining interest.

Apache also operates or has an interest in several other projects in Western Australia.

Apache holds a 28.57% interest in the BHP Billiton Petroleum Ltd. operated $1.7 billion Pyrenees project, scheduled to start producing in this year's second half. The project includes the Crosby, Ravensworth, and Stickle oil fields, which lie in 560-820 ft of water on Block WA-12-R in the Exmouth basin (OGJ Online, July 3, 2007). BHP Billiton holds the remaining 71.43% interest in the Pyrenees development.

In 2011, Apache expects to start production from its operated Reindeer field through the Devil Creek processing plant—Western Australia's first new domestic natural gas processing hub in Western Australia in more than 15 years. Apache said Devil Creek is forecast to increase Western Australia's domestic gas production capacity by as much as 20%. Apache holds 55% interest in Reindeer with the remaining interest held by Santos Ltd.

Apache also will supply gas from its Julimar and Brunello discoveries to Chevron Corp.'s Wheatstone LNG project and become a foundation equity partner in the project. Apache said the fields contain an estimated 2.1 tcf of gross gas reserves. Apache holds a 65% interest in the discoveries and plans to make a final investment decision on the first phase of Wheatstone in 2011. Kuwait Foreign Petroleum Exploration Co. owns the remaining 35%.

Total to proceed with Shetlands project

Total SA has advanced a decision to invest in two UK gas fields after the British government earlier this month introduced tax breaks to encourage development in the area west of the Shetland Islands.

Total's director of North Sea operations Patrice de Vivies said he expected to sanction the development of the Laggan and Tormore gas fields, which will be brought on stream in March as a single project.

Total's decision follows a recent announcement by the British government that it would give a £1 billion-plus tax boost to help to jumpstart production in remote gas fields west of the Shetland Islands.

"The legislation, if approved by the House, will extend the field allowance, announced in Budget 2009, to remote deepwater gas fields, which are found in the west of Shetland area," said Chancellor of the Exchequer Alistair Darling (OGJ, Feb. 8, 2010, p. 28).

"Approval of the legislation will be sought no later than the end of March," a Treasury spokesman said.

In December Total was holding talks with the British government on extending tax relief to its Laggan and Tormore fields in the west of Shetland region. Total said the fields could be brought on stream in 2014, depending on the tax break.

According to analyst BMI, Total has a "relatively large" exposure to the West of Shetland. It is the operator of the Laggan and Tormore fields with a 50% interest, alongside partners DONG Energy 20%, Eni SPA 20%, and Chevron Corp. 10%.

"Total forecasts output from Laggan-Tormore to be 90,000 b/d of condensate and 5.2 billion cu m/year of gas," BMI said, adding that "This would be a massive boost to Total's UK production, which has being falling steadily in recent years."

BMI said Total's liquids output has dropped from 135,000 b/d in 2005 to just 91,000 b/d in 2008, while over the same period its gas output has fallen to 6.7 billion cu m from 9.6 billion cu m.

Oil output rising in Turkey's Selmo field

Production at Selmo, Turkey's second-largest oil field by cumulative production, is expected to top 2,000 b/d of 34° gravity oil as soon as three recently drilled wells are placed on production.

The field, in Turkey's Southeast basin north of the Zagros fold belt, averaged 1,715 b/d in the first half of February vs. 1,534 b/d in fourth-quarter 2009.

TransAtlantic Petroleum Ltd., Dallas, with 100% interest in the field, plans to drill at least 18 infill wells at Selmo in 2010. The underdeveloped field has produced 83 million bbl of the 600 million bbl estimated in place. Spacing averages 188 acres/well.

In the past 90 days the company has reworked wells to reduce water cut and acidized the upper producing intervals in several wells. The MSD dolomite and Upper LSL limestone formations have made good completions with low water cut.

A fourth pulling unit and the company's own acid stimulation equipment are to arrive in the second quarter of 2010, enabling the company to pump higher-rate jobs. ✦

Processing — *Quick Takes*

Paramount Petroleum to buy California refinery

Paramount Petroleum Corp. plans to buy a closed Bakersfield, Calif., refinery from Flying J Inc., and its subsidiary Big West of California LLC, for $40 million, subject to approval from a bankruptcy court.

The refinery, which has a 65,000 b/cd capacity, supplies diesel and gasoline to California. It was shut down for lack of cash with which to buy oil (OGJ, Feb. 9, 2009, Newsletter).

Paramount, a subsidiary of Alon Energy USA Inc., agreed to pay $40 million plus the fair market value of inventory. Clean Fuels project equipment and a 250-acre buffer property were excluded from the transaction. The agreement also includes an assumption of environmental clean up obligations.

Flying J is based in Ogden, Utah. The Bakersfield refinery closure did not affect Flying J's 30,000 b/cd capacity refinery in Salt Lake City, the company said.

Elme ethylene plant in Nigeria due revamp

Elme Petrochemicals Co. of Nigeria has let a contract to KBR for a revamp of the company's 550,000-tonne/year ethylene plant at Elme, near Port Harcourt.

The plant cracks NGL and feeds units able to produce 240,000 tpy of polyethylene, 95,000 tpy of polypropylene, and 100,000 tpy of naphtha.

KBR will provide an extended basic engineering design pack-

age for the partial revamp of six furnaces to use proprietary KBR technology. The revamp is to enhance operating performance and reliability of the 15-year-old furnaces, improve run lengths, and improve overall performance and reliability, KBR said.

Elme Petrochemicals is a subsidiary of the Indorama Group, Jakarta. ✦

Transportation — *Quick Takes*

Montana gas storage, pipeline project planned

Williston Basin Interstate Pipeline Co. has launched a $100-130 million project to boost delivery capacity from its Baker natural gas storage field in eastern Montana by April 2012.

Part of the project is an expansion of the company's gas pipeline system that connects Baker, the largest gas storage field in the US, with Northern Border Pipeline north of Dickinson, ND.

The company would add as much as 125 MMcfd to existing firm storage deliverability capacity from Baker by drilling new wells, adding compression, replacing and looping gathering lines, and looping pipelines between Baker and Northern Border.

Withdrawal capacity of 115 MMcfd at Baker would be more than doubled if shipper interest exists.

A binding open season for the project began Feb. 16 and ends Mar. 18, 2010, said Steven L. Bietz, WBI president and chief executive officer.

"Usage of our storage facilities reached record levels in 2009 and we are currently sold out of firm storage capacity so this is an excellent time to move forward with an enhancement of our Baker storage field," said Bietz.

Baker is one of three storage fields owned and operated by WBI at which working gas capacity totals 193 bcf.

The other two are Elk Basin and Billy Creek fields in northern Wyoming.

Arrow to buy Gladstone LNG plant

Arrow Energy Ltd., Brisbane, is to buy the proposed Fisherman's Landing LNG plant to be built in Gladstone, Queensland, from its project partner Liquefied Natural Gas Ltd., Perth, for $168 million (Aus.).

This figure includes an up-front payment of $51 million in cash and options. The plant is to be fueled from Arrow's coalseam gas fields in the Surat-Bowen basins to the west.

The acquisition comes just a month after Arrow signed a deal giving it ownership of the first LNG train at the plant and supersedes this earlier agreement.

Arrow says the new deal is a further simplification of the Fisherman's Landing LNG development and the elimination of the commercial agreements with LNG Ltd. It will improve the ability to construct, finance, and ultimately allow for greater flexibility in the operation of the plan.

The acquisition price includes $45 million for reimbursement of project costs incurred to date, an initial $5.7 million licensing fee for the use of LNG Ltd.'s trademarked optimized single-mixed refrigerant (OSMR) liquefaction technology, and a grant of 12.5 million options exercisable at $3.50 each, which expire May 14.

Arrow will pay LNG Ltd. a minimum royalty of 0.7% calculated on the oil price differential above $60/bbl (US) for the first train. A higher royalty of 0.9% will be payable if capital expenditure for the project is materially lower than current estimates of $2.1-2.2 billion (Aus.).

Further payments will be required to LNG Ltd. when certain milestones in the project are reached. These include $24 million (Aus.) at final investment decision, an additional $5 million (US) licensing fee at FID, $24 million (Aus.) when the plant produces 1 million tonnes of LNG a year, and $63.5 million (Aus.) when the plant reaches 3 million tonnes/year of LNG production through a second train.

Arrow will now reassess the feasibility of the original Mar. 31 final investment decision date although first production is still scheduled for late 2012.

For its part LNG Ltd. will come out of the completed deal with $85 million (Aus.) cash, 12.5 million Arrow options, and no further commitments for Fisherman's Landing work. This will allow the company to focus on marketing its OSMR technology and other midscale LNG opportunities.

Peru LNG lets service, maintenance contract

Peru LNG has awarded a long-term service and maintenance contract to Wood Group GTS, a unit of John Wood Group PLC. The value of the contract is $150 million over 18 years, Wood Group said.

Wood Group GTS will provide a service and maintenance program to maximize machine availability of the gas turbines, compressors, and generators at Peru LNG's Pampa Melchorita site south of Lima.

The agreement covers two GE Frame 7 (7EA DLN-1) gas turbine-driven compressor trains for the LNG process and three GE LM2500 + DLE aeroderivative gas-turbine power generator sets.

Wood Group GTS will implement remote monitoring and diagnostics, supply of spare parts, component repair, inventory management, field service, and maintenance management to maximize machine availability over the 18-year term.

Since 2007, Wood Group Production Services has supported Peru LNG by supplying specialized and technical personnel to Compania Operadora de LNG del Peru, the operating company of Peru LNG.

COLP has been responsible for building the LNG plant and gas supply pipeline and will be responsible for plant and pipeline operation and support. ✦

Correction

A Journally Speaking column entitled "Projection and the Pipeline" misstated the units of Alberta oil sands production in terms of billion b/d, while actual production estimates should have been stated in million b/d (OGJ, Feb. 15, 2010, p. 18).

Calendar

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

OIL&GAS JOURNAL online

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2010

FEBRUARY

Laurance Reid Conditioning Conference, Norman, Okla., (512) 970-5019, (512) 233-2877 (fax), e-mail: bettyk@ou.edu, website: www.lrgcc.org. 21-24.

International Petrochemicals Technology Conference & Exhibition, Madrid, +44 (0) 20 7357 8394, +44 (0) 20 7357 8395 (fax), e-mail: enquiries@europetro.com, website: www.europetro.com. 22-23.

Photovoltaics World Conference & Exhibition, Austin, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.Photovaltaicsworldevent.com. 23-25.

Renewable Energy World North America Conference & Expo, Austin, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.renewableenergyworld-events.com. 23-25.

SPE Unconventional Gas Conference, Pittsburgh, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 23-25.

International Downstream Technology & Catalyst Conference & Exhibition, Madrid, +44 (0) 20 7357 8394, +44 (0) 20 7357 8395 (fax), e-mail: enquiries@europetro.com, website: www.europetro.com. 24-25.

SPE/IADC Managed Pressure Drilling & Underbalanced Operations Conference and Exhibition, Kuala Lumpur, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 24-25.

IPAA Private Capital Conference, Houston, (202) 857-4722, (202) 857-4799 (fax), website: www.ipaa.org. 25.

Nitrogen + Syngas International Conference and Exhibition, Manama, +44 20 7903 2058, +44 20 7903 2172 (fax), e-mail: cruevents@crugroup.com, website: www.nitrogenandsyngas2010.com. Feb. 28-Mar. 3.

MARCH

Annual Arctic Gas Symposium, Calgary, Alta., (877) 927-7936, website: www.arcticgassymposium.com. 2-3.

APPEX Conference, London, +44 0 20 74341399, +44 0 20 74341386 (fax) website: www.appexlondon.com. 2-4.

Subsea Tieback Forum & Exhibition, Galveston, Tex., (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.subseatieback-forum.com. 2-4.

✦Middle East Geosciences Conference and Exhibition, Manama, +973 17 550033, +973 17 553288 (fax), e-mail: fawzi@aeminfo.com.bh, website: www.aeminfo.com.bh/geo2010. 7-10.

Middle East Geosciences Conference and Exhibition,

Manama, +973 17 550033, +973 17 553288 (fax), e-mail: fawzi@aeminfo.com.bh, website: www.geobahrain.org. 7-10.

SPE Hydrocarbon Economics and Evaluation Symposium, Dallas, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 8-9.

Purvin & Gertz LPG Seminar, The Woodlands, Tex., (713) 331-4000, (713) 236-8490 (fax), website: www.purvingertz.com. 8-11.

CERA Week, Houston, (617) 866-5992, e-mail: info@cera.com, website: www.cera.com. 8-12.

NPRA Security Conference & Exhibition, The Woodlands, Tex., (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npradc.org. 9-10.

Offshore West Africa Conference & Exhibition, Accra, Ghana, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.offshorewestafrica.com. 9-11.

Annual European Fuels Conference, Paris, +44 (0) 1242 529 090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 9-12.

SPE European San Management Forum, Aberdeen, +44 1224 495051, e-mail: Alexandra.stacey@hulse-rodger.com, website: www.spe-uk.org. 10-11.

NACE International Corrosion Conference & Expo, San Antonio, (281) 228-6200, (281) 228-6300 (fax), e-mail: firstservice@nace.org, website: www.nace.org. 14-18.

International Pump Users Symposium, Houston, (979) 845-7417, (979) 845-1835 (fax), e-mail: inquiry@turbo-lab.tamu.edu, website: http://turbolab.tamu.edu. 15-18.

API Spring Committee on Petroleum Measurement Standards Meeting, Dallas, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 15-18.

Gas Asia, Kuala Lumpur, +44 (0) 1242 529 090, +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 16-18.

Oil and Gas Africa Exhibition & Conference, Cape Town, SA, +27 21 713 3360, +27 21 713 3366 (fax), e-mail: events@fairconsultants.com, website: www.fairconsultants.com. 16-18.

Offshore Asia Conference & Exhibition, Kuala Lumpur, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.offshoreasiaevent.com. 16-18.

Turkish International Oil & Gas Conference & Showcase (TUROGE), Ankara, Turkey, +44 (0) 207 596 5000, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 16-18.

Electric Light & Power Executive Conference, Tampa, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.elpconference.com. 21-22.

NPRA Annual Meeting, Phoenix, (202) 457-0480, (202) 457-0486 (fax), website: www.npra.org. 21-23.

GPA Annual Convention, Austin, Tex., (918) 493-3872, (918) 493-3875 (fax), e-mail: pmirkin@gpaglobal.org, website: www.GPAglobal.org. 21-24.

AIChE Spring National Meeting & Global Congress on Process Safety, San Antonio, (203) 702-7660, (203) 775-5177 (fax), website: www.aiche.org. 21-25.

Howard Weil Energy Conference, New Orleans, (504) 582-2500, website: www.howardweil.com/energy-conference.aspx. 21-25.

Gas Turbine Users International (GTUI) Annual Conference, Calgary, Alta., +9714 804 7738, +9714 804 7764 (fax), e-mail: info@gtui.org, website: www.gtui.org. 21-26.

Middle East Downstream Week & Annual Meeting, Abu Dhabi, +44 (0) 1242 529 090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 22-25.

IADC Drilling HSE Asia Pacific Conference & Exhibition, Singapore, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 23-24.

SPE/ICoTA Coiled Tubing & Well Intervention Conference & Exhibition, The Woodlands, Tex., (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 23-24.

Middle East Refining Conference & Annual Meeting, Abu Dhabi, +44 (0) 1242 529 090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 23-24.

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SPE Intelligent Energy Conference and Exhibition, Utrecht, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.intelligentenergyevent.com/conferenceOGJ. 23-25.

Utility Products Conference & Exposition, Tampa, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.utilityproductsexpo.com. 23-25.

DistribuTECH Confernece & Exhibition, Tampa, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.distributech.com. 23-25.

Georgian International Oil, Gas, Energy and Infrastructure Conference & Showcase (GIOGIE), Tbilisi, +44 (0) 207 596 5000, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 24-25.

NPRA International Petrochemical Conference, San Antonio, (202) 457-0480, (202) 457-0486 (fax), website: www.npra.org. 28-30.

APRIL

ATYRAU North Caspian Regional Oil, Gas and Infrastructure Exhibition, Atyrau, +44 (0) 207 596 5000, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 6-8.

Rocky Mountain Unconventional Resources Conference & Exhibition, Denver, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.RMURconference.com. 6-8.

Oil & Gas WestAsia Exhibition in conjunction with SPE EOR Conference, Muscat, +968 24660124, +968 24660125 (fax), e-mail: omanexpo@omantel.net.om, website: www.ogwaexpo.com 11-13.

SPE EOR Conference at Oil & Gas West Asia, Muscat, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 11-13.

AAPG Annual Convention and Exhibition, New Orleans, (918) 560-2679, (918) 560-2684 (fax), e-mail: convene@aapg.org, website: www.aapg.org 11-14.

Annual Asian Petcoke Conference, Panaji, Goa, India, (832) 351-7828, e-mail: petcoke.conference@jacobs.com, website: www.petcokes.com. 12-14.

IPAA OGIS, New York City, (202) 857-4722, (202) 857-4799 (fax), website: www.ipaa.org. 12-14.

SPE International Conference on Health, Safety and Environment in Oil and Gas Exploration and Production, Rio de Janeiro, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 12-14.

IADC Well Control Europe Conference & Exhibition, Aberdeen, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 13-14.

GPA Mid-continent Annual Meeting, Oklahoma City, (918) 493-3872, (918) 493-3875 (fax), e-mail: gpa@gasprocessors.com, website: www.gasprocessors.com. 15.

International Liquefied Natural Gas Conference and Exhibition, Oran, +44 (0) 20 7596 5000, +44 (0) 20 7596 5111 (fax), website: www.lng16.org. 18-21.

Oil & Gas WestAsia Conference, Muscat, +968 24660124, +968 24660125 (fax), e-mail: omanexpo@omantel.net.om, website: www.ogwaexpo.com. 19-21.

Hannover Messe Pipeline Technology Trade Show, Hannover, +49 0 511 89 0, +49 0 511 89 32626 (fax), website: www.hannovermesse.de. 19-23.

Texas Alliance Annual Meeting and Expo, Wichita Falls, (940) 723-4131, (940) 723-4132 (fax), e-mail: texasalliance@texasalliance.org, website: www.texasalliance.org. 20-21.

API Pipeline Conference and Cybernetics Symposium, New Orleans, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 20-22.

SPE Improved Oil Recovery Symposium, Tulsa, (918) 366-7033, (918) 366-7064 (fax), e-mail: IOR@SPEIOR.ORG, Website: www.speior.org. 26-28.

Middle East Fertilizer Symposium & Annual Meeting, Abu Dhabi, +44 (0) 1242 529

Calendar

090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 26-28.

API Spring Refining and Equipment Standards Meeting, New Orleans, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 26-28.

API/NPRA Spring Operating Practices Symposium, New Orleans, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 27.

MAY

Offshore Technology Conference (OTC), Houston, (972) 952-9494, (972) 952-9435 (fax), e-mail: service@otcnet.org, website: www.otcnet.org/2010. 3-6.

GPA Permian Basin Annual Meeting, Midland, Tex., (918) 493-3872, (918) 493-3875 (fax), website: www.gasprocessors.com. 4.

Asian Biofuels, New Feedstocks and Technology Roundtable, Singapore, +44 (0) 1242 529 090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 4-6.

OGU/Uzbekistan International Oil & Gas Exhibition & Conference, Tashkent, +44 (0) 207 596 5000, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 11-13.

International School of Hydrocarbon Measurement, Norman, Okla., (405) 325-1217, (405) 325-1388 (fax), e-mail: lcrowley@ou.edu. *Website:* www.ishm.info. 11-13.

APPEA Conference & Exhibition, Brisbane, 07 3229 6999, 07 3220 2811 (fax), e-mail: jhood@appea.com.au. website: www.appea.com.au. 16-19.

Mediterranean Offshore Conference & Exhibition, Alexandria, Egypt, +20 2 27065210, +20 2 25184980 (fax), e-mail: conference@omc.it, website: www.moc2006.com. 18-20.

NPRA National Safety Conference & Exhibition, San Antonio, (202) 457-0480, (202) 457-0486 (fax), website: www.npra.org. 19-20.

IADC Drilling Onshore Conference & Exhibition, Houston, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 20.

SPE International Conference on Oilfield Corrosion, Aberdeen, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 24-25.

ILTA Annual International Operating Conference & Trade Show, Houston, (202) 842-9200. (202) 326-8660, e-mail: info@ilta.org, website: www.ilta.org. 24-26.

✦*Petrotech Middle East Refining and Petrochemicals Exhibition & Conference*, Manama, +973 1755 0033, +973 1755 3288 (fax), e-mail: fawzi@aeminfo.com.bh, website: www.mepetrotech.com. 24-26.

NPRA Reliability and Maintenance Conference and Exhibition, San Antonio, (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npradc.org. May 25-28.

SPE International Conference on Oilfield Scale, Aberdeen, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 26-27.

SPE Western North America Regional Meeting, Anaheim, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 26-30.

JUNE

Caspian International Oil & Gas/Refining & Petrochemicals Exhibition & Conference, Baku, +44 (0) 207 596 5000, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 1-4.

AchemAsia, Beijing, 0049 69 75 64 0, 0049 69 75 64 201 (fax), website: www.achemasia.de. 1-4.

ASME Annual Meeting, Pittsburgh, (800) 843-2763, (973) 882-1717 (fax), e-mail: infocentral@asme.org, website: www.asme.org. 4-9.

Society of Petroleum Evaluation Engineers (SPEE) Annual Meeting, Victoria, BC, (713) 651-1639, (713) 951-9659 (fax), website: www.spee.org. 5-8.

Asia Oil & Gas Conference, Kuala Lumpur, 65 6338 0064, 65 6338 4090 (fax), e-mail: info@cconnection.org, website: www.cconnection.org. 6-8.

IAEE International Conference, Rio de Janeiro, (216) 464-5365, (216) 464-2737 (fax), e-mail: iaee@iaee.org, website: www.usaee.org. 6-9.

PIRA Canadian Energy Conference, Calgary, Alta., (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 8.

SPE International Oil & Gas Conference and Exhibition, Beijing, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 8-10.

✦*SUBSEA Asia Conference*, Kuala Lumpur, +65 6233 6777, +65 6233 6768 (fax), e-mail: gerald@iemall-world.com, website: www.subseaasia.org. 9-11.*IPAA OGIS London*, London, (202) 857-4722, (202) 857-4799 (fax), website: www.ipaa.org. 10.

PIRA Scenario Planning Conference, London, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 14.

PIRA London Energy Conference, London, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 14-15.

EAGE Conference and Exhibition/SPE EUROPEC, Barcelona, Spain, +31 88 995 5055, +31 30 634 3524 (fax), e-mail: eage@eage.org, website: www.eage.org. 14-17.

ASME Turbo Expo, Glasgow, Scotland, (800) 843-2763, (973) 882-1717 (fax), e-mail: infocentral@asme.org, website: www.asme.org. 14-18.

GTI Global Unconventional Gas Conference, Amsterdam, (847) 768-0783, website: www.gastechnology.org/gug2010. 15-17.

IADC World Drilling Conference & Exhibition, Budapest, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 16-17.

PIRA Understanding Global Oil Markets Conference, London, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 16-17.

AAPL Annual Meeting, Vail, Colo., (817) 847-7700, (817) 847-7704 (fax). e-mail: aapl@landman.org, website: www.landman.org. 16-19.

IPAA Midyear Meeting, Colorado Springs, Colo., (202) 857-4722, (202) 857-4799 (fax), website: www.ipaa.org. 17-18.

Society of Professional Well Log Analysts Annual Symposium (SPWLA), Perth, (713) 947-8727, (713) 947-7181 (fax), e-mail: webmaster@spwla.org, website: www.spwla.org. 19-23.

International Offshore and Polar Engineering Conference (ISOPE), Beijing, (650) 254-1871, (650) 254-2038 (fax), e-mail: meetings@isope.org, website: www.isope.org. 20-26.

Purvin & Gertz LPG Seminar, Singapore, (713) 331-4000, (713) 236-8490 (fax), website: www.purvingertz.com. 21-24.

NEFTEGAZ International Exhibition for Equipment and Technologies for the Oil and Gas Industries, Moscow, +44 (0) 207 596 5000, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 21-25.

PIRA Scenario Planning Conference, Houston, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 22.

Atlantic Canada Petroleum Show, St. John's, Newf., (403) 209-3555, (403) 245-8649 (fax), website: www.petroleumshow.com. 22-23.

PIRA Understanding Global Oil Markets Conference, Houston, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 23-24.

API Tanker Conference, San Diego, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 28-29.

API Exploration & Production Standards Conference on Oilfield Equipment and Materials, Wash., DC, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. June 28-July 3.

JULY

COGA Rocky Mountain Energy Epicenter Conference, Denver, (303) 861-0362, (303) 861-0373 (fax), e-mail: conference@coga.org, website: www.coga.org. 7-9.

IADC Lifting & Mechanical Handling Conference & Exhibition, Houston, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 13-14.

Oil Sands and Heavy Oil Technologies Conference & Exhibition, Calgary, Alta., (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.oilsandstechnologies.com. 20-22.

AUGUST

SPE Nigerian Annual Confer-

ence and Exhibition, Abuja, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 3-5.

Summer NAPE Expo, Houston, (817) 306-7171, (817) 847-7703 (fax), e-mail: info@napeexpo.com, website: www.napeonline.com. 19-20.

ASEG/PESA Conference & Exhibition, Sydney, +08 9427 0838, +08 9427 0839 (fax), e-mail: secretary@aseg.org.au, website: www.aseg.org.au. 22-26.

The Oil & Gas Conference, Denver, (303) 296-8834, (303) 293-9904 (fax), e-mail: kgrover@enercominc.com, website: www.theoilandgasconference.com. 22-26.

NPRA Cat Cracker Seminar, Houston, (202) 457-0480, (202) 457-0486 (fax), website: www.npra.org. 24-25.

Offshore Northern Seas (ONS) Conference, Stavanger, +47 51 84 90 40, e-mail: info@ons.no, website: www.ons.no. 24-27.

IAEE European Conference, Vilnius, Lithuania, +370 37 401 952, +370 37 351 271 (fax), e-mail: iaee2010@mail.lei.lt, website: www.iaee2010.org. 25-28.

OGMT Maintenance Technology North America Conference, New Orleans, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.ogmtna.com. Aug. 31-Sept. 2.

SEPTEMBER

World Energy Congress, Montreal, (514) 397-1474, (514) 397-9114 (fax), e-mail: info@wecmontreal2010.ca, website: www.wecmontreal2010exhibit.com. 12-16.

Rio Oil & Gas Expo and Conference, Rio de Janeiro, +31 0 79 341 1981, e-mail: stoutjesdijk@iro.nl, website: www.iro.nl/Programme/Rio-Oil—Gas.aspx?mld=9736&rld=145. 13-16.

New Zealand Petroleum Conference, Auckland, +64 3 962 6179, +64 4 471 0187 (fax), e-mail: Helen.moriarty@med.govt.nz, website: www.crownminerals.govt.nz/cms/petroleum/conferences. 19-22.

SPE Annual Technical Conference and Exhibition, Florence, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 19-22.

NPRA Environmental Conference, San Antonio, (202) 457-0480, (202) 457-0486 (fax), website: www.npra.org. 20-21.

Herold Pacesetters Energy Conference, Greenwich Conn., (203) 847-3344, (203) 847-5566 (fax), website: www.herold.com. 20-23.

IPLOCA Conference, Venice, +41 22 306 02 30, +41 22 306 02 39 (fax), e-mail: info@iploca.com, website: www.iploca.com. Sept. 27-Oct. 1.

IADC Drilling HSE Europe Conference & Exhibition, Amsterdam, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 29-30.

OCTOBER

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

API Fall Committee on Petroleum Measurement Standards Meeting, Westminster, Colo., (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 4-7.

Unconventional Gas International Conference & Exhibition, Fort Worth, Tex. (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.unconventionalgas.net. 5-7.

Kazakhstan International Oil & Gas Exhibition & Conference (KIOGE), Almaty, +44 (0) 207 596 5000, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 5-8.

NPRA Q&A and Technology Forum, Baltimore, (202) 457-0480, (202) 457-0486 (fax), website: www.npra.org. 10-13.

Petchem Arabia Annual Meeting, Manama, +44 (0) 1242 529 090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 11-14.

IPAA OGIS San Francisco, San Francisco, (202) 857-4722, (202) 857-4799 (fax), website: www.ipaa.org. 12-14.

Offshore Middle East Conference & Exhibition, Dohar, Qatar (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.offshoremiddleeast.com. 12-14.

IADC Contracts & Risk Management Conference, Houston, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 13-14.

Materials Science and Technology Conference and Exposition, Houston, (281) 228-6200, (281) 228-6300 (fax), e-mail: firstservice@nace.org, website: www.nace.org. 15-18.

SPE Asia Pacific Oil and Gas Conference & Exhibition, Brisbane, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 17-20.

SEG International Exposition and Annual Meeting, Denver, Colo., (918) 497-5500, (918) 497-5557 (fax), e-mail: register@seg.org, website: www.seg.org. 17-22.

Permian Basin International Oil Show, Odessa, Tex., (432) 367-1112, (432) 367-1113 (fax), e-mail: pbioilshow@pbioilshow.org, website: www.pbioilshow.org. 19-21.

ISA EXPO, Houston, (919) 549-8411, (919) 549-8288 (fax), e-mail: info@isa.org, website: www.isa.org. 19-21.

IADC Drilling Africa Conference & Exhibition, London, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 20-21.

PIRA New York Annual Conference, New York, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 21-22.

GITA's GIS Annual Oil & Gas Conference, Houston, (303) 337-0513, (303) 337-1001 (fax), e-mail: info@gita.org, website: www.gita.org. 24-27.

SPE Russian Oil and Gas Technical Conference and Exhibition, Moscow, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 26-28.

GSA Annual Meeting, Denver, (303) 357-1000, (303) 357-1070 (fax), e-mail: meetings@geosociety.org, website: www.geosociety.org Oct. 31–Nov. 3.

NOVEMBER

IADC/SPE Asia Pacific Drilling Conference & Exhibition, Ho Chi Minh City, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 1-3.

Power-Gen Middle East Conference, Doha, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.power-gen-middleeast.com. 1-3.

Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC), Abu Dhabi, +971 2 4444 909, +971 2 4444 383 (fax), e-mail: info@adipec.com, website: www.adipec.com. 1-4.

Deepwater Operations Conference & Exhibition, Galveston, TX (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.deepwateroperations.com. 2-4.

European Autumn Gas Conference (EAGC), Berlin, +44 (0)203 180 6574, e-mail: katecheetham@dmgworldmedia.com, website: www.theeagc.com. 9-10.

NPRA International Lubricants & Waxes Meeting, Houston, (202) 457-0480, (202) 457-0486 (fax), website: www.npra.org. 11-12.

IADC Annual Meeting, San Antonio, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org.11-12.

API Fall Refining and Equipment Standards Meeting, Nashville, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 15-17.

API/NPRA Fall Operating Practices Symposium, Nashville, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 16.

IADC Well Control Middle East Conference & Exhibition, Manama, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 29-30.

Deep Offshore Technology International Conference & Exhibition, Amsterdam (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.deepoffshoretechnology.com Nov. 30–Dec. 2.

✦OSEA International Oil & Gas Exploration, Production & Refining Exhibition, Singapore, +65 6233 6777, +65 6233 6768 (fax), e-mail: gerald@iemallworld.com, website: www.osea-asia.com. Nov. 30–Dec. 3.

DECEMBER

✦ GEO India Conference, New Delhi, +65 6233 6777, +65 6233 6768 (fax), e-mail: gerald@iemallworld.com, website: www.geo-india.com. 7-10.

PIRA Natural Gas Markets Conference, New York, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 13-14

PIRA Understanding Global Oil Markets Conference, New York, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 15-16..

Journally Speaking

Survey: rise in optimism

Leena Kootungal
Survey Editor/
News Writer

During a time when much attention is focused on the global recession, unemployment, and other gloomy reports, it was nice to see positive news recently.

This month, accounting firm Grant Thornton LLP released the results of its 2010 survey of upstream US energy companies. The results are optimistic for the upstream industry compared with last year's report.

This eighth annual survey was conducted from November through December 2009 with more than 100 responses from senior executives of independent producers, service companies, and transport firms. Of the respondents, 73% were E&P companies, 17% service firms, and 10% gathering and transportation companies.

The companies that responded had average yearend 2009 total assets of $540 million and average 2009 fiscal year revenues of $245 million. The following are key findings in three areas.

Employment, spending

The direction for employment has turned upward from the previous survey. Fifty percent of respondents expect higher employment levels at their companies in 2010, compared with 35% in 2009.

Results were similar for the industry as a whole (see chart). Seventy-five percent believe employment levels in the industry will rise or hold steady in 2010. Only 11% expected this to happen in 2009. An increase in employment is projected for 2011 and 2012.

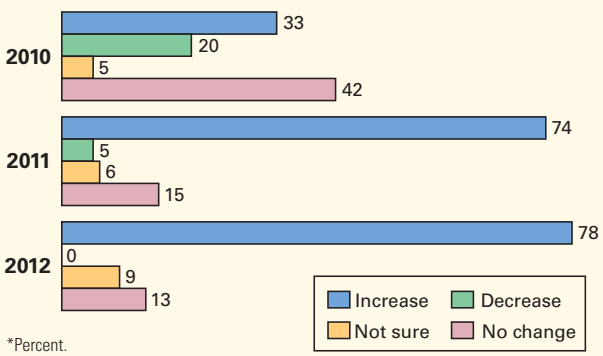
The survey also found that 78% percent of respondents believe conditions have improved or will have improved enough by the end of 2010 to consider the US economy's recession to be over.

Eighty-five percent of respondents do not expect to encounter difficulties hiring and retaining employees over the next year. Those who do expect difficulties find engineers and land professionals to be their primary concern.

Sixty-seven percent of survey respondents expect an increase in their US spending in 2010, compared with 32% in 2009. Ninety-three percent expect no change in capital spending outside the US this year.

For 2010, survey respondents indicated forecast natural gas and crude oil prices, projected demand for natural gas, and availability of capital and financing as the most important factors in capital spending decisions. Availability of drilling rigs and skilled personnel and tax impacts were the least important.

OIL, GAS INDUSTRY EMPLOYMENT PROJECTIONS*



*Percent.
Source: Grant Thornton LLP

Issues, opportunities

The survey found successful exploitation of resources, mergers and acquisitions, and operating efficiencies provide the greatest potential for enhancing company value and growth. Retaining and attracting people and asset sales had the least potential.

Incentives to increase US drilling, conservation, and OPEC actions were the most likely ways to reduce energy prices for the US consumer. Use of alternatives to hydrocarbons was at the bottom of the list.

Respondents would prefer areas of short-term government focus to be on opening up drilling in onshore federal acreage, clean coal as an alternative fuel source, and tax credits to increase research and development. Long-term, drilling in the Arctic, biomass as an alternative fuel, and grants for research and development are the preferred areas of focus.

The top concerns in the industry today did not change from 2009. Uncertain natural gas and crude oil prices and obtaining capital were the most commonly cited problems.

Respondents believe the US is strong in capitalizing on technology and attracting and retaining talent. Eighty percent of respondents think the US needs to focus on achieving more energy independence.

Respondents would like to see their corporate and individual leaders concentrate on promoting natural gas as a viable source of energy, more dependence on domestic exploration and production, and legislation that promotes the energy industry instead of imposing additional limitations. ✦

What bipartisanship means

Suddenly, bipartisanship is back in fashion in Washington, DC. Since the general election of November 2008, bipartisanship has been the runaway spaniel of politics—something missed and longed for yet deemed unlikely to be encountered again. Election victories in 2008 by the liberal wing of the Democratic Party shooed the pooch. It emboldened White House Chief of Staff Rahm Emanuel to advise, soon after the election, "Never let a serious crisis go to waste…it's an opportunity to do things you couldn't do before." It evoked this famous slap-down by House Speaker Nancy Pelosi to critics of $825 billion in "stimulus" spending on a fat catalog of liberal causes: "We won the election. We wrote the bill."

Then, bipartisanship didn't matter. Now, as the liberal agenda implodes, it does. President Barack Obama has invited congressional Republicans to a "bipartisan summit" Feb. 25 to try to salvage health care reform. In another bipartisan gesture, he has offered to back construction of nuclear power plants. All Republicans have to do to earn this treat is agree to more support for economically hopeless renewable fuels and new taxation of fossil energy.

No one in the oil and gas industry should be fooled. Bipartisanship is bait-and-switch, a desperate tactic of the politically beleaguered.

Limitless cost

Indeed, bipartisanship set the US on its current course toward limitless energy cost. It was the core sales proposition of the Energy Policy Act of 2005 (EPACT). So smitten were energy interests, including oil and gas, by the spirit of bipartisanship—not to mention the chance to score a tax break here and there—that no one noticed the historic pivot the US made when former President George W. Bush signed the bill into law.

Because Democrats and Republicans had worked together to pass comprehensive energy legislation, it seemed not to matter that no one understood everything or even much of what the mammoth bill contained. What mattered was that political rivals had made deals and passed something not strictly the product of one party or the other. There were hugs and kisses all around. And when the party ended the US government was solidly back in the business of making fuel choices for Americans.

That was historic. Since then, energy policy-making has been a competition for public money, which politicians happily have dispensed with little regard for cost or proportionate contribution to energy supply.

One of the biggest boondoggles was the first-ever volumetric mandate for already-subsidized agricultural ethanol in vehicle fuel. Congress didn't set required volumes by considering market practicalities but rather by splitting the difference between what the ethanol lobby demanded and the American Petroleum Institute called acceptable. It naturally left to regulators the difficult chore of prospectively apportioning mandated volumes each year among numerous suppliers in an unpredictable market.

After Democrats took control of Congress, lawmakers in 2007 set a mandate for total biofuels, some not yet and maybe never commercial, more than four times the size of the 2005 mistake and much more complex and difficult to implement. For technical and market reasons, the elevated mandate will look increasingly unfeasible as it ramps up unless vehicle fuel consumption makes an unexpected growth spurt. But Democrats wanted to outdo the mandate passed, in the spirit of bipartisanship, while Republicans controlled things. So they did. And statutory failure looms. And Americans face increases in fuel costs and taxes. And Democrats are in political trouble. So they appeal to bipartisanship.

Arbitraging errors

With energy, Americans don't need bipartisanship. They need continuous and affordable supply of convenient and environmentally manageable fuel. A sensible approach to the subject should not be a defining position of one part or the other. Both parties can learn enough about energy at least to see that the government can't make fuel choices without creating unsustainable cost.

At present, because neither party approaches energy that way, compromise means arbitraging errors. Until Republicans and Democrats begin to calibrate energy ambitions to physical, economic, and market realities, bipartisanship will remain a shroud hiding too much spending on too little energy. ✦

Natural gas prominent in governors' energy strategies

Nick Snow
Washington Editor

Jobs and the economy have dominated a number of US governors' State of the State (SOTS) and budget addresses so far in 2010, and will be prominent issues as the National Governors Association holds its winter meeting Feb. 20-22 in Washington, DC. Direct references to oil and gas have been few and far between, but have been significant when they have occurred.

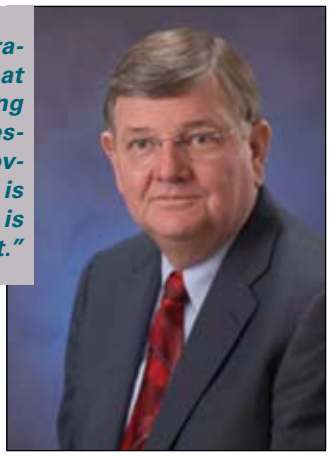
Across the board, governors have emphasized fiscal responsibility as they submitted budget proposals to state lawmakers. Some observed that federal economic stimulus assistance that their states received in 2009 will be absent this year. Others emphasized the importance of continuing to leave "rainy day" funds alone, or replenishing them.

"I do not see a dramatic change that suggests this is going to be some aggressive and robust recovery. I believe that it is going to be slow; it is going to be difficult," Wyoming Gov. Dave Freudenthal (D) said on Feb. 8. "Part of it is simply the absence of credit availability, particularly for small businesses, and not a matter that I see being resolved very quickly. The state should remain, I believe, fairly conservative."

He congratulated legislators for fully funding a major scholarship program, capital construction, and other major state activities without increasing debt or taking on massive new unfunded obligations. "We arrive here today the envy of many states—not by accident, but by a design that many of you here supported and we implemented," he told them.

Freudenthal said, "The other reason we are in pretty good shape is that since 2003, we have more than doubled the take-away capacity of natural gas out of this state." While gas prices have declined, higher export volumes have helped keep Wyoming's revenue from dropping by a corresponding amount, he said.

"I do not see a dramatic change that suggests this is going to be some aggressive and robust recovery. I believe that it is going to be slow; it is going to be difficult."



Wyoming Gov. Dave Freudenthal (D)

Newer technologies

Freudenthal also outlined proposals dealing with wind energy and carbon capture and sequestration. Several other leaders continued to emphasize alternative and renewable energy development in their economic plans.

"In these uncertain times, the New Energy Economy—which did not exist 3 years ago—continues to be our beacon to a brighter future," Colorado Gov. Bill Ritter Jr. (D) said on Jan. 14. "We're creating thousands of new jobs, new markets, and new revenues. We're nurturing a culture of innovation from the best energy research corridor in the world. We're manufacturing 21st century products from state-of-

"As a state, one of our true economic competitive advantages is our relatively low cost of power. Our energy plan must focus on maintaining affordability, encouraging capital investment, and protecting our environment."

Utah Gov. Gary R. Herbert (R)

the-art factories."

Noting that Colorado was the first US state to pass a renewable energy standard, Ritter said that the use of renewable energy doubled in 2007 and the state is now 5 years ahead of schedule to meet the current 20% goal. He urged lawmakers to "think bigger, creating even larger markets for solar, wind, biomass, hydro, and geothermal" and increase renewable energy's share of Colorado's energy consumption to 30%.

"This session, we also have an opportunity to lead the nation in expanding the role of cleaner-burning natural gas in our energy portfolio. Gas has always been part of the New Energy Economy, and this year we look forward to solidifying its role for the future," Ritter added.

"Over the past few months, I've been working closely with the natural gas industry, with utilities, and with other stakeholders. We're looking at ways to increase the use of Colorado gas to generate electricity, reduce air pollution, stabilize energy bills for consumers, and create jobs," he said.

In his Feb. 9 budget address, Pennsylvania Gov. Edward G. Rendell (D) mentioned gas's potential contribution to his state in a different context: He proposed taxing Marcellus shale production—as well as cigars and smokeless tobacco products. "Once again, it's simply not fair that Big Tobacco and Big Oil and Gas are exempt from the obligations the rest of us have to bear," Rendell stated. "The revenues raised by these initiatives are overwhelmingly supported by our fellow citizens, and would provide a half a billion dollars for the Stimulus Transition Reserve Fund."

Utah initiative

In a state long-associated with oil, gas, and coal, Utah Gov. Gary R. Herbert (R) announced on Jan. 26 that he would assemble the state's top experts and have them create a 10-year strategy—the Utah Energy Initiative—with three main elements: to ensure continued access to clean and low-cost energy resources in the state; to be on the cutting edge of new energy technologies; and to foster economic opportunities and create more jobs.

"We have a rich abundance of diverse natural resources—everything from traditional fuels such as oil, gas, and coal to renewables such as solar, wind, and hydroelectric," he said in his first SOTS address. "Two new wind projects north of Milford and in Spanish Fork Canyon are now producing electricity. Geothermal is rapidly coming online. Blending solar and biomass with traditional fuels at existing generation sites shows great potential. Simply put, few other states have the energy resources with which we, in Utah, have been blessed."

Herbert noted that Utah is uniquely positioned in the heart of a western energy corridor stretching from Canada to New Mexico, with adequate power generation and transmission capacity. Investments totaling billions of dollars will be required to maintain and expand the infrastructure, and regulatory structures will need to reflect the state's long-term energy vision, he said. "As a state, one of our true economic competitive advantages is our relatively low cost of power. Our energy plan must focus on maintaining affordability, encouraging capital investment and protecting our environment," he maintained.

Keeping energy affordable and available also was a high priority for South Dakota Gov. M. Michael Rounds (R) in his Jan. 12 SOTS address. "We need access to a wide variety of affordable energy for our economy to thrive. We also need to do our part to help our nation become energy independent from the Middle East and Venezuela," he said.

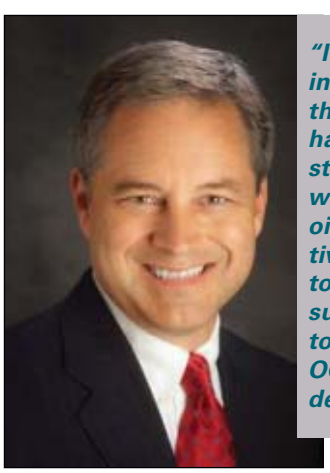
Changes in the state's laws to promote and accelerate wind power development since 2002 have expanded South Dakota's generation capacity from that source to 314 Mw from just 4 Mw, with another 309 Mw under construction, according to Rounds. The biggest challenge now is constructing transmission lines, which can cost $1-3 million/mile, he noted.

"We need access to a wide variety of affordable energy for our economy to thrive. We also need to do our part to help our nation become energy independent from the Middle East and Venezuela."

South Dakota Gov. M. Michael Rounds (R)

Traditional projects

Rounds noted that more-traditional energy projects are moving ahead, including the proposed Hyperion energy complex, which will include a 400,000 b/d refinery, create thousands of jobs in its construction and operation, and be the largest private development in the state's history. Construction of two TransCanada oil pipelines, the Keystone system, which will carry 1.1 million b/d from Canada to Gulf Coast refineries, also is on schedule, while ethanol production has grown to 990 million



"I have made exploring and developing the OCS our priority. I have met with all the stakeholders, from whaling captains to oil company executives. We do not have to sacrifice traditional subsistence whaling to have jobs from OCS exploration and development."

Alaska Gov. Sean Parnell (R)

gal/year from 165 million gal/year in 2002, he indicated.

Oil and gas were prominent in Alaska Gov. Sean Parnell's SOTS address on Jan. 20 because they are such a big part of the state's economy. "Alaska's numerous oil fields send approximately 650,000 b/d down the Trans-Alaska Pipeline System. For 3 decades, oil has substantially funded our state treasury, and provided jobs and income to thousands of Alaskans," he noted.

Noting the potential of future offshore discoveries on the Outer Continental Shelf "and maybe even one day" on the Arctic National Wildlife Refuge's coastal plain, Parnell said that Alaskans need the estimated 35,000 jobs and $72 billion in salaries that responsible OCS development would create. "I have made exploring and developing the OCS our priority. I have met with all the stakeholders, from whaling captains to oil company executives. We do not have to sacrifice traditional subsistence whaling in order to have jobs from OCS exploration and development. We can have both," he maintained.

Shale gas activity in the Lower 48 won't keep Alaska's abundant gas supplies from being developed because they have environmental and production advantages, Parnell said. Both major pipeline projects to move gas to Lower 48 markets are moving toward their first open seasons in the spring, and Parnell suggested that construction could start in another 4-5 years. He said that the state also is evaluating proposals to build in-state gas pipelines.

Virginia Gov. Robert F. McDonnell (R)

"We cannot now let Washington bureaucracy undermine the clear desires of the people of Virginia.... There are many unemployed Virginians who are ready to work in the oil and gas production industry."

Perhaps the boldest declaration came from Robert F. McDonnell (R), who said in his Jan. 18 budget address: "I am committed to utilizing all of our vast, God-given natural resources to make Virginia the 'Energy Capital of the East Coast.'"

'Clear desires'

Noting that a 2011 lease sale is part of the US Minerals Management Service's current 5-year OCS plan, McDonnell told state lawmakers: "The state that is first will reap an economic bonanza. We can lead or be left out. Four years ago you had the foresight to pass legislation giving us a critical advantage. We cannot now let Washington bureaucracy undermine the clear desires of the people of Virginia."

McDonnell said he has written US Interior Secretary Ken Salazar and notified Virginia's congressional delegation that this is a top priority. "Several studies show that environmentally safe offshore exploration and production will create thousands of jobs, put hundreds of millions [of dollars] into our depleted state coffers, and spur billions in capital investment in the Old Dominion," he said. "There are many unemployed Virginians who are ready to work in the oil and gas production industry."

He also asked Virginia's senate and house to prepare for OCS production this session by mandating that 20% of new tax revenues and any future royalties be invested in renewable energy projects, with the other 80% going to transportation.

"We must also promote coal and natural gas industries in southwest Virginia. As carbon sequestration and coal gasification technologies become cost-efficient, coal production can grow," McDonnell continued. He also called for more nuclear power incentives. Virginia has more private sector nuclear capability than any other state, and new partnerships between Areva Inc. and the University of Virginia are producing the engineers needed to make this sector grow, he said.

Finally, McDonnell asked Virginia lawmakers to pass legislation making the entire state a "Green Jobs Zone" where any business creating green energy jobs in the next 5 years would receive a $500/position income tax credit. "'Virginia is for Lovers…,'" he said, quoting one of the state's most popular tourism slogans, then added, "…of renewable energy." ✦

EIA forecasts gradual improvement in US gas markets

Nick Snow
Washington Editor

US natural gas markets should gradually improve during 2010 with modest demand growth, lower production and imports, and higher prices, the US Energy Information Administration suggested in its latest Short-Term Energy Outlook.

"EIA expects total natural gas consumption to increase 0.4% to 62.5 bcfd in 2010 and another 0.4% in 2011," EIA said Feb. 10 in its latest monthly outlook. It also forecast that total marketed gas production will decline 2.6% to 58.7 bcfd in 2010 and increase by 1.3% in 2011.

Projected US pipeline imports will fall by 8.3%, or 700 MMcfd, to 8.1 bcfd this year from the sustained impact of lower Canadian drilling and production and from increasing demand from oil sands projects in western Canada,

EIA said. "A portion of the decline in pipeline imports this year is expected to be offset by imports of [LNG], which were double year-ago levels in January as temperatures plummeted and prices jumped," it added.

EIA said very cold weather during January's first half, particularly in the Southeast, contributed to an 8.4% jump in its monthly estimate of demand to generate electricity from its previous forecast. "The latest estimate for electric power consumption in January would be a new record for the month," it indicated.

While demand for gas to produce power has been strong so far this year, EIA said an expected increase in coal-fired generation capacity and higher gas prices later in 2010 should reduce gas's share of the baseload power mix by 1.3% despite lower-than-normal snowpack in the Northwest which could lower hydroelectric generation there by 8% and boost demand for gas.

It said that it anticipates stronger residential, commercial, and industrial demand to more than offset a drop in consumption for power generation, leading to the 0.4% rise in overall domestic gas demand. The strongest growth is expected from industrial customers as a result of improved economic conditions, EIA said.

Production outlook

According to EIA, the impact of continued lower drilling activity, following the number of working US gas rigs hitting a low of 665 in mid-July 2009, will contribute to the 2.6% production decline it forecast for 2010. "While the number of working gas rigs is currently about 25% below the year-ago level, [it] has increased during the last month by about 100 rigs to a total of 861 at the end of January," it said.

Current 2010 futures prices of $5.50-6.70/MMbtu "appear to provide the necessary economic incentive to expand drilling programs even further," it added. "As a result, EIA expects monthly gas production to begin to slowly increase later this year and con-

WATCHING GOVERNMENT

Nick Snow, Washington Editor

Blog at www.ogjonline.com

Utah council has people talking

Utah was very much in the news a year ago after US Interior Secretary Ken Salazar ordered the Bureau of Land Management to reject 77 successful bids from a December 2008 lease sale. Several members of the state's congressional delegation angrily criticized the move.

Others reacted differently. Soon after he became governor last year, Gary R. Herbert, a Republican, contacted former Salt Lake City Mayor Ted Wilson, a Democrat, and asked if he could pick his brain about energy and environmental issues. After talking for several hours, Herbert asked Wilson to lead a new Balanced Resource Council.

"These are matters that have become so polarized that progress has become all but impossible," Herbert said during his Jan. 26 State of the State address. "This unprecedented partnership will provide a much-needed new 'state of mind' on environmental issues."

He may have exaggerated when he called it an unprecedented partnership. When this columnist started covering Utah energy issues in the mid-1970s, the state government formed such a council to discuss managing impacts from building proposed coal-fired electric power plants in rural areas.

'A tradition'

"We have a tradition of this," Wilson said in a Feb. 12 phone interview. "The governor asked me to put the council together now to interject itself into old, classic disputes as well as new ones, and try to work things out. I liked the idea."

Groups and individuals already were reaching agreements, he continued. Bill Barrett Corp. has worked some out with the Southern Utah Wilderness Alliance involving sites in eastern Utah, said Wilson, who has served on the group's board.

"Bill Barrett has been very creative talking to SUWA," he added. "As an environmental guy, I'm encouraged when someone like him tells me how drill sites can be smaller and roads can be less intrusive."

One issue the council is trying to resolve involves roads across public lands that producers need to reach leases, he explained. Several state and federal agencies can become involved, creating delays.

Wilson said the council has proposed to the US Department of the Interior that administration of such roads be given to each county, and that unresolved disputes be taken to court as a group.

With environmentalists

"Basically, we are trying to make oil and gas leases more accessible," he said. "We're trying to do this with environmentalists at the table. They don't like surprises. It gets their dander up."

What's important is that people are willing to meet and discuss issues, Wilson continued. "People are tired of fighting. They want to sit down and talk to the other side," he said. That includes Herbert, he added. While he is in Washington for the National Governors Association's winter meeting, the governor plans to meet with Deputy US Interior Secretary David J. Hayes and ask when DOI plans to get to the second phase of its study of those 77 leases. ✦

tinue on an upward trend through the end of 2011."

Total gas in storage was 2,406 bcf on Jan. 29, 150 bcf more than the previous 5-year average and 199 bcf higher than the comparable 1999 week's level, the forecast noted. "Colder-than-normal temperatures in the first half of January led to the largest consecutive-week withdrawal on record as a total of 511 bcf was pulled from storage," it said. Withdrawals for the 2 weeks ended Jan. 15 were a combined 317 bcf above the average withdrawal for the corresponding weeks over the previous 5 years, it observed.

Considerably warmer temperatures during January's final 2 weeks led to withdrawals totaling 201 bcf, compared to the previous 5-year average of 357 bcf for the comparable period, EIA said. It said that it anticipates working gas inventories will finish 2010's first quarter at about 1,644 bcf, or 7% higher than the 2005-09 average.

The Henry Hub spot price averaged $5.83/MMbtu in January, 49¢ more than December's average spot price and 36¢ higher than January's forecast price in last month's STEO, according to the forecast. The spot gas price peaked at $7.51/MMbtu on Jan. 7 as colder weather tightened its grip on much of the country, then fell to about $5.30/MMbtu by the end of the month as temperatures eased, it said.

EIA said that it expects the Henry Hub spot price to average $5.37/MMbtu in 2010 and $5.86/MMbtu in 2011, with relatively high inventories and increased domestic production keeping prices from rising too dramatically. ✦

Texas takes legal steps to stop EPA from regulating GHGs under CAA

Nick Snow
Washington Editor

Saying the US Environmental Protection Agency wrongly outsourced scientific review to a United Nations commission, Texas government leaders said on Feb. 16 that the state will legally challenge EPA efforts to regulate greenhouse gases under the Clean Air Act.

Separately, a coalition of eight national trade associations, including three from the oil and gas industry, mounted their own legal challenge of EPA's proposed GHG regulations on the same day. The US Chamber of Commerce, the nation's largest business association, announced similar plans on Feb. 12.

"Texas is aggressively seeking its future in alternative energy through incentives and innovation, not mandates and overreaching regulation," Gov. Rick Perry (R) said at a press conference in Austin with Atty. Gen. Greg Abbott and Agriculture Commissioner Todd Staples.

"EPA's misguided plan paints a big target on the backs of Texas agriculture and energy producers, and the hundreds of thousands of Texans they employ," Perry stated, adding, "This legal action is being taken to protect the Texas economy and the jobs that go with it, as well as defend Texas' freedom to continue our successful environmental strategies free from federal overreach."

Perry said Texas has filed a petition for review with the US Court of Appeals for the DC Circuit, and also will file a petition for reconsideration with EPA, asking Administrator Lisa P. Jackson to review her finding that GHGs threaten public health and safety and should be regulated under CAA.

The state argues that this endangerment finding is not legally supported because EPA relied on the UN's International Panel on Climate Change for scientific support. IPCC's global warming report has been discredited since e-mails were leaked showing that key scientists coordinated efforts to hide flaws in their research and tried to keep contravening evidence out of reports, according to Abbott.

'Parade of controversies'

Perry said, "Prominent climate scientists associated with the IPCC were engaged in an ongoing, orchestrated effort to violate freedom of information laws, exclude scientific research, and manipulate temperature data. In light of the parade of controversies and improper conduct that has been uncovered, we know that the IPCC cannot be relied upon for objective unbiased science, so EPA should not rely upon it to reach a decision that will hurt small businesses, farmers, ranchers, and the larger Texas economy."

The state's actions came the same day that the American Petroleum Insti-

"Texas is aggressively seeking its future in alternative energy through incentives and innovation, not mandates and overreaching regulation," Texas Gov. Rick Perry (R) said at a Feb. 16 press conference in Austin with Atty. Gen. Greg Abbott and Agriculture Commissioner Todd Staples about the state's challenge of the US EPA's proposed GHG regulations. Texas Governor's Office photo.

tute, National Petrochemical & Refiners Association, Western States Petroleum Association, and five other large trade organizations jointly challenged EPA's finding that GHGs from new motor vehicles and engines contribute to air pollution which poses a threat to public health.

The group is focused first on significant impacts that the endangerment finding will have on stationary sources of GHGs, according to Matt Paulson, a partner in Baker Botts LLP's Austin office who filed a petition in the DC Circuit Court of Appeals on the coalition's behalf.

"Specifically, because the [CAA] was not designed to address a problem like global climate change but rather is intended to address local or regional pollution such as smog, EPA's endangerment finding will open the door to what will be, as acknowledged by EPA, burdensome and wholly unworkable permitting requirements for stationary sources," Paulson said.

Paulson emphasized that the organizations are not disputing the science behind the existence of global change itself, but believe that EPA's record supporting its endangerment finding is inadequate. Four days earlier, when the US Chamber of Commerce announced that it filed a formal petition challenging EPA's decision, Steven J. Law, its chief legal officer and general counsel, made a similar statement.

Tremendous burden

In comments filed with EPA in 2009, Perry noted that regulating GHGs under CAA would impose a tremendous regulatory and financial burden on farmers and ranchers, small businesses, and an energy industry that employs hundreds of thousands of Texans. Families in the state would each face an estimated additional $1,200/year in living costs under the scheme, he added.

"Around the world, Texas has a well-deserved reputation as a rich source of traditional fuels," Perry said on Feb. 16. "Thanks to bountiful natural resources and an entrepreneurial culture, we have been providing energy for our nation and world for almost as long as there has been a Texas. As a result, we understand that those traditional energy sources are an essential part of any viable energy strategy to meet the needs of our state and nation.

"Unfortunately, the powers-that-be in Washington are anxious to usher in a 'new era' by tearing down the old one, using sweeping mandates and draconian punishments to force the square peg of their vision into the round hole of reality," he continued. "In the process, they are preparing to undo decades of progress while painting hard-working entrepreneurs as self and destroying hundreds of thousands of jobs."

Perry commented that Texas has aggressively staked its energy future on alternative and renewable technologies through incentives and innovation instead of mandates and regulations. It produces more power from wind than any other US state, and more than all but four of the world's countries, he indicated. It also is investing heavily in solar energy, with three utility-scale projects due to begin construction soon and others being developed, he added.

Commissioner Staples noted that Texas agriculture, which accounts for $106 billion or 9.5% of the state's gross product, would be disproportionately damaged by EPA's proposed regulations. "As a regulatory agency, the Texas Department of Agriculture is required to impose rules based on sound science, not political science," Staples said, adding, "Not only does state law require this, but it is also a fundamental principle by which regulators all across the US have always lived. EPA has ignored extensive research on [GHG] emissions and based this significant regulation on faulty data." ✦

BP, ConocoPhillips drop out of Climate Action Program

Nick Snow
Washington Editor

BP PLC and ConocoPhillips are leaving the US Climate Action Program because they believe they can be more effective on their own in the national global climate-change debate, the companies separately announced on Feb. 16.

Their departure leaves Royal Dutch Shell PLC as the only oil company in USCAP, which was formed to formulate a climate-change legislative blueprint for Congress to consider. Earth-moving equipment manufacturer Caterpillar Inc. of Peoria, Ill., also said it is leaving USCAP.

USCAP still includes as members other businesses, including six utility holding companies, as well as conservation groups. BP and ConocoPhillips officials emphasized that the group has been a pioneer in helping federal legislators shape policy.

"As an active member of USCAP, we owe a great deal of credit to our colleagues, both companies and nongovernment organizations alike," ConocoPhillips Chief Executive Officer James J. Mulva said in Houston. "USCAP's diverse membership and high-level

commitment have made it a true pioneer in climate change debate, and we have highly valued our involvement."

BP spokesman Ronnie Chappell told OGJ on Feb. 17, "We also believe that USCAP accomplished what it intended when we joined it as a founding member: to develop a high-level framework for shaping legislation. We believe its blueprint is a fine model of executives and industries coming together to help shape legislation, and we will continue to support using this blueprint."

Soon after issuing its Blueprint for Legislative Action on Jan. 15, 2009, however, USCAP drew fire from companies which were not members, including several in the oil and gas industry, for supporting enactment of a domestic carbon cap-and-trade program to limit greenhouse gas emissions. The criticism intensified after the House passed a bill cosponsored by Reps. Henry A. Waxman (D-Calif.) and Edward J. Markey (D-Mass.) in late June which several trade associations said favored some industries over others.

"House climate legislation and Senate proposals to date have disadvantaged the transportation sector and its consumers, left domestic refineries unfairly penalized vs. international competition, and ignored the critical role that natural gas can play in reducing GHG emissions," Mulva said on Feb. 16. "We believe greater attention and resources need to be dedicated to reversing these missed opportunities, and our actions today are part of that effort." Chappell said, "We think we can be a more-effective participant in the effort to pass comprehensive climate change legislation as BP instead of part of a larger organization. We expect the effort to pass climate change legislation to continue, and we expect there to be more detailed discussions of specific proposals." ✦

NARUC study lists adverse impacts for ongoing OCS ban

Nick Snow
Washington Editor

Continuing US offshore oil and gas leasing moratoriums from 2009 through 2030 would decrease US oil production by 9.9 billion bbl—or an average 15%/year—and natural gas production by 46 tcf—or 9%/year—a study commissioned by the National Association of Regulatory Commissioners concluded.

The study, which NARUC released on Feb. 15 during its 2010 winter meeting in Washington, DC, also predicted that US oil imports from members of the Organization of Petroleum Exporting Countries would climb by 4.1 billion bbl, or an average 19%/year, during 2009-30 if US offshore leasing bans continue. This would result in $607 billion more in payments to OPEC producers, or $295 billion on a net present value basis, it said.

NARUC added that total net gas imports (by pipeline or as LNG) would increase by 15.7 tcf, or nearly 75%/year; energy-intensive industries would lose 13 million jobs, or an average 0.36%/year; and housing starts would drop by nearly 200,000, or 0.46%/year.

The study also projected average annual prices increases of 17% for gas, 5% for electricity, and 3% for motor gasoline without more domestic OCS oil and gas activity. It estimated that real energy costs to consumers would climb by $2.35 trillion ($1.15 trillion NPV or $3,700/capita), or an average 5%/year; and import costs for crude, products, and gas would increase cumulatively by $1.6 trillion ($769 billion), or more than 38%/year.

"Higher energy prices, greater volatility, expanded foreign dependence, and $2.3 trillion less for everyday Americans to spend—and that's just the tip of the iceberg," said Consumer Energy Alliance Pres. David Holt, who spoke at the NARUC gas committee meeting where the report was presented.

'Inertia of inaction'

"The good news is that this report describes a scenario for the future that we don't have to accept, and mustn't," Holt said. "The bad news is that, despite overwhelming support for new energy exploration among the American people, the inertia of inaction that has defined this debate will be difficult to overcome."

"This landmark study attests that a drilling ban along the OCS and some restricted onshore lands carries an estimated adverse effect on [US gross domestic product] of more than $2 trillion between now and 2030," observed Natural Gas Supply Association Pres. R. Skip Horvath. "By not allowing drilling in the OCS and many restricted onshore areas, the study estimates that 285 tcf of gas will remain off-limits to the American people, enough to meet our needs for more than 12 years at current levels of consumption."

American Gas Association Pres. David N. Parker said, "It's clear from this report that the status quo on energy production simply won't suffice. We encourage lawmakers to heed the results of this study and take a closer look at the energy-rich areas in our country that are currently off-limits."

NARUC directors adopted a resolution in 2007, supported by the Interstate Oil & Gas Compact Commission, which instituted the study, guided by a large and diverse study group of private and public sector energy experts. Science Applications International Corp. provided energy expertise and market modeling capabilities, with the Gas Technology Institute as a subcontractor providing oil and resource and development expertise, NARUC said.

"The previous administration and

Congress removed oil and gas moratoriums on offshore public lands over a year ago, but required actions to access the energy resources there have not been taken," said O'Neal Hamilton, the study group's chairman and a former chairman of both NARUC and the South Carolina Public Service Commission.

Study's purpose

Hamilton said, "Whether additional federal lands should be leased for energy development, and under what conditions leasing should occur, is a matter for national energy policy decision makers. Our research allows policymakers to know the extent of the resource base and the effects that maintaining the restrictions would have on the country."

GTI's domestic resource assessment for the study suggested that US gas resources would climb by 132 tcf onshore and 154 tcf offshore, excluding parts of Alaska, from 2009 to 2030. It estimated that domestic crude resources could grow by 36 billion bbl offshore and by 6 billion bbl, all within the Arctic National Wildlife Refuge. It projected no increase for onshore crude resources in the Lower 48 states.

"With these additions, GTI estimates the current resource base [will] increase from 1,748 tcf to 2,034 tcf for gas and from 186 billion bbl to 229 bbl for oil," the study's executive summary said. "The increases are driven by two primary factors: the increased shale gas activity and development successes, and an increase in resource estimates for the currently restricted offshore areas to better reflect the impact of new technology and successes in the currently available and developed offshore areas."

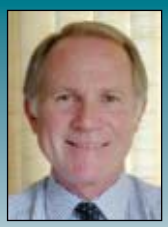
The study noted that if resources in areas which previously were covered by congressional moratoriums or presidential withdrawals are not developed, there would be no new environmental effects attributable to their development.

"However, as a nonmodeled item,

WATCHING THE WORLD

Eric Watkins, Oil Diplomacy Editor

Blog at www.ogjonline.com



Mexico's big changes

Mexico's oil and gas industry is in for some very big changes, especially in the amount of LNG it plans to import in the near future.

The Mexican government recently unveiled that future with its annual natural gas demand forecast, which estimates that its LNG imports will spiral by 60% in 2010 alone.

Altogether, Mexico's imports of LNG will average 586 MMcfd this year, up from 367 MMcfd in 2009.

But the story does not stop there, as government estimates see Mexico's gas demand rising to 11.2 bcfd in 2024 from 7.204 bcfd in 2008, while the country's production will rise to 8.7 bcfd in 2024.

What does Mexico plan to do about the 2.5-bcfd shortfall? Experts say that brings LNG imports into play, and a number of international firms have already positioned themselves for the expected business.

Enter STX

Among them is South Korea's STX Heavy Industries, which last week said it won a $700 million order to build an LNG terminal at the Port of Lazaro Cardenas on Mexico's west coast.

Under a joint development agreement with Mexico's Group Indi, STX will be in charge of design, construction, and trial operation of the 3.8 million tonne terminal, with construction to begin early next year and finishing in the latter half of 2014.

According to IndiEnergy, an affiliate of Group Indi, the agreement also calls for the construction of two 200,000-cu m LNG carriers in addition to the regasification facility—with the imports all headed for Mexico's state-owned Petroleos Mexicanos.

One STX source said the project is a starting point "to expand our business in the Latin American market," adding, "We will position as a global player in the Latin American plant market."

Plant market?

What is meant by the plant market? Well, it's a reminder of the recent agreement by Mitsui and Tokyo Gas to buy five gas-fired power plants and a small related gas pipeline in northeastern Mexico from Spain's Gas Natural.

In December, the Spanish group announced the $1.23 billion sale which includes several thermal plants: Anahuac (495 Mw), Lomas del Real (495 Mw), Valle Hermoso (500 Mw), Electricidad Aguila Altamira (495 Mw), and Saltillo (248 Mw).

The entire output of the power plants is contracted to state Comision Federal de Electricidad under 25-year power purchase agreements, out to 2026-30.

No one needs reminding that Mitsui owns 25% of the 500 Mmcfd Altamira LNG terminal on Mexico's east coast, while a Mitsui-led consortium 2 years ago won a tender to build the 500 MMcfd Manzanillo terminal on Mexico's west coast.

Mitsui and Tokyo Gas are said to have high hopes they will reap stable profits in Mexico, which, spurred by its economic development, has been experiencing a rising demand for power and for the gas that runs the turbines.

Yes, indeed. Big changes are coming to Mexico. ✦

the study observes that there could be environmental effects on domestic and international waters as a result of increased tanker transport of oil and gas imports and unknown environmental effects in countries from which the US would import the resources," it added. ✦

Argentina closes ports to ships visiting Falklands

Eric Watkins
Oil Diplomacy Editor

Argentina's President Cristina Fernandez, intent on increasing tension over oil exploration in the South Atlantic, has signed a government decree restricting the movement of vessels between the Argentine mainland and the Falkland Islands, also known as Las Malvinas.

"Every ship or vessel intending to transit between ports located on the Argentine mainland and ports located in the Malvinas, South Georgia, and South Sandwich Islands, or through Argentine waters toward the latter, and/or loading goods to be transported directly or indirectly between these ports must request prior authorization by the competent national authority," the decree stated.

Fernandez's decree follows last week's detention of a ship by Argentine authorities, who claimed the vessel had already visited the Falkland Islands and was loading a fresh cargo of oil pipes for a return visit—a claim rejected by Techint, which said the steel tubes were for customers in the Mediterranean (OGJ Online, Feb. 12, 2010).

The president's chief of staff Anibal Fernandez said the government announcement was accompanied by the creation of a new commission comprised of various ministries to oversee and coordinate the actions needed to fulfill the decree. The commission includes officials from the foreign and defense ministries, along with others from Customs, and Ports and Waterways.

The aim of the commission is to develop a registry with statistical data of vessel movements in the area and cross them with ship activities both in the UK and the Falklands. The commission is also assessing the legal framework and the commercial impact of the enforcement of such measures.

Respect for international law, said Anibal Fernandez, "obliges us to defend the interests of the Argentines, to take such decisions that allow us to go to a point that guarantees not only the defense of sovereignty but of all the resources that may exist" in the islands.

Apart from the new decree, the Argentine ministry of foreign affairs also is reported to have adopted a strategy aimed at creating a framework of insecurity for all of the so-called "illegal" activities in the disputed area which are geared to exploit what the Argentineans refer to as "our" resources.

"Offshore oil drilling is a very high risk operation and if a sense of insecurity can be injected, it should further discourage the enterprise," said one Argentinean official.

Exploration operations are set to begin next week with the arrival of the Ocean Guardian oil rig. British authorities have already expressed concerns that Buenos Aires will seek to disrupt the movement of the vessel into the waters surrounding the Falklands.

That idea took on further weight this week as local media reported that the Argentine defense ministry is tracking the rig's course and has supplied the foreign ministry with pictures of the "floating platform" being towed just south of the Uruguayan coastline. ✦

UFIP: French refining industry situation 'critical'

Doris Leblond
OGJ Correspondent

The French refining industry faces a "critical" situation as part of a European system in which "between 10 to 15% of the 114 refineries should be shut down to restore a demand-supply balance," says the leader of a trade group.

Jean-Louis Schilansky, president of Union Francaise des Industries Petrolieres (UFIP), gave that assessment at a press conference Feb. 4 in Paris.

In an industry outlook, Schilansky noted that demand for oil products in France last year dropped by 2.8% in a change he called "structural."

Refinery runs for all of last year fell to 72 million tonnes from 84 million tonnes in 2008 as margins diminished.

Schilansky said gasoline exports fell by 17% last year, while gas oil imports grew by 38%. Average gross refining margins fell to €15/tonne from $23/tonne during 1995-2008.

Since March 2009, Schilansky added, the French refining industry has lost €150 million/month.

With a planned storage hub at the Marseille-Fos port targeting capacity of 1.1 million cu m and 80,000 cu m becoming available at the Fos Oil Depot, French refiners face growing competition from abroad.

As explained to OGJ by Esso SAF's Head of Communications and External Relations Jean-Francois Dussoulier, this means that the much cheaper products from refineries abroad will be able to compete with France's more expensive products.

Strikes hit Total's refineries in France

Doris Leblond
OGJ Correspondent

Total SA's six refineries and 12 product depots in France have been hit by labor strikes supporting the Feb. 16 takeover by workers of the idle 137,000-b/d Dunkirk refinery.

The Dunkirk workers are calling for restart of the facility, where operations were suspended in mid-September 2009 (OGJ Online, Feb. 2, 2010).

Total has rescheduled for Mar. 29 a meeting at which the refinery's future will be outlined. But the workers want to know immediately what will happen to their jobs.

The trade unions claim that 95% of the workers at the Dunkirk, Donges, Grandpuits, Feyzin, Provence, and Normandy refineries are striking. The strike was scheduled for Feb. 17 and 18 but could be extended, they said.

Capacities at Total's French refineries total about 1.1 million b/d.

Total spokesman Michel Crochet-Vourey told OGJ that 70-80% of the shift workers at the refineries were on strike and that only 12 of 41 depots are blocked.

"There is not a significant impact on supplies," he said.

"This is already happening", he said, pointing to the rise in diesel oil imports.

Adding to problems of France's refining industry are potential costs of European Union and French regulatory initiatives, "which will render more fragile the more vulnerable installations," Schilansky said.

Changes to the EU's emissions trading system in 2013 will add an estimated €2.0/tonne to the cost of processed crude if carbon allowances cost €30/tonne. And the Industry Emissions Directive (IED), which requires replacement of heavy fuel oil used in refineries by gas, should add €2.5/tonne. Investment required by the change will be about €1 billion.

And France has imposed requirements that so far have not been adopted elsewhere estimated to add costs of €100 million over 5 years and afterwards €25 million/year. ✦

Calvalley tests Kohlan, basement in Yemen

Calvalley Petroleum Inc., Calgary, has tested oil and gas-condensate from fractured granitic basement and gas-condensate from Jurassic Kohlan sands at its Qarn Qaymah-2 deep exploratory well in central Yemen's Block 9 in the Masila basin.

The well's estimated hydrocarbon column exceeds 380 m in fractured granitic basement in a structure larger than 37 sq km. Production tests through 2⅞-in. tubing yielded a natural flow of 43° gravity sweet crude, 55° gravity condensate, and associated gas at fluctuating rates that reached a maximum of 2,350 b/d of oil and condensate with no formation water.

A sustained rate could not be achieved due to excessive hydrostatic head (greater than 3,500 m), but management believes a sustainable rate can be attained with an electric submersible pump. A system is being designed.

Calvalley perforated the overlying Kohlan sands twice over a 13-m interval. After the first set of perforations were shot, the well flowed condensate-rich natural gas at an initial rate of up to 3.8 MMcfd. After several days, the rate dropped and stabilized at 350 Mcfd as the wellbore loaded with condensate.

The result of the first flow test indicated ineffective initial perforations and potential formation damage. Calvalley reperforated the Kohlan with mild acidization with marked improvement. The well flowed for an extended period at 2-3.5 MMcfd with 70 bbl/MMcf of condensate. Management believes further acidizing is warranted.

Kohlan sands in the Qarn Qaymah fairway display regional blanket sand characteristics with the fairway extending over 34 sq km of Block 9. Recent success by other operators in the area has a positive implication for both Kohlan and FGB potential, Calvalley said. TD is 3,975 m measured depth, and the basement was drilled at a 70° inclination.

Calvalley plans to drill four more deep wells on the same fairway in 2010.

At Ras Nowmah-1, an exploratory well between Hiswah and Al Roidhat fields, Calvalley cut 45 m of gross oil pay in high-quality reservoir rock including 35 m in the Cretaceous Qishn and 10 m in the Cretaceous Saar formation. Production casing was set, but a stuck downhole completion assembly awaits a fishing job in March. The first of two follow-up wells is to spud by the end of March.

Calvalley will abandon the Salmin-1 exploration well near the block's western edge. The primary target, a seismically identified carbonate buildup prospect in the Jurassic Madbi formation, had nonreservoir quality rock, and 10 ft of Kohlan sand had moderate hydrocarbon shows.

Agreements are to be signed in February 2010 for the sale of blended crude from Block 9 through Block 51 to the Masila system in Block 14 for export. Trucking is to start in the third quarter of 2010, and engineering of a pipeline to replace the trucking will begin as soon as the agreements are signed. ✦

Williams to restructure, enlarge partnership

Williams Cos. Inc., Tulsa, will fold its natural gas pipeline and US midstream businesses into Williams Partners LP, along with its limited and general-partner interests in Williams Pipeline Partners LP, in a partnership-transforming restructuring valued at $12 billion.

In other recent company news:

• Enterra Energy Trust announced that its board unanimously approved the conversion of the trust to a corporation to be named Equal Energy Ltd. In response to changes in Canada's tax laws regards trusts, effective Jan. 1, 2011.

• Heritage Oil PLC said Eni International BV has terminated "with immediate effect" its previous agreement to buy with Heritage's interest in Blocks 1 and 3A in Uganda.

• Petroleo Brasileiro SA (Petrobras) exercised its preferential rights to acquire Devon Energy Corp.'s 50% interest in Gulf of Mexico's Cascade field.

• Callon Petroleum Co., Natchez, Miss., has added onshore and unconventional assets to its Gulf of Mexico properties and set a $61.7 million capital budget for 2010.

• Niko Resources Ltd., Calgary, will buy Voyager Energy Ltd., which has interests in Trinidad onshore blocks. Voyager's board unanimously approved, and shareholder will be polled in March.

Williams restructuring

Williams' gas pipeline assets include 100% of Transcontinental Gas Pipe Line Co., 65% of Northwest Pipeline GP, and 24.5% of Gulfstream Natural Gas System LLC. Williams also will contribute its general-partner and limited-partner interests in Williams Pipeline Partners, which owns the remaining 35% of Northwest Pipeline.

Williams will own about 80% of new, much larger Williams Partners, up from 24% of current partnership. The company said it will be able to allocate more capital to exploration and production for growth and diversification.

The midstream assets include Williams' operations in Rocky Mountains and Gulf Coast, as well as its recently added business in Pennsylvania's Marcellus shale. These assets encompass seven processing trains totaling 2.3 bcfd of capacity in the Rockies and four processing trains on the Gulf Coast.

The Gulf Coast processing trains are integrated with five major deepwater oil and gas pipeline systems and two platforms to handle production in deepwater Gulf of Mexico. The midstream assets also include various equity investments in domestic processing and fractionation assets, said the announcement.

For the asset contributions, Williams will receive from Williams Partners some $3.5 billion cash, less Williams Partners' transaction fees and expenses, plus 203 million Williams Partners limited-partner units, and will maintain its 2% general-partner interest, said the announcement. Williams Partners also will assume about $2 billion of existing debt associated with the gas pipeline assets.

The transaction will immediately add to Williams Partners' distributable cash flow/limited-partner unit. Williams expects this restructuring to increase recurring earnings and cash flow and enable the company to pursue a "greater number of investment and growth opportunities."

Upon completion of the transactions, Williams will continue to be an integrated natural gas company but with a simplified corporate structure, said the announcement. Williams will retain its full ownership and control of general partner Williams Partners. The restructuring will increase Williams' combined general-partner and limited-partner ownership interest in Williams Partners to about 84%.

Williams will continue to focus on the success of Williams Partners, given its large ownership position and preeminent exploration and production business. Williams is the tenth largest natural gas producer in the US, and its primary production areas are in the Piceance, Powder River, San Juan, and Fort Worth basins. Williams also has a growing position in the Marcellus shale in the Appalachian basin where it recently began operations.

Williams will retain the olefins and Canadian midstream businesses and will retain the remaining 25.5% interest in Gulfstream, in accordance with certain limitations in Gulfstream's governing documents. This interest would be eligible for contribution to Williams Partners in the future.

Enterra restructuring

Don Klapko, Enterra president and chief executive officer, said, "We are relaunching Enterra as Equal Energy to create a new market brand with the conversion." Canada changed its tax laws regarding trusts as that all Canadian trusts must essentially pay taxes in the same manner that corporations are taxed.

The conversion would be subject to the approval of the trust's unitholders as well as customary court and regulatory approvals. The conversion is expected by May 31.

Equal Energy will continue to pursue the exploration and development of Enterra Energy Trust, which involve the Hunton natural gas and NGL play in Oklahoma. The company also wants to further develop its oil play in the west-central Alberta Cardium formation, and other Western Canadian Sedimentary Basin oil and gas prospects.

PERSONNEL MOVES AND PROMOTIONS

ConocoPhillips announces senior appointments

ConocoPhillips announced two senior leadership changes.

Robert Herman, currently president, Europe refining, marketing, and transportation, will become vice-president, health, safety, and environment. He succeeds **Bob Ridge**, who will retire after more than 31 years of service.

Larry Ziemba, currently president, US refining, will become president, global refining. In this expanded role, Ziemba will assume responsibility for all of ConocoPhillips's worldwide refining operations.

Other moves

Newfield Exploration Co., Houston, has named **Lee K. Boothby** to the additional role of chairman, effective upon his reelection at the company's annual stockholders' meeting on May 7. He currently serves as president and chief executive officer.

Boothby was named president in early 2009 (OGJ Online, Feb. 6, 2009). He was named chief executive officer and elected to Newfield's board in May 2009 (OGJ Online, May 22, 2009).

Enterra Energy Trust made several management changes in preparation for its previously announced plan to convert to an exploration and production corporation to be named Equal Energy Ltd. (OGJ Online, Jan. 25, 2010).

Shane Peet was appointed senior vice-president, engineering. Peet has served in several roles with Enterra since August 2009. Most recently Peet served as chief operating officer of Wild River Resources Inc. In his new role, he will be responsible for Canadian exploitation and operations.

Terry Fullerton was promoted to vice-president, Canadian exploration. Fullerton has 21 years of experience generating successful exploration plays with various Canadian companies ranging from start-ups to large firms.

Peter Letizia has been promoted to vice-president, production for Canada. Letizia joined Enterra in 2007 as production manager and brings 18 years of varied experience with large and small companies. Letizia's expanded responsibilities will include Canadian production assurance and leadership of health, safety, and environment initiatives.

Zion Oil & Gas Inc., Dallas, has named **William L. Ottaviani** as president and chief operating officer.

Ottaviani, a petroleum engineer, has been with Chevron Corp. in 1982-2007 working in Angola, Indonesia, and the US. He was chief operating officer of Rex Energy Corp. in 2007-09.

Zion Oil & Gas holds three petroleum exploration licenses that cover 327,000 acres in Israel.

Eni ends Uganda deal

An Eni spokesman said, "Eni today revoked the sale and purchase agreement (SPA) signed on Dec. 18 for the acquisition of Heritage's 50% share in Ugandan Blocks 1 and 3A…."

Heritage said the termination followed Tullow Uganda Ltd.'s exercise of a preemption right with respect to the transaction and was allowed under the terms of the Eni SPA.

Heritage said Eni's termination should expedite completion of the SPA entered into between Heritage and Tullow on Jan. 26, which is on the same terms and conditions as the Eni SPA.

In December, Eni agreed to purchase the interests from Heritage for $1.35 billion in cash and a deferred payment of $150 million or an interest in another oil-producing field valued at the same amount.

As a result of Eni's withdrawal, Tullow stands to become the sole owner of Blocks 1, 2, and 3A, which hold reserves estimated at more than 1 billion bbl of oil.

A formal request for the Ugandan government's consent to transfer the disposed assets to Tullow was submitted Feb. 2, and the transaction is expected to close within the first quarter.

Tullow wants Heritage's 50% share of Blocks 1 and 3A to attract a partner of its own choosing without reducing its own interests too much. With Tullow ready to acquire the acreage, the stage is set for the entrance of other players.

Tullow indicated it plans to bring in a partner to help with development of the Ugandan assets and also with construction of downstream facilities, such as a refinery and an export pipeline. Tullow Chief Executive Aidan Heavey last month said the firm's new partner would entirely fund development of a 1,200-km pipeline to export Uganda's oil to Mombasa.

Heavey also said the downstream development plan is likely to include a refinery, the size to be determined by a feasibility study in late March or early April (OGJ Online, Jan. 28, 2010).

Meanwhile, there has been no confirmation of reports late last week suggesting China National Offshore Oil Corp. and Tullow are on the verge of signing a $2.3-2.5 billion deal that would pave the way for the Chinese firm's entry into the project.

Petrobras buys gulf assets

After finalizing the transaction in about 60 days, Petrobras will hold 100% interest in Cascade.

Petrobras is developing Cascade together with Chinook field. The

Tethys Petroleum Ltd., Guernsey, UK, has named **Graham Wall** as chief operating officer.

Wall, promoted from his previous position as vice-president, technical, will head a strengthened operations team responsible for production, reservoir engineering and development, field planning, drilling and production operations, production geology, and well testing.

Tethys focuses on oil and gas exploration and production in Central Asia with activities currently in Kazakhstan, Tajikistan, and Uzbekistan.

Malaysia's Prime Minister Najib Razak said **Shamsul Azhar Abbas** was appointed president and chief executive of the state-owned Petronas, succeeding **Hassan Marican**.

Abbas served as president and chief executive of Petronas' shipping unit MISC Bhd. during 2004-09. Abbas also held senior positions in Petronas' chemical, oil exploration, and production divisions as well as in its logistics and maritime businesses.

Analyst IHS Global Insight said that Abbas inherits a number of problems, not least, "growing pressure from the Malaysian central government to utilize Petronas' revenue to help plug the biggest budget deficit in over 20 years, which in 2009 came in at 7.4% of GDP."

HighMount Exploration & Production LLC, Houston, has named **Jason A. Garner** as chief operating officer, effective Mar. 1.

Garner will succeed **James D. Abercrombie**, who is retiring. Abercrombie will remain with the company through the end of March to ensure a smooth transition.

Before becoming HighMount's western division vice-president, Garner worked in various engineering, planning, and management positions for Dominion E&P in Richmond, Va., Houston, and Oklahoma City.

HighMount E&P is a subsidiary of Loews Corp. It holds unconventional gas resources in the Permian, Michigan, and Black Warrior basins.

development includes the use of the first floating production, storage, and offloading vessel in the US portion of the Gulf of Mexico.

Petrobras expects the FPSO to be in operation in mid-2010.

Petrobras has a 66.7% interest in Chinook with the remaining 33.3% held by Total SA.

Maersk Oil had planned to acquire Devon's interest in Cascade prior to Petrobras exercising its preferential rights (OGJ Online, Jan. 26, 2010).

Callon adds to assets

Callon's budget is allocated 33% to Permian basin development drilling, 24% to Haynesville shale gas development, 9% to the gulf, and 13% for more leasehold acquisitions, and 21% is reserved for capitalized costs.

The revised strategy, 18 months in planning, is to reinvest cash flow from Habanero and Medusa deepwater gulf fields into onshore conventional oil and shale gas properties acquired in fourth-quarter 2009.

Callon plans to begin drilling this month and drill as many as 16 wells in 2010 and add more rigs in 2011 and 2012 in a Permian Basin Wolfberry low permeability oil play. It acquired a property with 1.6 million boe of net proved reserves and 350 boe/d of production. The operated property has 22 producing wells and 148 locations on 40 acres.

Estimated gross ultimate recovery is 80,000-100,000 bbl/well at $1.5 million/completed well. Spacing could be halved to 20 acres.

Callon will drill two horizontal wells starting in mid-2010 on a 577-acre Haynesville shale unit in Bossier Parish, La., on which it acquired a 70% operated interest for $3 million. Offset wells have flowed at initial rates of 20 MMcfd. As many as seven horizontal wells are possible. Estimated gross ultimate gas recovery is 6.4 bcf at $9 million/completed well.

Callon has 15% working interest in Murphy Oil Corp.-operated Medusa field, where eight wells averaged 2,000 boe/d net to Callon in 2009. Most wells are producing from their primary completion and have proved reserves behind pipe. Medusa has a proved reserve life of 7 years and is 89% oil.

Callon has an 11.25% working interest in Shell Offshore-operated Habanero field, where two wells averaged 1,000 boe/d net to Callon in 2009. Callon believes important proved reserves will be accessed by sidetracking updip from the existing wells.

Callon's gulf shelf assets averaged 14 MMcfd of net gas equivalent production in 2009. The company is evaluating options for monetizing the shelf assets and may retain its shelf operations if no viable alternative exists.

The company's gulf operations will generate the majority of Callon's operating cash flow in 2010. With minimal offshore capital requirements, this cash flow will be used to fund the onshore transition.

Niko-Voyager deal

Voyager is a partner in Niko's 2AB Block in Trinidad. Voyager also holds interests in the Shallow and Deep Horizon Central Range blocks and the Shallow and Deep Horizon Guayaguayare blocks in Trinidad.

Voyager has been successful in obtaining exploration opportunities in Trinidad, where Voyager management has active contacts and experience. Niko also noted that Trinidad provides a climate of political and fiscal stability supported by a government that promotes and encourages the development of the country's oil and gas industry.

Niko said it will benefit from the addition of Gerold Fong, Voyager president and chief executive officer, a key player in Voyager's success in the region. ✦

Two consortia awarded Orinoco Carabobo blocks

Eric Watkins
Oil Diplomacy Editor

Venezuelan President Hugo Chavez offered reassurances to international oil companies after state-owned Petroleos de Venezuela SA (PDVSA) signed agreements with two consortia to develop oil fields in his country's Orinoco belt.

"They say there's no type of judicial security here in Venezuela, and stuff like this, but it's not true," said Chavez, as he addressed senior executives from Chevron Corp., Repsol YPF SA, and other firms involved in the auction.

"You have all the guarantees for your investments, your profits, and the capital that you want to repatriate," said Chavez, who added that his country has too much oil for them to ignore. "You need to be here."

Underlining his country's importance, Chavez cited a recent US Geological Survey report stating that the Orinoco belt holds 513 billion bbl of recoverable heavy crude. In its report, USGS established a range of recoverable oil of 380-652 billion bbl and determined a mean estimate of 513 billion bbl (OGJ, Feb. 8, 2010, p. 16).

JVs formed

Chavez's remarks came after Oil Minister Rafael Ramirez announced that PDVSA will create joint ventures with the two consortia to develop two sectors in the Carabobo area of the Orinoco belt. The two winning groups each will hold 40% stakes, while PDVSA will hold 60%.

Under the previously released terms of the tender, the successful bidders are required to raise oil production at each block to at least 400,000 b/d and to finance the entire $10-20 billion cost of each project themselves.

The winners will have until March to finalize the joint venture with PDVSA and will need to take a final investment decision by yearend. After that, the companies will have a year to construct one bitumen upgrader for each of the projects.

PDVSA will form one joint venture with a consortium comprised of Chevron 34% and Suelopetrol 1% along with Mitsubishi, Jogmec, and Inpex sharing 5%. Ramirez said the group was awarded the Carabobo 3 block after agreeing to pay $500 million for drilling rights and a further $1 billion for financing to PDVSA.

The Carabobo 3 project includes development of three blocks: Carabobo 2 Sur, Carabobo 3 Norte, and Carabobo 5 (see map, OGJ, Nov. 21, 2005, p. 54). The project also includes construction of a heavy oil upgrader.

PDVSA's other JV will be undertaken with a consortium of Repsol YPF 11% and Petronas 11% together with Oil & Natural Gas Corp. 11%, Oil India Ltd. 3.5%, and Indian Petroleum Corp. 3.5%. Ramirez said that group was awarded the Carabobo 1 block after agreeing to pay a $1.05 billion signing bonus and another $1.05 billion to PDVSA for financing.

The Carabobo 1 project includes development of two blocks: Carabobo 1 Centro and Carabobo 1 Norte. The project also includes construction of a heavy-oil upgrader.

Ramirez said a third area up for bidding, Carabobo 2, went unassigned and that Venezuela would have to wait until a later time to determine how the block would be developed. According to Chavez, "It is still available."

Meanwhile, despite the upbeat tempo of Venezuelan officials, doubts have lingered over whether IOCs would invest in the country under the rule of Chavez, who has nationalized the assets of scores of foreign companies, including those of ExxonMobil Corp. and ConocoPhillips.

Concerns raised

Such concerns were voiced by William Edwards, an oil analyst with Edwards Energy Consultants, who said the IOCs that have signed on might be taking a risk because Chavez could launch another wave of state takeovers.

"I'd say it's very risky because once you're investing money in the country, the government is your partner," Ed-

wards told OGJ. "They could set one set of rules to invite you in, then they can change the rules. Venezuela has a history of doing exactly this. That's what makes this so risky."

Nonetheless, Chevron Vice-Pres. George Kirkland expressed optimism over the new agreement, saying, "We look forward to being part of this new opportunity that will expand development of one of the world's largest known hydrocarbon resources."

Japan's Ministry of Economy, Trade, and Industry likewise said it welcomes the choice of the Inpex-Mitsubishi Corp. consortium as a developer, as it will help the country to secure stable energy supplies.

According to earlier reports, PDVSA's strategic plan calls for the investment of about $15 billion during 2006-12 to increase heavy oil production from the Orinoco tar belt of Venezuela to 1.2 million b/d from the present level of 600,000 b/d. ✦

EOG tests Bossier pay on Haynesville spread

EOG Resources Inc., Houston, will drill several wells in 2010 to prove its belief that Jurassic Bossier dry gas pay exists on at least half of its 160,000 acres in the Jurassic Haynesville play in Northwest Louisiana and East Texas.

The Sustainable Forest horizontal well in DeSoto Parish, La., flow-tested at 13 MMcfd at 7,625 psi flowing tubing pressure, said Mark G. Papa, chairman and chief executive officer.

"It looks to us based on a couple of months' production from the Sustainable Forest well as if productivity and reserves from the Bossier are about identical to a typical Haynesville well," Papa said on a Feb. 10 conference call. EOG monitored the well to make certain the frac job stayed in Bossier and didn't penetrate the Haynesville about 200 ft deeper.

The two formations, which EOG will develop with separate wells, have similar maturation, and clay is slightly higher in the Bossier, the company said.

EOG is completing another Bossier well and plans to drill 70 gross Haynesville and Bossier wells in 2010, most of which will be Haynesville wells.

Papa said EOG subscribes to a theory that if an operator may increase the ultimate recovery of a Haynesville well if it doesn't pull the well quite so hard in the first year on production, but he said the company doesn't have enough data to confirm that the practice works. ✦

Aussie firm to get largest French land permit

Elixir Petroleum Ltd., Sydney, will acquire East Paris Petroleum Development Ltd., which holds France's largest onshore exploration block.

Northeastern France's 1.32 million acre Moselle permit, awarded in January 2009 with no drilling requirement, is prospective for numerous play types including tight sand and shale gas, coalbed methane, and conventional gas.

Moselle has 21 exploration wells, of which 12 had oil and-or gas shows, and more than 3,000 line-km of 2D seismic. Gas pipelines cross the permit area.

"It is Elixir's intention to apply its experience in the identification, evaluation, and presentation of new exploration opportunities for farmout, particularly for exploration and appraisal drilling, to the exciting potential of the Moselle Block," Elixir said.

Adjoining Moselle to the northeast is the Lorraine permit owned by European Gas Ltd., which published a contingent gas resource estimate of 3.69 tcf and is testing the Folschviller-2 well (OGJ Online, Jan. 29, 2007). West of Moselle is 100-plus bcf Trois-Fontaines Triassic gas field, in production since 1982 and operated by Gaz de France. ✦

Three-company group gets blocks off Uruguay

A three-company group has signed an agreement with Uruguay's state ANCAP, Montevideo, to explore two blocks on the Uruguayan continental shelf.

Petroleo Brasileiro SA of Brazil will operate one of the blocks, and Argentine firm YPF SA will operate the other. Galp Energia of Portugal is the third company in both groups.

Signing of the production sharing agreement completes the bid process for the exploration blocks under Ronda Uruguay 2009 for the Pelotas and Punta del Este basins. The partnership made the best offer in July 2009 for Blocks 3 and 4 in the south-southeastern region of the Punta del Este basin (see map, OGJ, July 20, 2009, p. 40).

Block 3 is 300 km off Uruguay in 200-1,500 m of water, and Block 4 is 150 km off the coast in 100-200 m of water.

Petrobras will operate Block 4 with 40% interest, and YPF has 40% and Petrogal 20%. YPF will operate Block 3 with 40%, and Petrobras has 40% and Petrogal 20%.

The companies have 4 years to study seismic data and decide whether to drill. In the tender, the companies committed to shoot 2D seismic surveys and reprocess existing data. ✦

China

Primeline Energy Holdings Inc., London, and China National Offshore Oil Corp. plan to spud an exploratory well in mid-2010 in the East China Sea.

Subject to board approval, a jack up rig will drill the well on Block 25/34 at the LS35-3-1 location about 14.5 km from the Lishui 36-1 gas-condensate discovery. The location, one of several targets identified on a 3D seismic sur-

vey, is close enough to be tied back to Lishui 36-1, for which a development plan is to be submitted soon.

The companies are committed to drill two exploration wells on the block by April 2012. Cost of the first well is estimated at $25 million, far less than prices quoted in 2008-09.

Ghana

Kosmos Energy LLC, private Dallas independent, let a contract to OHM Rock Solid Images, Houston, for a seismic reservoir characterization study of Odum field on the West Cape Three Points block off Ghana.

A 500 sq km 3D seismic data volume will be inverted for reservoir properties and calibrated to the Odum-1 and Odum-2 discoveries. The discoveries are in the West African Transform Margin play 18 km east of Kosmos' Mahogany-1 exploration well and giant Jubilee oil field.

Kosmos Energy said, "When confronted with a slope channel complex such as that encountered in the Campanian-aged Odum discovery, an advanced reservoir characterization study based on seismic and well data is an effective tool for reservoir delineation and appraisal."

Guyana

Canadian independents Groundstar Resources Ltd. and Canacol Energy Ltd. plan to appraise the Karanambo-1 discovery well in the Guyana part of the Takutu basin in mid-2010.

The companies are reviewing bids for a drilling rig and support services. The companies have built a drill pad, access road, and staging areas and purchased and mobilized tubulars and wellheads for three wells 200 miles south of Georgetown near the border with Brazil.

Bottomhole location of the K-2 well will be 400 m northwest of Karanambo-1 and will target the same reservoirs that drillstem tested 411 b/d of 42° gravity oil at 8,946-9,290 ft in 1982 (OGJ, Apr. 26, 1982, p. 102). The former Home Oil Co. Ltd. believed the interval covered Jurassic carbonates and Triassic basalt.

Gaffney Cline and Associates attributed a gross mean risked recoverable prospective resource of 128 million bbl of oil to the discovery in a December 2009 report compiled for Canacol.

Drilling cost of K-2 net to Canacol's 65% interest is $6 million, and Canacol will become operator at total depth.

Alabama

Cane River Resources Inc., Conroe, Tex., has 33,000 acres of leases it believes prospective for gas in Conasauga shale in Alabama and Georgia.

Its Broomtown prospect is in Cherokee County, Ala., and Chatooga County, Ga., 80 miles northeast of subcommercial Big Canoe Creek gas field in northern St. Clair County, Ala., and about the same distance northwest of Atlanta.

It estimates Conasauga has 0.5% to 1.5% total organic carbon and 500 bcf of gas in place.

Cane River wants a partner to drill three 5,000-ft wells at about $250,000/well to earn an option to purchase its leasehold. It advises that the Conasauga, with high smectite content, should be drilled with air and dehydrators or with oil base mud.

California

Transco Oil & Gas, private Falcon, Colo., independent, is seeking partners to drill its North Semitropic prospect in Kern County, San Joaquin basin, California.

Target is oil in the McClure shale member of Miocene Monterey and two deeper targets. The three objectives have combined potential of 50 million bbl of oil and 20 bcf of gas.

Oligocene Vedder sand at 14,000 ft is the primary objective. Transco holds 2,300 acres.

Nevada

A newly listed UK company is attempting to mount an exploration effort in the Great Basin in northeastern Nye County, Nev., north of oil production in Railroad Valley.

U.S. Oil and Gas PLC, Dublin, holds 5,200 acres in Hot Creek Valley, just northwest of Railroad Valley. The company has completed a surface geochemical survey on the Eblana prospect area and plans to integrate the results with existing gravity and magnetics and well data to locate a drillsite.

Texas

North

Carrizo Oil & Gas Inc., Houston, set a $170 million capital budget for 2010, of which $130 million is dedicated to Barnett shale work.

The company finished 2009 with 33 net horizontal Barnett shale wells drilled and awaiting completion or pipeline connection. It drilled 9 net Barnett shale wells, ran fracs at 16, and placed 8 on production in the fourth quarter of 2009.

The 2010 budget includes funds to frac and complete 20 of its uncompleted Barnett wells. It plans to run three operated horizontal rigs in the Barnett all year.

Wyoming

Roxanna Oil Co., private Dallas firm, has leased more than 140,000 acres in the western Wyoming Overthrust where it seeks a partner to participate in drilling to the Meade Peak shale member of the Permian Phosphoria formation.

The Meade Peake is 13% total organic carbon, the highest shale TOC in the Rocky Mountain Region, Julie Garvin, geologist, said at the North American Prospect Expo. A well could penetrate 70-300 ft of dry gas-charged shale at 4,000-10,000 ft in depth.

The Meade Peake has never been horizontally drilled.

OGJ FOCUS

Field development required best practices, leveraged technology

Waleed A. Al-Mulhim
Fahad A. Al-Ajmi
Mahdi A. Al-Shehab
Tony R. Pham
Saudi Aramco
Dhahran

KHURAIS COMPLEX—1

Development of Khurais complex required best practices and leveraged various technologies such as 3D seismic, advanced mathematical modeling, and smart completions.

The Khurais complex is Saudi Aramco's largest intelligent field (I-field) initiative and is the flagship for I-field technologies. Development work reflects both as-needed fit-for-purpose technology applications and long-term vision for the life of the oil assets.

This series of two articles discusses upstream development of the Khurais complex, consisting of several fields and reservoirs capable of producing 1.2 million b/d of Arabian Light crude.

The first article describes the geologic setting, reservoir characterization and modeling, oil-water contact and structural delineation, and advanced mathematical modeling techniques.

The concluding part will discuss design of the horizontal laterals and the intelligent field initiative.

Geological setting

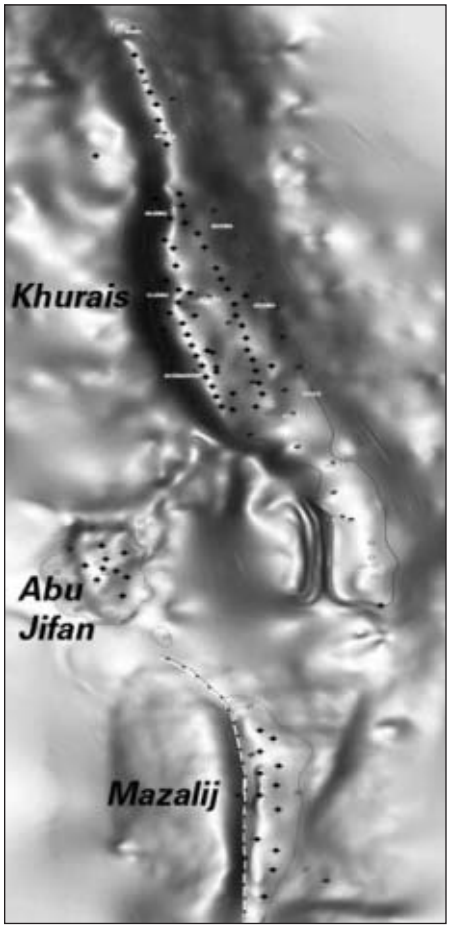
The Khurais complex consists of three fields (Fig. 1). The Khurais area is the largest and was discovered before the two smaller satellite fields, Abu Jifan and Mazalij, which were discovered in the early 1970s. The complex is about 100 miles east of Riyadh.

Although discovered several decades ago, the fields produced only briefly in the late 1980s and early 1990s. Comprehensive development began only during the last couple of years.

The fields have two main oil-bearing carbonate reservoirs: Arab-D and Hanifa, with the Khurais area being the largest in terms of reserves and oil withdrawal rates.

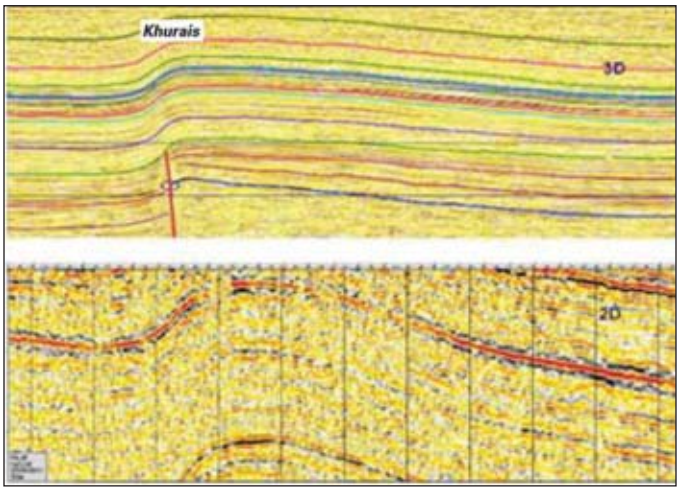
All three fields have similar geological settings, and therefore, the Khurais geologic description provides an understanding for all of the fields.

In Khurais, the Arab-D hydrocarbons are within an elongate, north-south trending, asymmetrical anticline with the lower limits defined by a tight aquifer. The Arab-D reservoir is a few hundred feet thick and consists primarily of clastic limestones, with a lesser amount of fine-grained limestone and dolomite. Zone-1 is considerably better

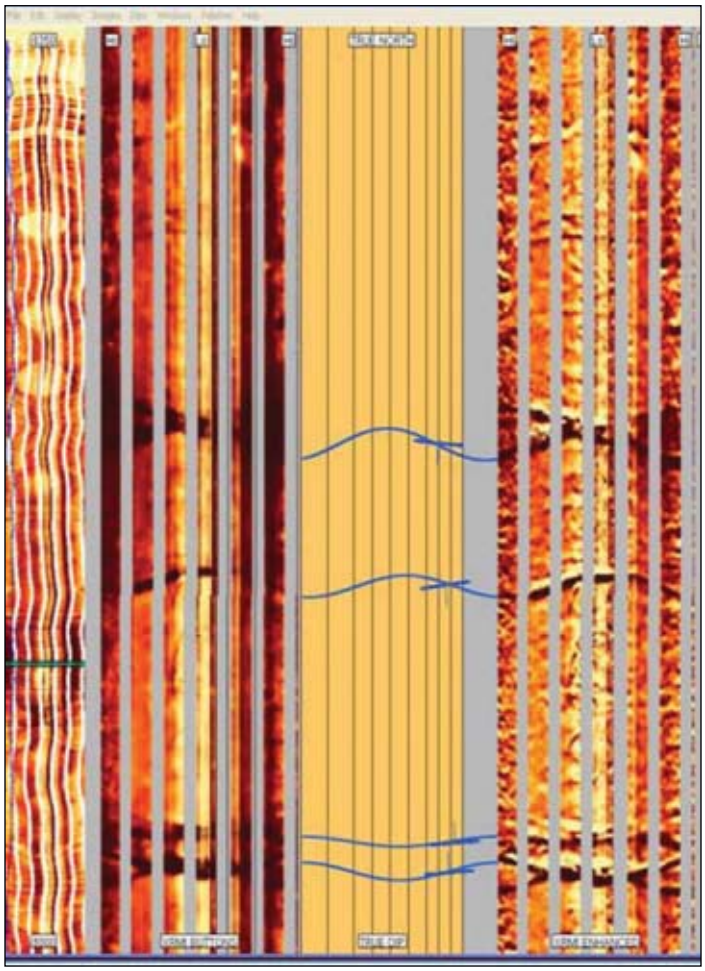


An areal view of Khurais complex shows Khurais, Abu Jifan, and Mazalij fields (Fig. 1).

Based on an article published in Saudi Aramco Journal of Technology, Winter 2009.



Resolution of new 3D seismic is much higher than the previous 2D seismic (Fig. 2).



Horizontal well images detected fractures (Fig. 3).

in the upper part of the reservoir compared with the lower Zones 2 and 3.

The Hanifa reservoir lies a few hundred feet below the Arab-D and has lower rock quality with a higher degree of fracturing. Both reservoirs contain Arab Light crude.

Development issues

During the initial development work, several issues loomed large such as:

- How to develop the fields to produce and sustain 1.2 million b/d with peripheral injection?
- How to optimize offtake and development requirements with respect to number of wells and their placements?
- How to identify reservoir communication between Arab-D and Hanifa reservoirs and optimize the production injection strategy between the two reservoirs?
- How to leverage incoming technologies with reservoir uncertainties?

To answer these questions appropriately, the first step involved massive 3D seismic data acquisition throughout the areal extent of the three fields, covering more than 7,000 sq km.

The results from the seismic program improved the definition of the reservoir structure, depth, as well as the characterization of faults and fractures (Fig. 2).

Reservoir characterization

From the subsurface point of view, field development planning begins with geological and reservoir characterization. In the Khurais complex development, this included characterization of cores acquired from several vertical wells. These provided routine core descriptions and porosities and permeabilities of individual layers.

Because the information was sparse, the analysis used stochastic modeling to populate the matrix reservoir parameter arrays. The analysis also included fracture descriptions based on core studies as well as dynamic flow data, pressure transient tests, and drilling information, such as loss-circulation intervals.

Early in field development, work included drilling of horizontal wells for evaluation purposes and acquisition of image logs for fracture assessment and orientation.

The Khurais reservoir contains several types of fractures. The most numerous observed in cores are diffused fractures.[1] These are small scale tension fractures sometimes referred to as hairline fractures, microfractures, or background fractures. These fractures are most often bedbound within certain lithologies.

In the Khurais area, diffused fractures are widespread over the entire Arab-D with higher fracture density in the lower zones (Zones 2 and 3) in which matrix porosities and permeabilities are lower than in Zone 1.

Another fracture type appears as fracture swarms, sparse in occurrences and referred to as fracture corridors.[2,3] Some of these are conduits for bringing water into the field. They also are referred to as fracture lineaments, derived from curvature analysis.

Khurais does not have large-scale fractures or faults that one can identify the throw on the seismic scale or

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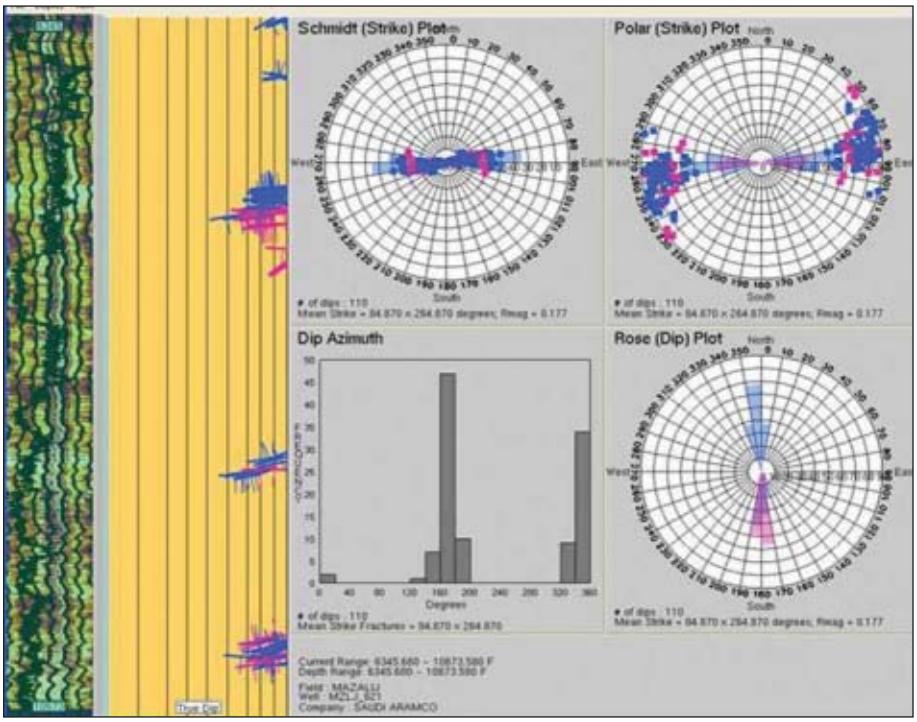
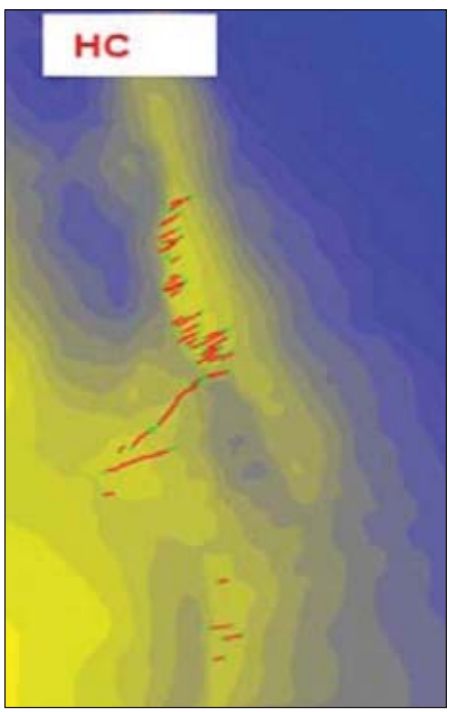


Dip analysis indicates that scattered fracture swarms are in an East-West to North 80° East trend (Fig. 4).



Curvature analysis shows the fracture lineaments that are tens of kilometers apart. HC means high confidence (Fig. 5).

on walk-away vertical seismic profiles (VSP) conducted in the area.

While cores show a minimal presence of fractures in Khurais, with the exception of diffuse fractures (up to 0.8 fractures/ft), image logs show some fracture swarms (Figs. 3 and 4).

The Rose and Schmidt plots of fractures show a dominant North 80° East to East-West orientation (Fig. 4). These orientations are in agreement with limited fracture lineaments (fracture corridors or swarms) observed from seismic curvature analyses as strike-slip faults with minimal displacements (Fig. 5).[2,3] One should note that while the appearance of fractures in Fig. 5 suggests a high fracture density, these lineaments are tens of kilometers apart.

One can also observe these fractures on image logs as clusters of fractures appearing within the same short intervals (Fig. 4). These also correlate well with the dynamic data such as high-flow intervals from low matrix permeability limestone beds. This suggests that the geological and dynamic simulation models should include fractures as one of the driving reservoir parameters.

As a consequence, a decision was made to run the 3D dynamic simulation models in dual porosity-permeability mode to enhance their predictive precision.

Structure delineation

After the geological evaluation, one major task was delineation of the oil-water contact (OWC) and refinement of the reservoir structures in selective areas with limited data.

The Khurais complex development included evaluation wells. These wells serve many purposes such as reservoir data acquisition, OWC and structure delineation for the current development, as well as for future sweep and flood front conformance monitoring.

The program consisted of coring, openhole logging (including image, and nuclear magnetic resonance (NMR) logs), and downhole fluid sampling for fluid characterization as well as establishing a base interpretation for future sweep and recovery assessment.

One highlight was the validation of the similarity of the OWC in both the Arab-D and Hanifa in the Khurais area. This confirmed that both reservoirs are in pressure communication. Also verifying the pressure communication was the common bottomhole pressure (BHP) gradient shown by the two reservoirs that exhibited similar partial pressure drawdown during the limited production period in the past from the Arab-D.

For cost-effectiveness, a series of vertical-horizontal pilot wells (Fig. 6) supplemented and refined the benchmarked 3D-seismic depth interpretations of the structure.

Subsequently, these wells were sidetracked and completed as water injectors. The horizontal laterals were placed just below the OWC for injection effectiveness with respect to pressure supporting the oil producing regions.

The 3D-seismic structure interpretations, combined with evaluation wells and pilot holes, helped in finding an additional small dome oil accumulation in the south of Abu Jifan, which

subsequently was included as part of the Khurais complex development.

Similarly, the work delineated the south dome of Abu Jifan as a larger structure than previously mapped.

Advanced modeling

Concurrent with delineation and reservoir evaluation (data acquisition) efforts, optimization of the development plan needed to address several key issues in terms of risk mitigation. Although we faced a wide range of uncertainties in reservoir parameters, we based some major decisions on deterministic solutions derived from analytical, simulation, or mental (engineering judgment) models. These may prove costly because some had very little consideration to the probability and what if scenarios and resulted in actions taken without proper exit strategies.

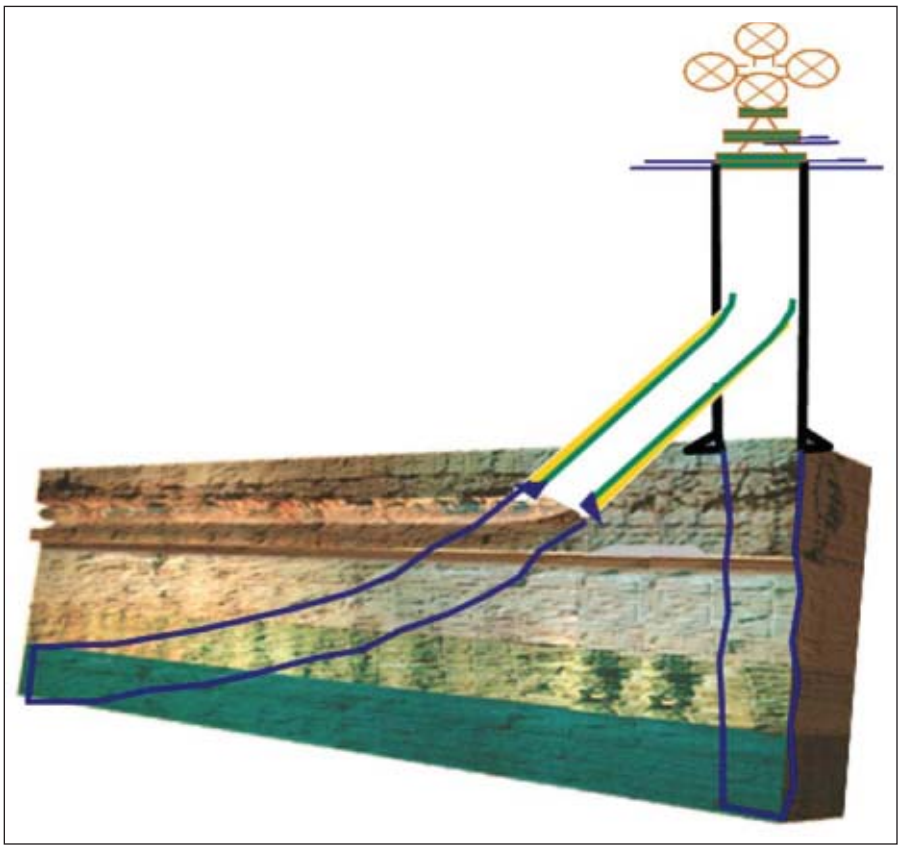
In these cases, an engineer would build into the decision-making process a safety factor, or cushion, to make certain that failure is not an option. Under certain conditions, it is prudent to do so; however, this could carry a high business cost. The need for an uncertainty analysis for making decision, therefore, is a must.

For example, optimization of production offtake and associated requirements (such as number of injectors and producers, injection production ratio, depletion rates for different areas, sweep and recovery) is difficult because of the nonlinear nature of the optimization problem and the complex interactions between various operational parameters.

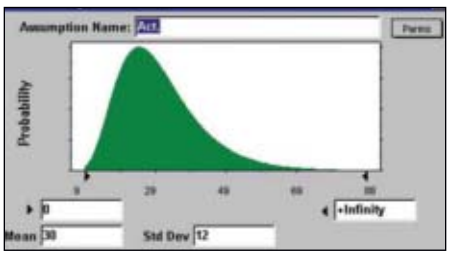
In this case, the analysis included a multiobjective function model. Another technical paper discussed the details of the methodology and its utility.[4] This article excerpts some of the detail to clarify several points.

In field development, the most important questions and constraints are as follows:

- How much production offtake is optimal from each of the fields and reservoirs?
- What are the most optimal numbers of producers and injectors to be drilled? And what is the optimum well placement?
- How will producers and injectors affect the injection production ratio from each area?
- Does production from each area satisfy its depletion requirement?
- Do we produce or inject too much in areas that have a higher degree of fractures that may cause premature water breakthrough and thereby impair the sweep?



Vertical-horizontal pilot wells delineated the structures (Fig. 6).

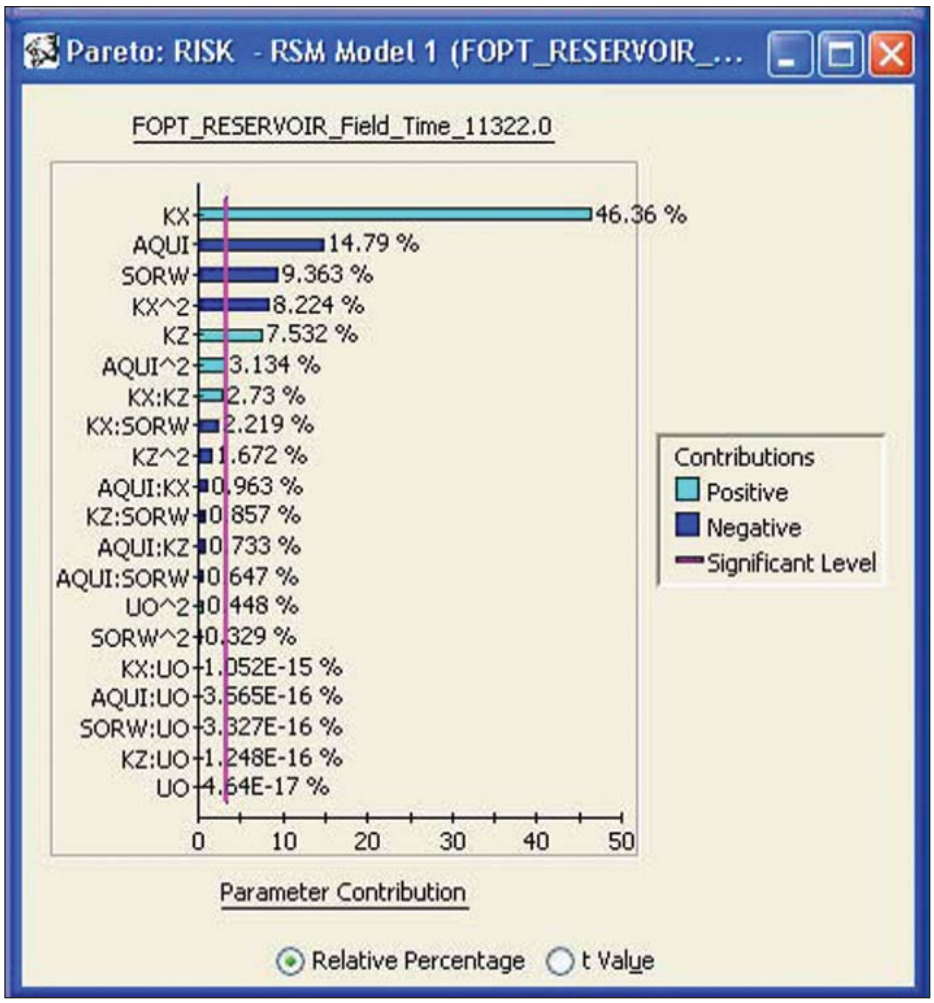


Optimization of the development included determining a probability function for each reservoir parameter (Fig. 7).

Optimizing these requirements is a difficult task because there are diverging requirements. This means that satisfying one requirement may be at the expense of the others. For example, a higher offtake rate from an area with better reservoir quality means drilling fewer producers for the same target rate, resulting in better developmental economics. This may violate the depletion criteria and may bring in premature water breakthrough, which can impair not only the reservoir sweep and conformance but also hydrocarbon recovery.

Another good example is producing at a depletion rate in an area with insufficient peripheral injection well locations, thereby potentially violating the pressure support requirements and consequently decreasing well productivity. This is where hard and soft constraints come into play and one has to assign weighted constraints.

The most important hard constraint,



Tornado charts show the relative effect of each parameter on reservoir performance (Fig. 8).

of course, is the total offtake rate for the increment development. The softest constraint is the number of wells required with the rest falling in between. With this in mind, the analysis divided the total offtake constraint into several areas, each with its specificities in terms of geometry and reservoir quality, in this case three fields and two reservoirs.

As previously mentioned, the hard or primary constraint is the total offtake and sustainability of the oil complex. The engineering analysis determined how much each area can produce by considering the following constraints:

- Keep depletion rate in balance among areas.
- Satisfy the injection production ratio, for example adequate injection has to support production and there must be enough injection wells to support the production.
- Minimize the withdrawal rate in areas with a higher degree of reservoir heterogenieties. A low production rate mitigates possible premature water breakthrough and allows reservoir performance to be observed, and evaluated to formulate optimum completion, and injection production strategy.
- Produce preferentially at a higher depletion rate in low structure areas to promote low structure sweep. This, in turn, lessens the production requirement in the higher structure area, allows better flood front sweep and conformance from low to high structure areas. This is particularly desirable in the case of gravity dominated bottoms-up sweep, as in the case for the reservoirs in the Khurais complex, judging from insights gathered from simulation models as well as from similar neighboring fields.
- Govern the production-injection strategy with prudent reservoir-management practices for oil offtake optimization from each reservoir and area to maximize the production plateau.

The multiobjective function program must optimize all of these constraints with regard to the soft constraint of economics, which is to reduce total development cost by minimizing the number of injectors and producers.

One can accomplished this by drilling wells on a priority basis in the most prolific area first without jeopardizing all other constraints. The key idea is establishment of hard and soft constraints that provide the venue for the optimization of all main requirements, including injection and producing well requirements, injection production ratio, production offtake, and depletion rate for individual areas.

The multiobjective function analysis represents the main focus of field development, such for Khurais.

Development work also included advanced modeling techniques and Monte Carlo simulations in conjunction with multiple realizations of 3D dual porosity-permeability models for development planning, including evaluation of the effect of various reservoir parameters on production using their individual probability functions (Figs. 7 and 8).

In the case of Khurais, the modeling also provided the optimum distance between water injectors and first row producers, as well the design for the electrical submersible pumps (ESPs) by defining the main uncertainties for rock permeabilities (k_x and k_y), vertical permeabilities (k_z), size of the aquifer, relative permeability curves and their end points, viscosity of the fluid, formation volume factors, and bubblepoint pressures.

Reference 4 discussed the details of the modeling. In summary, experimental design and Monte Carlo simulations, together with analytical methods and finite difference models, can be effective in decision making, especially in new field development such as Khurais, beyond their conventional use as tools for probability analysis. ✦

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The authors

Waleed A. Al-Mulhim (waleed.mulhim@aramco.com) is manager of the southern area reservoir management department in Saudi Aramco. Under his responsibilities, along with other fields, are greater Ghawar, Abqaiq, and all nonassociated gas reservoirs. Al-Mulhim oversaw the reservoir development of Khurais. He began his career with Saudi Aramco in 1984. Al-Mulhim has a MS in petroleum engineering from Stanford University.

Fahad A. Al-Ajmi is general supervisor for the Shayba-Manifa-Berri reservoir management division of Saudi Aramco. He previously was the general supervisor for the Khurais reservoir management division. Al-Ajmi has a BS in petroleum engineering from King Fahd University of Petroleum and Minerals, an MS in petroleum engineering from the University of Southern California, and PhD in petroleum engineering from Texas A&M University.

Mahdi A. Al-Shehab is a reservoir management supervisor for the Khurais Unit in the southern area reservoir management department of Saudi Aramco. He has worked in various positions at Saudi Aramco. Al-Shehab has a BS in petroleum engineering from King Fahd University of Petroleum and Minerals.

Tony R. Pham is a senior petroleum engineering consultant with more than 30 years of experience in the petroleum industry. Pham has a BS in petroleum engineering from Texas A&M University.

New correlation predicts dewpoints of acidic combustion gases

Bahman ZareNezhad
Ministry of Science, Research and Technology
Tehran

A newly developed general correlation accurately predicts acidic combustion gas dewpoints to mitigate corrosion potential in pollution control and energy-recovery equipment.

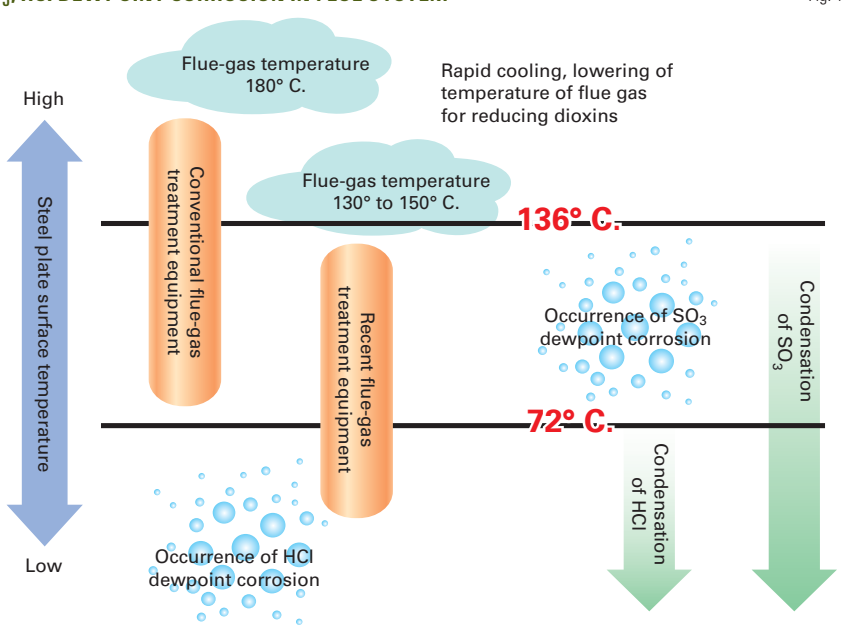
Acidic combustion gases can cause rapid corrosion when they condense on the surfaces of heat recovery and flue-gas-treatment equipment. This investigation considered the most important acidic gases—SO_3, SO_2, NO_2, hydrochloric acid, and hydrobromic acid.

The correlation can accurately predict flue-gas acid dewpoint temperatures over wide ranges of acid and water-vapor concentrations in oil and gas operations.

Condensation, corrosion

Acid dewpoint corrosion results from condensation of flue-gas acid species on low temperature gas-path surfaces. This kind of corrosion differs from general atmospheric corrosion and causes heavy corrosion not only of ordinary steels but even stainless steels.[1]

SO_3, HCl DEWPOINT CORROSION IN FLUE SYSTEM* Fig. 1



*Flue-gas composition: SO_3 = 3 ppm (vol); HCl = 300 ppm (vol); H_2O = 30 vol %.

Corrosion failures often occur because of condensing flue gases containing SO_3, SO_2, NO_2, HCl, HBr, and H_2O. Dewpoint temperature is a function of the water vapor concentration and the concentration of acid species in the flue gas.[2] The condensed acids are corrosive to steel and almost all plastics, as well as hydraulic cement composites.

Further, gas cooling below this dewpoint by radiation or convection forms a mist of corrosive acid droplets that is highly detrimental to the stack and heat-recovery equipment.[3] Many of the processes for improving the thermal efficiency of combined-cycle plants can also result in lower flue-gas temperatures leaving the heat-recovery steam generators or increased flue-gas moisture content. These conditions can increase the potential for corrosion of the low-temperature gas-path components.[4]

Fig. 1 shows sulfuric acid and hydrochloric acid dewpoint corrosion occurring in a typical flue-gas treatment system of a waste-incineration plant. For a typical flue gas (SO_3 = 3 ppm (vol); HCl = 300 ppm (vol); H_2O = 30 vol %), the H_2SO_4 and HCl dewpoints are about 136° and 72° C., respectively (Fig. 1).

At temperatures of 72-136° C., the H_2SO_4 condensation is the main cause of steel corrosion failure. Improvement of the thermal efficiency of flue-gas treatment equipment may need further cooling to a temperature as low as 72° C. As Fig. 1 shows, at flue-gas temperatures cooler than 72° C., HCl condensation is also an important influence in corrosion failure.

Verhoff and Banchero provided the correlation for predicting flue-gas

Equations

$$\frac{1,000}{T_{Dew} + 273.15} = 2.276 - 0.02943 \ln(p_{H2O}) - 0.0858 \ln(p_{SO3}) + 0.0062 \ln(p_{H2O}) \ln(p_{SO3}) \quad (1)$$

$$T_{Dew} = 92.5405 + 11.9864 \ln p_{H2O} + 4.70336 \ln p_{SO3} + [0.446 \ln p_{SO3} + 5.25720]^{2.19} \quad (2)$$

$$T_{Dew} = \sum_{i=0}^{4} A_i (\lambda M_w)^i + \sum_{i=0}^{4} B_i (\lambda M_w)^i \ln(p_{H2O}) + \sum_{i=0}^{4} C_i (\lambda M_w)^i \ln(p_{AcidGas}) + \sum_{i=0}^{4} D_i (\lambda M_w)^i \ln(p_{H2O}) \ln(p_{AcidGas}) \quad (3)$$

Nomenclature

T_{Dew}	=	sulfuric acid dewpoint temperature, °C.
p_{H2O}	=	partial pressure of H_2O in the flue gas, mm Hg
p_{SO3}	=	partial pressure of SO_3 in the flue gas, mm Hg
$p_{Acid\ gas}$	=	partial pressure of acid gas (SO_3, SO_2, NO_2, HCl, HBr), mm Hg
i	=	index (from 0 to 4) in Equation 3
A_i, B_i, C_i, D_i, and λ	=	parameters defined in Equation 3
M_w	=	molecular weight

sulfuric acid dewpoint shown in Equation 1 of the accompanying equations box.[5] The correlation does not apply to halogenated or nitrated acid gases.

To overcome this shortcoming, Kiang proposed different correlations for estimating NO_2, HCl, and HBr dewpoints.[6] There are usually significant deviations, however, between predicted and experimental dewpoints over the concentrations prevailing in combustion gases.

It should be noted that there is some disagreement between the experimental data and the Verhoff and Banchero correlation, especially at low acid concentrations and high H_2O content. Dewpoints predicted in the range of 120-140° C. have a positive deviation of 4° C. and more. Also in the range of 100-121° C., the predicted dewpoints are usually 4° C. low.

Okkes proposed a correlation (Equation 2) to overcome some of these shortcomings.[7] Although this correlation is more accurate at H_2O concentrations higher than 25%, it significantly underpredicts the sulfuric acid dewpoints at low H_2O concentrations that prevail in oil and gas operations.

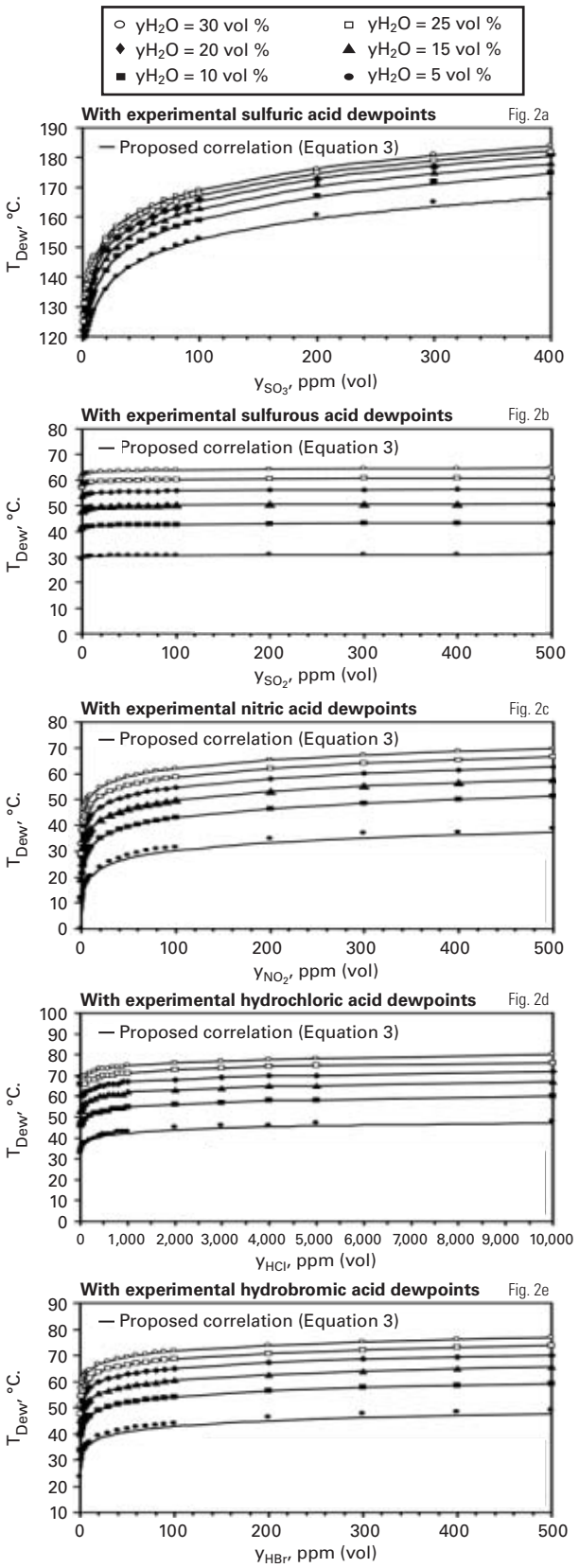
Since these correlations are not accurate enough for proper design of combustion equipment and heat-recovery systems, this article proposes a general correlation for accurate prediction of the most important acid-gas dewpoints.

Proposed correlation

This proposed general correlation is based on verified experimental data for accurate predic-

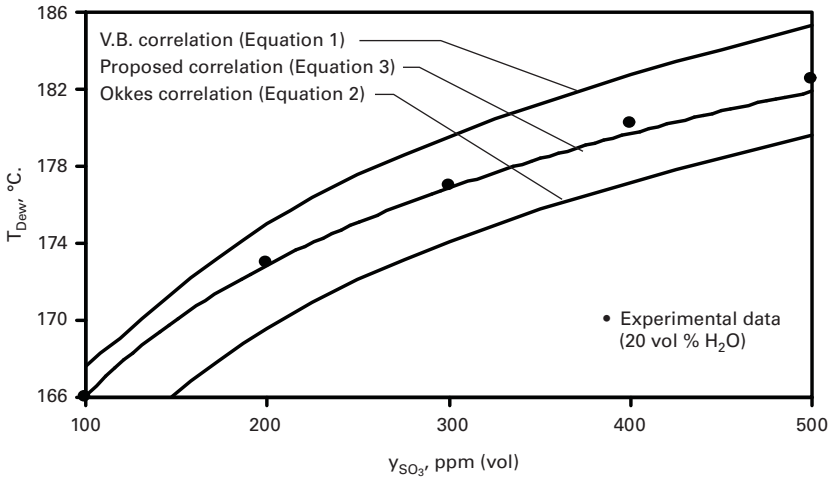
How proposed correlation compares

Fig. 2



COMPARISON OF CORRELATIONS

Fig. 3



tion of flue-gas acid dewpoints. A set of 940 dewpoint temperatures is determined for the most important acidic gases—SO_3, SO_2, NO_2, HCl, and HBr—by using the most accurate vapor-liquid equilibrium data.[8-11] We have found that this general correlation—Equation 3—can be used for accurate prediction of the dewpoints of acidic combustion gases.

It should be noted that A_i, B_i, C_i, and D_i parameters do not depend on acid species and are always fixed. The parameter λ and molecular weight (M_w) are given for the relevant condensed acid. Tables 1 and 2 display the optimum values of all parameters determined by the genetic algorithm.[12]

With the parameters displayed in Tables 1 and 2, Equation 3 yields the smallest sum of the squared errors for the entire range of acid dewpoint temperatures. The following section elaborates the performance of the proposed correlation.

Comparisons

Fig. 2a shows results of comparing predicted flue-gas sulfuric acid dewpoints by using Equation 3 with experimental data at different acid and moisture concentrations. Firing fossil fuels that contain sulfur in heaters or boilers yields sulfur dioxide and, to a lesser extent, sulfur trioxide as well as carbon dioxide and water vapor.

The SO_3 combines with water vapor in the flue gas to form sulfuric acid and condenses on heat-transfer surfaces, a process that could lead to corrosion and destruction of the surfaces. This condensation occurs on surfaces that are at or below the dewpoint of the acid gas.

As shown in Fig 2a, because the acid dewpoint is very sensitive to the flue-gas SO_3 concentration, a small increase in SO_3 concentration leads to a large increase in sulfuric acid dewpoint at a given H_2O concentration. The moisture content is also an important influence. As the moisture concentration increases, however, the effect of vapor H_2O on sulfuric acid dewpoint gradually reduces.

Since the sulfuric acid formed through the reaction of SO_3 and H_2O in the flue gas is usually condensed at relatively high temperatures, the corrosion risk in the waste-heat-recovery system is too high. As shown, the vapor-phase sulfur trioxide concentration strongly influences flue-gas dewpoint especially at SO_3 concentrations less than 100 ppm (vol).

Thus the accurate prediction of sulfuric-acid dewpoints at low SO_3 concentrations prevailing in process industries is important in controlling the corrosion problems in thermal waste-treatment plants and energy-recovery equipment. In most installations, formation of sulfuric acid is prevented by keeping the temperature above sulfuric acid's dewpoint as much as possible.

Fig. 2b compares predicted and measured flue-gas sulfurous acid dewpoints. The diagram shows sulfurous acid's condensation temperature is mainly influenced by water-vapor concentration. Since sulfurous acid is always formed through the dissolution of SO_2 in condensed water at lower than the water dewpoint, the corrosion risk in the stack is lower, compared with that for sulfuric acid.

Sulfurous acid formation at temperatures around 60° C., however, accelerates metallic corrosion in heat-recovery systems. The trend of dewpoint variation with respect to the moisture content is similar to the case of sulfuric acid in that the H_2O content is less influential at higher moisture concentration. According to Fig. 2b, the sulfurous acid dewpoint temperature is always less than 70° C. as long as the moisture concentration is no higher than 30 vol %.

EQUATION 3: OPTIMUM VALUES OF SPECIES PARAMETERS

Table 1

Indices	i = 0	i = 1	i = 2	i = 3	i = 4
A	160.4	–45.57	–1,320	372.4	770.2
B	–1.365	4.031	138	–34.88	–78.01
C	18.93	–7.466	–115.1	31.96	65.95
D	–0.4365	0.1829	3.622	–0.9925	–2.165

EQUATION 3: PARAMETERS IN CONDENSED ACIDS

Table 2

Condensed acids	H_2SO_4	H_2SO_3	HNO_3	HCl	HBr
λ	0.011283	0.005164	–0.04165	–0.00614	0.00466
M_w	98.0	82.0	63.0	36.5	80.9

Fig. 2c compares predicted flue-gas nitric acid dewpoints, using the proposed correlation, with experimental data at different acid and moisture concentrations. The NO_2 condenses as nitric acid below the nitric acid dewpoint or it dissolves in the condensed water below the water dewpoint to form nitric acid solution, causing severe stress corrosion cracking. In a gas containing 50 ppm (vol) NO_2 and 5 vol % water (a typical high NO_2 containing combustion gas emitted by a gas-turbine power station), the NO_2 dewpoint (28° C.) is lower than the water dewpoint (33° C.).

During operation of the heat-recovery steam generator, the inlet temperature is at least 70° C., which excludes water and nitric acid condensing. In this case, only during shutdowns, nitric acid can be formed by gas dissolution in the water droplets.

At high flue-gas NO_2 concentrations, the NO_2 dewpoint is usually higher than water dewpoint so that the nitric-acid condensation takes place directly from the gas phase below the nitric acid dewpoint. Fig. 2c shows that predicted nitric-acid dewpoints are in good agreement with experimental data.

Figs. 2d and 2e compare predicted flue-gas hydrochloric and hydrobromic acid dewpoints, by use of the proposed correlation, with measured data at different acid and moisture concentrations, respectively. In municipal solid-waste-fired plants, in addition to sulfuric acid, one must deal with hydrochloric and hydrobromic acid formation.

Also the halogenated compounds used in various types of plastics are released in waste incinerators so that the dewpoint corrosion due to HCl or HBr condensation may take place. Similar to the previous cases, the effect of H_2O concentration on acid dewpoint is more important at low moisture concentrations, as shown in Figs. 2d and 2e. According to these figures, the flue-gas hydrochloric and hydrobromic acid dewpoints are usually less than 80° C. in most practical cases. Figs. 2d and 2e show predicted results are in good agreement with experimental data.

Fig. 3 compares Equation 3 with Verhoff and Banchero (Equation 1) and Okkes (Equation 2) correlations regarding prediction of sulfuric acid dewpoints at a moisture concentration of 20 vol %. It shows that the V.B. correlation leads to considerable acid dewpoint overprediction. In such a case, the operator may incorrectly increase the air preheating level to combat the cold-end corrosion problem.

On the other hand, using the Okkes correlation leads to a large dewpoint underprediction, so that the air preheating level may be inadequate to overcome the corrosion risk.

The dewpoints predicted by Equation 3 are much more accurate than those predicted by V.B. and Okkes correlations and are in excellent agreement with measured acid dewpoints (Fig. 3).

Accurate prediction of flue-gas acid dewpoint is important for optimizing energy consumption in combustors and incinerators.

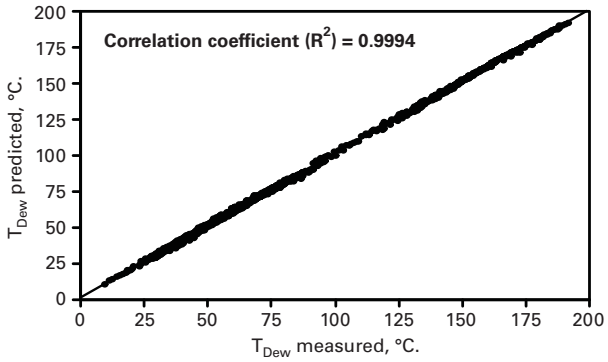
Table 3 gives deviations between predicted and measured acid dewpoints. The average absolute deviation in sulfuric acid dewpoint predictions is about 0.5541%, smaller than those of the other acids. Since the sulfuric acid dewpoint is usually higher than those of the other acids, it is important to predict the H_2SO_4 condensation temperature accurately.

In fact the sulfuric acid dewpoint temperature is the main bottleneck for increasing the performance of heat-recovery systems. The overall average absolute deviation, root mean square deviation, and correlation coefficient values regarding the proposed correlation are about 1.055%, 0.9815, and 0.9994, respectively. These suggest that Equation 3 is accurate enough for predicting the dewpoints of the different acid gases.

Fig. 4 also compares the predicted flue-gas acid dewpoints, according to Equation 3, with all available experimental data regarding all aforementioned acid gases. As shown, the proposed correlation can be used for accurately predicting the flue-gas acid dewpoint temperatures over wide ranges of moisture and acid gas concentrations.

PROPOSED CORRELATION AND ACID GASES DEWPOINTS

Fig. 4



DEVIATIONS: PREDICTED, MEASURED ACID DEWPOINTS

Table 3

Error*	H_2SO_4	H_2SO_3	HNO_3	HCl	HBr	Overall
AAD%	0.5541	0.6085	1.3077	1.5180	0.6314	1.055
RMSD	0.8248	0.6063	0.7773	1.3370	0.4465	0.9815
R^2	0.9982	0.9981	0.9976	0.9925	0.9989	0.9994

*AAD% = average absolute deviation, %; RMSD = room mean square deviation; R^2 = correlation coefficient.

Acknowledgment

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The author

Bahman ZareNezhad (zarenezhad@aol.com) is an academic professional member at the Ministry of Science, Research and Technology, in Tehran, and is a consultant for several oil and gas companies. His research activities focus mainly on advanced oil refining and gas processing technologies, tail-gas treatment, sulfur recovery, and NGL extraction processes. He has 22 years of experience in research, process engineering, project management and technology development. ZareNezhad holds a PhD in chemical engineering from the University of Manchester Institute of Science and Technology, Manchester, UK.

PHMSA committee adjusts incident reporting thresholds

Christopher E. Smith
Pipeline Editor

The US Pipeline and Hazardous Materials Safety Administration natural gas and hazardous liquids Technical Pipeline Safety Standards Committee voted in December 2009 regarding PHMSA's "One Rule" which addresses a number of proposed reporting requirements for pipeline operators.

These requirements include changes to the definition of natural gas pipeline reportable incidents to include incidents involving any unintended fire or explosion and replacing the $50,000 reporting threshold with a release volume.

TPSSC is a congressionally mandated committee consisting of government, industry, and public pipeline safety experts advising PHMSA as to whether proposed rules are reasonable, practicable, and technically-feasible.

The committee voted against unintended fire and explosion as a trigger for incident reporting and for a volume of 10 MMcf as the new threshold for incident reporting.

The "One Rule" proposal likewise called on operators of hazardous liquids pipelines to complete annual infrastructure reports for each operator and commodity by state. Industry representatives discussed reporting burdens and improvements to the reporting template before the committee adopted a motion supporting the PHMSA proposal.

Incident revision

This proposal would have changed the definition of an incident in 49 CFR 191.3 to establish a new reporting category: an explosion or fire not intentionally set by the operator, consistent with the accident reporting criteria of 49 CFR Part 195. PHMSA maintained adding these events to the definition of a reportable incident would allow it to include additional incidents since fires and explosions are major adverse outcomes raising the risk of death or injury from a pipeline failure (Fig. 1).

PHMSA's analysis of its accident-incident database showed the risk of death or injury increased by 4-5 times if there was a fire or explosion, compared to incidents without a fire or explosion. The agency also said the revision would make the natural gas pipeline incident reporting requirement consistent with the reporting requirement for hazardous liquid pipelines.

The committee noted that examples of newly reportable events included house fires in which the fire eventually involves the gas meter and minor ignitions during inspection and maintenance. The American Public Gas Association asserted the change would have resulted in a huge increase in the number of reportable incidents, giving the appearance distribution pipeline safety has deteriorated.

APGA said PHMSA should not revise the definition of reportable incident. In comments filed with PHMSA, APGA pointed out that before 1984 such fire-only events were reportable and resulted, in PHMSA's words, in an "unproductive paperwork burden."

The American Gas Association maintained newly included incidents would artificially inflate the number of natural gas distribution incidents reportable to the US Department of Transportation. It cited PHMSA estimates that incidents would rise to 300 from 210 while its own analysis estimated more than 5,000 events would be reported under the new criteria. AGA also said PHMSA had underestimated the paperwork burden associated with collecting the new information. PHMSA estimated paperwork would increase by 1,140 hr. AGA estimated an annual paperwork increase of more than 27,000 hr.

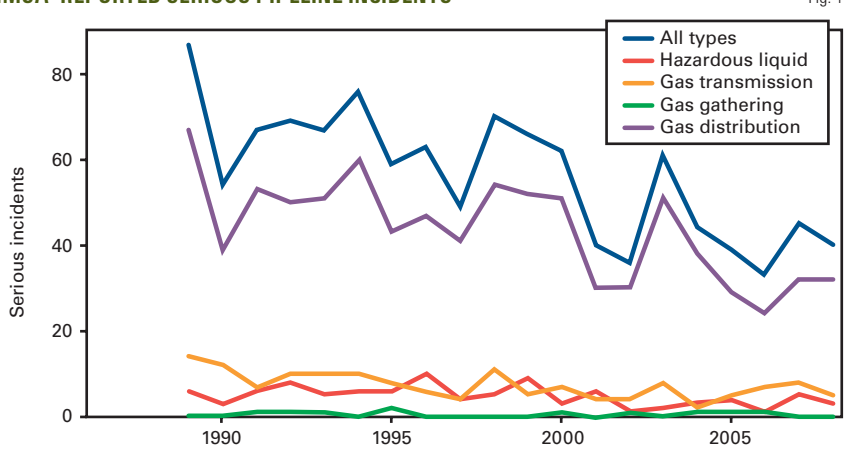
AGA concluded it was unreasonable for PHMSA to collect fire-related events when these events were already collected by another government agency, are primarily outside of PHMSA's jurisdiction for distribution incidents, are not within the control of the operator, and would artificially and negatively affect the natural gas industry's safety record.

Reporting threshold

The existing volume measure for re-

PHMSA-REPORTED SERIOUS PIPELINE INCIDENTS*

Fig. 1

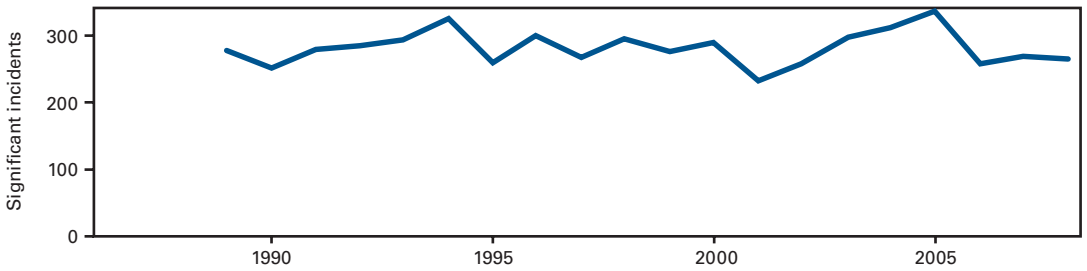


*PHMSA defines a serious pipeline incident as an event involving a fatality or injury requiring in-patient hospitalization.
Source: PHMSA Significant Incidents Files, Oct. 14, 2009

leased gas included incidents resulting in property damage, including cost of gas lost, of the operator or others, or both, of $50,000 or more (Fig. 2). The increased value of gas, however, has caused more incidents to be reported even though smaller volumes are being released. The "Rule One" proposal sought to use a volumetric basis for unplanned gas loss in determining whether an incident had occurred.

PHMSA-REPORTED SIGNIFICANT PIPELINE INCIDENTS*

Fig. 2



*PHMSA defines significant incidents as those reported by pipeline operators when any of the following conditions are met: 1. fatality or injury requiring in-patient hospitalization, 2. $50,000 or more in total costs, measured in 1984 dollars, 3. highly volatile liquid releases of 5 bbl or more or other liquid releases of 50 bbl or more, 4. liquid releases resulting in an unintentional fire or explosion.
Source: PHMSA Significant Incident Files, Oct. 14, 2009

The 10 MMcf threshold was a compromise between an initially proposed 3 MMcf threshold by PHMSA and outside proposals such as the Interstate Natural Gas Association of America's 20 MMcf limit suggested in November 2005.

PHMSA said historical data showed 20 MMcf to be too high to have any impact on distribution incident reporting and that it would reduce the number of gas transmission incident reports to PHMSA, inhibiting the agency's ability to accurately track the number of incidents and learn from the already small number of reportable incidents occurring annually. It instead proposed a reporting criterion of 3 MMcf gas lost, saying it more accurately represented the median volume of gas lost reported through transmission incident reports since 2002. PHMSA also said the 3 MMcf proposed volume represented a large amount of gas from a small pipeline having less potential to do major damage, compared to a small amount of gas from a large pipeline (30-40 in. OD), which could cause major damage.

INGAA based its proposed volume on the $50,000 reporting threshold and the 1985 cost of gas at $2.50/Mcf.

INGAA argued that adopting the proposed 3 MMcf threshold would shift many low-risk pinhole and fitting leaks reported as part of the annual DOT Form PHMSA F 7000-1.1 to an incident reporting status (DOT Form PHMSA F 7000-2). It went on to say that both the number of incident reports and the cost of reporting would increase sharply and the incident database would lose its continuity.

Segmented reporting

The "One Rule" proposal calling on operators of hazardous liquids pipelines to complete annual infrastructure reports for each operator and commodity by state, included detailed infrastructure data such as mileage by OD, decade of construction, SMYS, HCA type, and breakout tanks.

Natural gas transmission pipeline operators submit state-specific annual reports providing PHMSA an understanding of the location, scope, and nature of the pipeline facilities subject to its regulations. Hazardous liquid pipeline operators do not currently report state-specific information on their annual reports, instead reporting only nationally aggregated information for the general characteristics of the hazardous liquid pipelines, along with fundamental integrity management information. PHMSA maintains the nationally aggregated information lacks the granularity of data critical to its understanding the risks posed by and condition of these pipelines.

PHMSA says capturing state-specific information for both gas transmission and hazardous liquid pipelines would provide it with the data necessary to identify areas of potential high risk and allocate resources accordingly, also facilitating efforts to reconcile discrepancies between operator National Pipeline Mapping System submissions and information submitted through annual reports.

PHMSA also said it requires a complete understanding of the scope, nature, and extent of the pipeline infrastructure under each state's purview to accurately assess the effectiveness of funding state pipeline programs and monitor safety performance.

PHMSA held preliminary discussions on the reporting-by-state proposal with representatives of the hazardous liquid pipeline community consisting of representatives from API, AOPL, and hazardous liquid pipeline operators. This industry data team generally supported reporting by state for the specific areas proposed but also urged PHMSA to consider an efficient method for collecting the proposed information. Members of the industry data team also requested PHMSA consider obtaining infrastructure and integrity management information through the NPMS.

PHMSA acknowledged the potential costs and benefits of NPMS submission, foremost among the costs being the need to modify the existing geospatial technological architecture of NPMS to accept the data elements likely to be submitted if NPMS generated the proposed state totals. The need to determine the percentage of hazardous

liquid operators able to submit information using geospatial technology stood as an attendant matter.

After discussing these issues the committee supported the PHMSA proposal. ✦

Correction

In the article "Black Sea region stands at energy crossroads," by Vlad Popovici, Fig. 2 (OGJ, Dec. 7, 2009, p. 57) contained errors. The correct version of the figure appears here. The corresponding figure has been updated in the electronic version of the story available at www.ogjonline.com.

An error also occurred in the text of the story. The correct version of the affected text reads as follows: Ukrtransnafta, operator of the Ukrainian oil pipeline system, stopped Russian oil shipments in one of its main pipelines in October 2009 for several weeks, forcing Lukoil's Black Sea Odessa refinery to halt activity. Ukrainian press sources also claimed the country started to import oil directly from Azerbaijan through its Black Sea ports.

EXISTING OIL, GAS TRANSMISSION PIPELINES

Fig. 2

*All or most of the oil and gas moving through a given pipeline is from Russia.
Source: US Energy Information Administration

New vibration tester is hand-held unit

Here's the Fluke 810 vibration tester, which enables maintenance teams to rapidly collect data and diagnose and solve mechanical problems with an easy to use tool.

The hand-held unit is designed and programmed to diagnose the most common mechanical problems of unbalance, looseness, misalignment, and bearing failures in a variety of mechanical equipment, including motors, fans, blowers, belts and chain drives, gearboxes, couplings, pumps, compressors, closed coupled machines, and spindles.

When it detects a fault, the Fluke 810 identifies the problem and rates its severity on a four-level scale to help the maintenance professional prioritize maintenance tasks. It also recommends repairs. Context-sensitive on-board help menus provide new users with real-time guidance and tips.

The tester uses a simple step-by-step process to report on machine faults the first time measurements are taken. The combination of plain-text diagnoses, severity ratings, and repair recommendations helps users make better maintenance decisions and address critical problems first, the firm points out.

The Fluke 810 is designed specifically for maintenance professionals who need to troubleshoot mechanical problems and quickly understand the root cause of equipment condition.

Source: **Fluke Corp.,** Box 9090, Everett, WA 98206-9090.

New regulator helps maximize uptime, reduce noise

The new Fisher EZHSO Series regulator as well as Whisper Trim cage options to the EZH and EZHSO Series are available to the industry.

The EZHSO design incorporates a patent-pending spring cartridge that offers a fail-to-open alternative, helping ensure gas delivery and maximize uptime.

The Whisper Trim technology provides efficient noise prevention at the source, and the cage can be easily retrofitted in the field.

The Type EZHSO and EZHSO-OSX (slam shut) regulators are available in 1, 2, and 3-in. sizes.

The Whisper Trim cage option is available for 2, 3, and 4-in. sizes, opening a broader application range for this product family, the firm notes. Noise reduction of 10-20 dB(A) can be achieved, depending on the application.

Source: **Emerson Process Management,** 12301 Research Blvd., Bldg. III, Austin, TX 78759.

Bechtel Group Inc.,

San Francisco, has elected former Chevron Corp. Chairman and CEO David J. O'Reilly to its board of directors. O'Reilly recently retired from a 41-year career at Chevron, including 10 years as chairman and CEO. He joined Chevron as a process engineer after earning his bachelor's in chemical engineering from University College in Dublin.

O'Reilly

O'Reilly is vice-chairman of the National Petroleum Council, as well as a member of The Business Council, J.P. Morgan International Council, the World Economic Forum's International Business Council, and the American Society of Corporate Executives.

Bechtel is a leading engineering, construction, and project management company with projects in oil and gas, energy, mining, transportation, and infrastructure.

BJ Services Co.,

Houston, has appointed Kyle Ruzick area manager, Gulf Coast, for its process and pipeline services group. In his new role, Ruzick will oversee all process and pipeline services operations, business development initiatives, and financial management throughout the Gulf of Mexico region. He brings 20 years of experience in marketing, sales, engineering, technical operations, and management within the process and pipeline sector. Ruzick launched his career in the oil industry in 1990 with Halliburton, where he served in a variety of management roles in the US and abroad. He joined BJ Services' process and pipeline services group in 2003 as West Africa operations manager, progressing to the position of area manager for the Northern North Sea and Nigeria, working from the company's base in Aberdeen. Ruzick holds a BS in petroleum engineering from the University of Wyoming.

BJ Services Company is a leading provider of field development and production enhancement services to the energy industry.

Bredero Shaw,

a unit of Toronto-based ShawCor Ltd., has entered into a joint venture agreement with OOO ArkhTekhnoProm, an affiliate of OAO Mezhregiontruboprovodstroi, the leading Russian offshore pipeline contractor. The JV will establish a pipe coating facility at the Port of Arkhangelsk in Russia's Arkhangelsk Region to provide advanced concrete weight coating services for the emerging northern Russia offshore pipeline market. The JV involves the formation of a company owned 75% by OOO ArkhTekhnoProm and 25% by Bredero Shaw. Bredero Shaw will lease one of its proprietary mobile concrete coating plants to the JV and will operate the plant under a technical services agreement for an initial 4 years. The first contract to be executed by the joint venture involves concrete weight coating of 48-in. pipe for a pipeline crossing of Baydaratskaya Bay from the Yamal Peninsula. This project will commence during the second quarter of 2010. It is expected that the Arkhangelsk location will enable the JV to undertake future pipe coating projects related to Yamal Peninsula pipeline development as well as other offshore projects throughout Russia.

ShawCor is an energy services company specializing in products and services for the pipeline and pipe services and the petrochemical and industrial segments of the oil and gas industry.

Cecon ASA,

Arendal, Norway, has appointed Morten Kilen operations director, Andrew Towler business development director, and Jorn Otto Gunderson commercial director. Kilen has been with the company since 2007 as project manager on several offshore construction projects. He holds an MS and has 15 years' experience as project manager, project engineering manager, and installation manager on numerous projects. Towler, based in Perth, has been with the company since 2005 as operations director. He holds an MS, BA, and BS and has >25 years' offshore experience, of which the last 20 years was as project manager for significant offshore development projects. Gundersen has been with the company since 2008 as project services manager. He attended the Royal Norwegian Naval Academy and has >15 years of management and senior management experience as contracts and tendering manager on numerous projects.

Cecon is an independent subsea installation contractor focused on engineering, procurement, construction, and installation contracts for steel pipelines, J/S-lay, flexible flowlines, and risers together with cables and umbilicals for subsea oil and gas projects worldwide.

2H Offshore Engineering Ltd.,

London, has merged its UK-based shallow-water conductor and deepwater riser engineering teams into a single engineering group. The combined group of engineers based in Woking will deliver a full range of shallow-water and deepwater conductor and riser engineering services. The shallow-water conductor engineering team was previously based in Norwich and formed part of the UWG analysis group that 2H acquired in July 2008. The Norwich office will be closed.

Meanwhile, 2H has opened a new office in Aberdeen to provide improved support for clients based in the area. 2H has been serving Aberdeen through its London office for over 15 years. The Aberdeen office will initially focus on drilling riser, completion riser, conductor, and wellhead assessments but will also take on other types of engineering with support from 2H's London office. The Aberdeen office will be staffed through a mix of local recruitment and relocation of experienced employees from other 2H offices.

2H manufactures and markets deepwater oil and gas riser equipment.

KCA Deutag,

Aberdeen, has appointed Tim Summers nonexecutive chairman. He joins the company from TNK-BP in Moscow, where he most recently served as CEO. Summers held a variety of senior roles with BP PLC prior to his appointment as COO at TNK-BP 4 years ago. He is a chartered chemical engineer, graduate of Manchester University, and a fellow of the Institute of Chemical Engineers and the Institute of Materials, Minerals, and Mining.

KCA Deutag, owned by funds controlled by First Reserve Corp. and Pamplona Capital Management, is one of the

largest international land drilling contractors outside the Americas and one of the largest platform drilling contractors in the North Sea.

Gulf Offshore Logistics LLC,

New Orleans, has announced plans to build eight deepwater offshore support vessels. That would increase its fleet to 21 owned and operated deepwater service vessels, with several of these vessels slated to work under long-term charter agreements extending into 2014. Four of the vessels will be 220 ft by 36 ft DP2 fast supply vessels powered by four 3,000 hp CAT engines and capable of speeds exceeding 30 knots. The vessels will be built by Gulf Craft LLC in Patterson, La., with the first vessel to be delivered in 2012. The other four vessels will be 300 ft class DP2 diesel electric platform supply vessels with capacities for 18,000 bbl of liquid mud and 13,000 cu ft of dry bulk. These vessels will be built by Thoma-Sea Builders LLC in Lockport, La., with the first delivery set for 2012.

GOL is a full-service marine transportation and logistics company providing vessels and logistical support for the US Gulf Coast oil and gas industry.

UTEC Survey,

Houston, has named Colin Erskine sales manager for UTEC Survey Construction Services Ltd., Aberdeen. Erskine will be responsible for developing new growth opportunities and client relationships in Northwest Europe, the Mediterranean, and West Africa. Erskine has more than 25 years of experience in the offshore survey industry. Previously, he was director of sales for Ashtead Technology and, prior to that, a survey manager for Stolt Offshore. Erskine has a bachelor's in topographic science from the University of Glasgow.

UTEC Survey provides a comprehensive range of offshore survey services to the oil and gas, hydrographic, telecommunication, and construction industries.

Deep Sea Supply PLC,

Limassol, Cyprus, has appointed Espen Skadal CFO. Previously, Skadal was investment director at Agder Energi AS, where he headed the corporate finance business and was managing director of Agder Energi Venture AS. Prior to that, he held positions in Orkla ASA's investment division as portfolio manager and financial analyst, including Orkla Swiss Branch in Zurich. He has also experience from DnBNOR as account manager in the oil and gas department. Skadal has an MBA from the Norwegian School of Economics and Business Administration and is a certified financial analyst and certified portfolio manager.

Deep Sea Supply owns and operates a fleet of anchor handling tug supply vessels.

T3 Energy Services Inc.,

Houston, has opened a new wellhead and production systems facility at Fort Nelson, BC. The facility is to serve as a field support base for the recently discovered Horn River basin gas shale. It will have test, assembly, and repair capabilities supported by manufacturing capabilities from T3's Nisku operation. The Fort Nelson facility will maintain a full complement of service tools in addition to a full range of wellhead and gate valve spare parts.

T3 provides a broad range of oil field products and services in support of drilling and completions, workovers, production, and transportation.

Reservoir Group LLC,

Aberdeen, has appointed Malcolm Greener managing director of its XDT division.

Greener

XDT is the recently launched downhole drilling tools and services division of Reservoir Group focused on the globalization of its range of downhole roller-reamers and ancillary tools, as well as bringing innovative products to market. Previously, Grener was managing director of Andergauge. During his 14-year career with Andergauge, he spearheaded international growth and the sale of the company to SCF Partners followed by a subsequent sale to Grant-Prideco. Prior to Andergauge, Greener spent several years in international roles with Eastman-Whipstock and Baker-Hughes INTEQ. He has an engineering degree from Brunel University.

Reservoir Group is an international group of companies providing the global oil and gas industry with exclusive drilling, completion, and production technologies and related services.

Wartsila Corp.,

Helsinki, has launched a new portfolio of environmental services to serve both the energy and marine markets. The new offering will help customers minimize emissions into the air and water and help them meet increasingly stringent legislation and regulations.

The new portfolio includes a range of products, solutions, and services aimed at both land-based power plants and marine vessels. Included are catalysts that treat nitrogen oxide emissions, scrubbers for removing sulfur oxides, and oily water treatment systems.

Wartsila is a leader in complete life cycle power solutions for the marine and energy markets.

GeoBio Energy Inc.,

Seattle, has appointed Paul Spencer CFO and Chris Wain COO. Spencer and Wain have worked together for several years in business development and financial consulting for early-stage companies. They will bring GeoBio up to speed on financial reporting requirements, consolidate the books and records of GeoBio's proposed oil and natural gas services industry acquisitions, assist the completion of such acquisitions, and develop financial projections and valuations for the combined entities. Spencer is a CPA and a founding partner of TanOak LLC, a Seattle-based business development firm. He previously worked as an office managing partner for BDO Seidman. Prior to that, he worked for Ernst & Young. Wain, also a founding partner of TanOak, brings a 25-year career in engineering, operations, finance, technology integration, and R&D, fulfilling C-class and senior management roles with BP PLC, British Aerospace, Bombardier, Ciba Geigy, and PTI.

GeoBio Energy's business model emphasizes the acquisition and operation of existing companies in the oil and gas services and energy industry. Its most

recently proposed acquisitions include the Farmington, NM-based downhole chemicals specialist H&M Precision Products Inc. and an undisclosed wellsite construction company in Colorado's Piceance Creek Basin.

American International Industries Inc.,

Houston, has formed a new downhole tools company, Downhole Completion Products Inc., based in The Woodlands, Tex. DCP will offer proprietary premium drilling and completion threaded products designed to meet any downhole conditions. American International named Larry Shumate, president of its Shumate Energy Technologies Inc. (SET) subsidiary, president of DCP as well. Shumate has over 30 years of manufacturing experience. SET has API certificates for advanced quality systems and is licensed to produce and monogram threaded products to API Spec 7.1 for drill stem and Spec 5CT for casing and tubing specifications.

American International is a diversified holding company with holdings in oil and gas and in industry, finance, and real estate in Houston and surrounding areas.

Gas Technology Institute,

Des Plaines, Ill., has named Ernest Lever senior institute engineer to lead GTI's research, testing, development, and deployment of plastic pipe, fittings, and other products. Lever has over 20 years of extensive project management, technology development, and research and development experience in the plastic piping industry. Previously, he worked for 13 years at Georg Fischer Central Plastics LLC, Shawnee, Okla., most recently as vice-president of engineering and quality for the last six years. Lever is recognized as an industry leader in electrofusion of plastics, failure mechanisms in plastic, and optimal design of plastic fittings.

GTI is a natural gas industry-focused research, development, and training organization that has been addressing the nation's energy and environmental challenges by developing technology-based solutions for consumers, industry, and government for more than 65 years.

Merichem Chemicals & Refinery Services LLC,

Schaumberg, Ill., has announced the first license for a LO-CAT unit and the first regenerable hydrogen sulfide removal technology to be installed and operated on a floating production, storage, and offloading (FPSO) vessel. The hydrogen sulfide removal module will be installed on an FPSO slated for operation in Aquila field in the Adriatic Sea off Italy. Italian firms COMART and Saipem are working together on the engineering, fabrication, and construction of the module. Saipem will operate the FPSO on behalf of Italian energy giant ENI. The LO-CAT system is designed to directly treat produced associated gas and provide a sweet gas stream with a hydrogen sulfide content of <100 ppm.

Saipem provides engineering, procurement, project management, and construction services for large-scale offshore and onshore oil and gas projects.

COMART is an Italian company committed to the design and fabrication of packages and modules for the treatment of natural gas and oil.

Merichem Chemicals & Refinery Services has more than 30 years of hydrogen sulfide removal experience and offers a complete portfolio of hydrogen sulfide removal processes, systems, and products to fit a wide range of applications.

RigNet Inc.,

Houston, has appointed John Bush manager, strategic business development. He will focus on extending the company's remote communications and collaborative applications to new geographic and vertical markets, particularly in attractive overseas markets where RigNet is underpenetrated or has no presence. Bush comes to RigNet with industry experience in the areas of circuit manufacturing, aerospace technologies, and software development. He has a BS in electrical and computer engineering, with a minor in telecommunications engineering, from Western Carolina University.

Meanwhile, RigNet has relocated its Aberdeen operations to a new and improved facility in Westhill, Aberdeenshire, to accommodate an increased headcount and a need for expanded workshop space and storage and testing facilities. RigNet's Aberdeen office, first opened in 2005, provides local support centers for field operations. Its functions include sales, operations, project management, engineering, procurement, and logistics. The office services RigNet's offshore and onshore clients with operations in the UK and Africa.

RigNet is a leading global provider of managed communications, networks, and collaborative applications dedicated to the oil and gas industry.

WellPoint Systems Inc.,

Calgary, has appointed Herve Seguin CFO. He has over 15 years of experience as a CFO for public Canadian companies, leading debt and equity transactions, including financings, as well as the management of treasury, tax, investor relations, budgeting, and planning functions. Previously Seguin served as CFO and corporate secretary for Certicom Corp., CFO of InfoCast Corp., and vice-president, finance, and CFO of Promis Systems Corp. Ltd. He is a certified management accountant and certified general accountant. Seguin replaces Bharat Mahajan, the company's CFO since July 2008, who has stepped down as CFO but will remain with the company through February 28 in a consulting role to assist in an orderly transition. Mahajan is leaving to pursue other opportunities.

WellPoint provides premier software and related services for managing critical operations within the energy industry.

Foster Wheeler AG,

Zug, Switzerland, has agreed to form a Saudi Arabian joint venture with SOFCON (A. Al-Saihati, A. Fattani, and O. Al-Othman Consulting Engineering Co.). Foster Wheeler SOFCON Consulting Engineering Co. will be based in Al-Khobar, Saudi Arabia, and will provide engineering and project management services for onshore and offshore oil and gas, refining, petrochemical, and associated infrastructure projects in Saudi Arabia.

Foster Wheeler designs and constructs processing facilities for upstream oil and gas, LNG and gas-to-liquids, refining, chemicals, petrochemicals, power, environmental, and other industries.

SOFCON provides program management, engineering design, procurement, construction, and environmental services in Saudi Arabia and other Gulf Cooperation Council countries, notably in oil and gas, refining, petrochemicals, power, water, and infrastructure.

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For most companies the

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Key personnel with phone and email
Company operating & finance descriptions
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Engineers, Contractors & Service Co's
Equipment Manufacturers & Suppliers
Trade Associations & Regulatory Agencies

- Gas Utility Industry – Worldwide
- Electric Utility Industry - Worldwide
- Pipeline Industry - Worldwide
- Refining & Gas Processing Industry - Worldwide
- Petrochemical Industry - Worldwide
- Liquid Terminals Industry - Worldwide
- Drilling & Well Servicing Industry - Worldwide

- United States & Canada E&P
- Texas E&P
- Houston & Gulf Coast E&P
- Mid Continent & Eastern US E&P
- Rocky Mountain & Western US E&P
- Offshore E&P
- International E&P (outside North America)

Directory Numbers (latest counts)

Directory	Listings	HQ Offices	Personnel	Emails	Phone	Fax	Website
Pipeline	22,584	7,955	67,162	52,951	46,409	21,868	6,328
Refining & Gas Processing	20,873	8,726	58,369	45,344	39,455	20,031	6,462
Petrochemical	18,882	8,264	50,755	38,598	35,863	19,268	5,911
Liquid Terminals	8,457	2,983	28,325	22,693	19,142	8,933	2,637
Gas Utility	13,768	6,645	47,288	37,118	31,035	15,903	4,873
Electric Utility	27,586	13,117	81,906	62,193	49,642	25,432	9,160
Drilling & Well Servicing	15,275	6,745	37,279	28,303	23,639	12,974	3,691
Offshore E&P	9,197	3,842	30,382	25,032	16,240	8,518	3,313
International E&P	10,796	4,647	25,495	16,684	16,869	7,459	2,818
United States & Canada E&P	38,595	23,500	81,713	51,098	54,145	27,242	6,758
Texas E&P	11,760	7,820	31,857	22,614	19,578	9,921	3,101
Houston & Gulf Coast E&P	10,403	6,307	32,722	24,387	18,347	9,409	3,626
Mid Continent & Eastern US E&P	12,370	8,407	29,854	18,954	20,142	8,900	2,576
Rocky MTN & Western US E&P	9,539	6,256	21,603	13,119	13,860	6,710	1,647

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Imports of crude and products

	Districts 1-4 2-5 2010	Districts 1-4 1-29 2010	District 5 2-5 2010	District 5 1-29 2010	Total US 2-5 2010	Total US 1-29 2010	Total US *2-6 2009
	1,000 b/d						
Total motor gasoline	1,160	926	8	0	1,168	926	1,318
Mo. gas. blending comp.	881	719	8	0	889	719	1,010
Distillate	630	438	0	0	630	438	146
Residual	402	441	174	54	576	495	460
Jet fuel-kerosine	63	103	46	13	109	116	111
Propane-propylene	312	103	8	18	320	121	254
Other	(354)	16	56	116	(298)	132	(112)
Total products	**3,094**	**2,746**	**300**	**201**	**3,394**	**2,947**	**3,187**
Total crude	**7,253**	**7,430**	**1,089**	**996**	**8,342**	**8,426**	**9,652**
Total imports	**10,347**	**10,176**	**1,389**	**1,197**	**11,736**	**11,373**	**12,839**

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

Purvin & Gertz LNG netbacks—Feb. 12, 2010

Receiving terminal	Liquefaction plant: Algeria	Malaysia	Nigeria	Austr. NW Shelf	Qatar	Trinidad
	$/MMbtu					
Barcelona	7.53	5.40	6.68	5.29	5.99	6.60
Everett	5.23	3.12	4.86	3.20	3.67	5.53
Isle of Grain	4.59	2.40	3.97	2.23	3.05	4.00
Lake Charles	3.09	1.10	2.87	1.28	1.55	3.71
Sodegaura	5.84	8.12	6.09	7.81	7.07	5.15
Zeebrugge	6.54	4.45	5.87	4.39	4.93	5.93

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

Crude and product stocks

District	Crude oil	Motor gasoline: Total	Motor gasoline: Blending comp.[1]	Jet fuel, kerosine	Fuel oils: Distillate	Fuel oils: Residual	Propane-propylene
	1,000 bbl						
PADD 1	13,376	60,487	41,785	9,722	64,132	14,866	2,756
PADD 2	82,084	56,707	27,693	8,219	32,371	1,146	13,074
PADD 3	173,201	74,483	45,009	13,557	43,487	18,719	15,783
PADD 4	15,637	6,048	1,960	533	3,251	197	[1]926
PADD 5	47,120	32,720	28,293	10,343	12,951	4,503	—
Feb. 5, 2010	**331,418**	**230,445**	**144,740**	**42,374**	**156,192**	**39,431**	**32,539**
Jan. 29, 2010	**328,994**	**228,121**	**143,539**	**43,239**	**156,548**	**39,652**	**33,855**
Feb. 6, 2009[2]	**350,768**	**217,559**	**123,107**	**41,000**	**141,565**	**35,050**	**43,209**

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

Refinery report—Feb. 5, 2010

District	Refinery operations: Gross inputs	Refinery operations: Crude oil inputs	Refinery output: Total motor gasoline	Refinery output: Jet fuel, kerosine	Refinery output: Fuel oils: Distillate	Refinery output: Fuel oils: Residual	Refinery output: Propane-propylene
	1,000 b/d		1,000 b/d				
PADD 1	1,130	1,145	2,255	48	337	67	54
PADD 2	3,344	3,312	2,188	182	924	38	244
PADD 3	6,540	6,376	2,611	593	1,597	346	715
PADD 4	538	533	274	17	146	4	[1]56
PADD 5	2,441	2,224	1,479	379	409	124	—
Feb. 5, 2010	**13,993**	**13,590**	**8,807**	**1,219**	**3,413**	**579**	**1,069**
Jan. 29, 2010	**13,738**	**13,461**	**8,584**	**1,309**	**3,484**	**557**	**1,013**
Feb. 6, 2009[2]	**14,370**	**14,127**	**8,492**	**1,367**	**4,142**	**513**	**1,034**
	17,688 Operable capacity		**79.1% utilization rate**				

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

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

OGJ crack spread

	*2-12-10	*2-13-09	Change $/bbl	Change, %
SPOT PRICES				
Product value	80.39	54.62	25.77	47.2
Brent crude	70.75	44.99	25.76	57.3
Crack spread	9.64	9.63	0.01	0.1
FUTURES MARKET PRICES				
One month				
Product value	80.90	53.53	27.38	51.1
Light sweet crude	73.91	36.91	37.00	100.3
Crack spread	6.99	16.62	–9.63	–58.0
Six month				
Product value	85.26	57.80	27.45	47.5
Light sweet crude	76.28	50.69	25.59	50.5
Crack spread	8.98	7.11	1.87	26.3

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

OGJ GASOLINE PRICES

	Price ex tax 2-10-10	Pump price* 2-10-10	Pump price 2-11-09
	¢/gal		
(Approx. prices for self-service unleaded gasoline)			
Atlanta	228.9	260.3	184.0
Baltimore	224.0	265.9	182.0
Boston	220.1	262.0	180.6
Buffalo	213.7	276.9	186.2
Miami	224.7	277.6	183.6
Newark	226.7	259.6	175.2
New York	212.1	275.3	190.6
Norfolk	219.2	256.9	175.2
Philadelphia	219.9	270.6	189.6
Pittsburgh	218.6	269.3	199.2
Wash., DC	229.4	271.3	199.6
PAD I avg	221.6	267.8	186.0
Chicago	241.1	296.2	215.2
Cleveland	239.7	286.1	198.6
Des Moines	220.8	261.2	190.4
Detroit	236.6	288.2	197.5
Indianapolis	229.0	279.1	196.5
Kansas City	220.4	256.1	184.4
Louisville	228.2	269.1	193.1
Memphis	118.0	157.8	182.5
Milwaukee	225.9	277.2	194.5
Minn.-St. Paul	215.6	261.2	188.4
Oklahoma City	200.7	236.1	173.1
Omaha	214.4	260.1	184.2
St. Louis	212.4	248.1	181.6
Tulsa	198.7	234.1	176.3
Wichita	202.8	246.2	180.5
PAD II avg	213.6	257.1	189.1
Albuquerque	219.2	256.4	183.1
Birmingham	216.3	255.6	181.1
Dallas-Fort Worth	211.3	249.7	178.2
Houston	213.3	251.7	174.0
Little Rock	207.5	247.7	185.1
New Orleans	217.5	255.9	181.1
San Antonio	221.0	259.4	179.1
PAD III avg	215.1	253.8	180.2
Cheyenne	220.0	252.4	159.7
Denver	235.1	275.5	176.7
Salt Lake City	214.6	257.5	174.7
PAD IV avg	223.2	261.8	170.4
Los Angeles	229.8	295.6	206.0
Phoenix	239.4	276.8	186.8
Portland	245.6	289.0	211.8
San Diego	231.1	296.9	217.8
San Francisco	233.2	299.0	222.8
Seattle	236.2	292.1	210.5
PAD V avg	235.9	291.6	209.3
Week's avg.	**219.8**	**264.6**	**188.4**
Jan. avg.	**224.9**	**269.7**	**177.1**
Dec. avg.	**214.4**	**259.2**	**171.1**
2010 to date	**223.5**	**268.3**	—
2009 to date	**135.0**	**180.6**	—

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

REFINED PRODUCT PRICES

	2-5-10 ¢/gal		2-5-10 ¢/gal
Spot market product prices			
Motor gasoline (Conventional-regular)		Heating oil No. 2	
New York Harbor	189.39	New York Harbor	189.15
Gulf Coast	186.64	Gulf Coast	185.12
Los Angeles	193.14	Gas oil	
Amsterdam-Rotterdam-Antwerp (ARA)	NA	ARA	182.01
Singapore	200.36	Singapore	188.21
Motor gasoline (Reformulated-regular)		Residual fuel oil	
New York Harbor	188.52	New York Harbor	159.83
Gulf Coast	187.64	Gulf Coast	165.19
Los Angeles	199.14	Los Angeles	190.34
		ARA	167.04
		Singapore	175.07

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

BAKER HUGHES RIG COUNT

	2-12-10	2-13-09
Alabama	4	2
Alaska	10	8
Arkansas	41	51
California	25	22
Land	24	21
Offshore	1	1
Colorado	52	69
Florida	1	0
Illinois	1	1
Indiana	2	3
Kansas	18	15
Kentucky	8	11
Louisiana	205	160
N. Land	136	83
S. Inland waters	13	6
S. Land	17	21
Offshore	39	50
Maryland	0	0
Michigan	0	0
Mississippi	10	12
Montana	6	3
Nebraska	2	0
New Mexico	53	50
New York	1	3
North Dakota	81	64
Ohio	7	8
Oklahoma	116	134
Pennsylvania	66	24
South Dakota	0	0
Texas	546	581
Offshore	4	6
Inland waters	0	0
Dist. 1	24	8
Dist. 2	20	30
Dist. 3	38	44
Dist. 4	47	45
Dist. 5	76	129
Dist. 6	71	97
Dist. 7B	10	15
Dist. 7C	52	40
Dist. 8	108	69
Dist. 8A	17	18
Dist. 9	33	30
Dist. 10	46	50
Utah	24	22
West Virginia	23	27
Wyoming	38	53
Others—HI-1; NV-4; TN-1	6	16
Total US	**1,346**	**1,339**
Total Canada	**551**	**421**
Grand total	**1,897**	**1,760**
US Oil rigs	443	273
US Gas rigs	891	1,054
Total US offshore	45	58
Total US cum. avg. YTD	**1,277**	**1,501**

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	2-12-10 Percent footage*	Rig count	2-13-09 Percent footage*
0-2,500	101	3.9	49	—
2,501-5,000	48	68.7	69	50.7
5,001-7,500	134	28.3	184	24.4
7,501-10,000	265	7.5	288	3.8
10,001-12,500	276	9.7	272	2.2
12,501-15,000	210	2.8	258	0.3
15,001-17,500	185	—	148	—
17,501-20,000	78	—	69	—
20,001-over	45	—	41	—
Total	**1,342**	**9.5**	**1,378**	**7.1**
INLAND	14		16	
LAND	1,285		1,311	
OFFSHORE	43		51	

*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]2-12-10	[2]2-13-09
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	21	21
Alaska	710	679
California	644	646
Colorado	67	65
Florida	4	2
Illinois	25	24
Kansas	111	110
Louisiana	1,425	1,351
Michigan	16	16
Mississippi	62	62
Montana	85	81
New Mexico	164	161
North Dakota	227	191
Oklahoma	183	178
Texas	1,425	1,374
Utah	66	64
Wyoming	147	142
All others	69	78
Total	**5,451**	**5,245**

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

US CRUDE PRICES

	2-12-10 $/bbl*
Alaska-North Slope 27°	70.46
South Louisiana Sweet	75.25
California-Midway Sunset 13°	66.55
Lost Hills 30°	74.60
Wyoming Sweet	64.63
East Texas Sweet	70.00
West Texas Sour 34°	65.50
West Texas Intermediate	70.50
Oklahoma Sweet	70.50
Texas Upper Gulf Coast	63.50
Michigan Sour	62.50
Kansas Common	69.50
North Dakota Sweet	56.75

*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]	1-29-10
United Kingdom-Brent 38°	72.32
Russia-Urals 32°	71.95
Saudi Light 34°	70.76
Dubai Fateh 32°	72.67
Algeria Saharan 44°	73.28
Nigeria-Bonny Light 37°	74.41
Indonesia-Minas 34°	74.86
Venezuela-Tia Juana Light 31°	71.99
Mexico-Isthmus 33°	71.88
OPEC basket	72.62
Total OPEC[2]	71.97
Total non-OPEC[2]	72.02
Total world[2]	71.99
US imports[3]	71.29

[1]Estimated contract prices. [2]Average price (FOB) weighted by estimated export volume. [3]Average price (FOB) weighted by estimated import volume. **No new data at press time.**

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

US NATURAL GAS STORAGE[1]

	2-5-10	1-29-10	2-5-09	Change, %
	bcf			
Producing region	736	796	726	1.4
Consuming region east	1,135	1,251	988	14.9
Consuming region west	344	359	328	4.9
Total US	**2,215**	**2,406**	**2,042**	**8.5**
	Nov. 09	**Nov. 08**	**Change, %**	
Total US[2]	**3,833**	**3,346**	**14.6**	

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

Statistics

World oil balance

	2009 3rd qtr.	2009 2nd qtr.	2009 1st qtr.	2008 4th qtr.	2008 3rd qtr.	2008 2nd qtr.
	Million b/d					
DEMAND						
OECD						
US & Territories	18.86	18.75	19.07	19.53	19.20	20.05
Canada	2.22	2.08	2.20	2.26	2.25	2.19
Mexico	2.10	2.01	2.05	2.07	2.14	2.19
Japan	4.10	4.03	4.72	4.71	4.34	4.63
South Korea	2.07	2.17	2.34	2.14	2.10	2.11
France	1.81	1.81	2.02	2.04	1.95	1.95
Italy	1.57	1.52	1.55	1.62	1.64	1.64
United Kingdom	1.66	1.67	1.73	1.73	1.65	1.73
Germany	2.40	2.39	2.57	2.65	2.71	2.43
Other OECD Europe	7.02	6.84	7.04	7.38	7.57	7.32
Australia & New Zealand	1.11	1.10	1.08	1.12	1.10	1.11
Total OECD	**44.92**	**44.37**	**46.37**	**47.25**	**46.65**	**47.35**
NON–OECD						
China	8.33	8.44	7.62	7.54	7.78	8.07
FSU	4.24	4.19	4.09	4.48	4.47	4.22
Non–OECD Europe	0.82	0.77	0.77	0.80	0.80	0.80
Other Asia	9.17	9.53	9.30	8.83	9.06	9.74
Other non–OECD	16.81	16.37	15.26	15.68	16.53	16.12
Total non–OECD	**39.37**	**39.30**	**37.04**	**37.33**	**38.64**	**38.95**
TOTAL DEMAND	**84.29**	**83.67**	**83.41**	**84.58**	**85.29**	**86.30**
SUPPLY						
OECD						
US	9.13	8.97	8.78	8.46	8.18	8.75
Canada	3.32	3.20	3.38	3.40	3.40	3.22
Mexico	2.96	2.99	3.06	3.12	3.15	3.19
North Sea	3.79	4.00	4.40	4.37	4.06	4.31
Other OECD	1.56	1.53	1.54	1.59	1.59	1.57
Total OECD	**20.76**	**20.69**	**21.16**	**20.94**	**20.38**	**21.04**
NON–OECD						
FSU	12.98	12.87	12.60	12.46	12.42	12.60
China	4.01	3.98	3.92	3.99	3.97	4.00
Other non–OECD	12.42	12.38	12.39	12.36	12.31	12.13
Total non–OECD, non–OPEC	**29.41**	**29.23**	**28.91**	**28.81**	**28.70**	**28.73**
OPEC*	**34.28**	**33.61**	**33.38**	**35.16**	**36.18**	**35.84**
TOTAL SUPPLY	**84.45**	**83.53**	**83.45**	**84.91**	**85.26**	**85.61**
Stock change	**0.16**	**–0.14**	**0.04**	**0.33**	**–0.03**	**–0.69**

*Includes Angola. **NOTE: No new data at press time.**
Source: DOE International Petroleum Monthly
Data available in OGJ Online Research Center.

US petroleum imports from source country

	Sept. 2009	Aug. 2009	Average YTD 2009	Average YTD 2008	Chg. vs. previous year Volume	Chg. vs. previous year %
	1,000 b/d					
Algeria	491	641	491	542	–51	–9.4
Angola	450	414	482	514	–32	–6.2
Kuwait	104	246	180	201	–21	–10.4
Nigeria	869	894	764	1,009	–245	–24.3
Saudi Arabia	943	1,045	1,041	1,537	–496	–32.3
Venezuela	955	1,146	1,120	1,187	–67	–5.6
Other OPEC	769	635	789	1,008	–219	–21.7
Total OPEC	**4,581**	**5,021**	**4,867**	**5,998**	**–1,131**	**–18.9**
Canada	2,360	2,356	2,439	2,477	–38	–1.5
Mexico	1,136	1,271	1,252	1,299	–47	–3.6
Norway	97	59	114	103	11	10.7
United Kingdom	266	295	255	242	13	5.4
Virgin Islands	215	280	282	322	–40	–12.4
Other non-OPEC	2,201	2,439	2,707	2,509	198	7.9
Total non-OPEC	**6,275**	**6,700**	**7,049**	**6,952**	**97**	**1.4**
TOTAL IMPORTS	**10,856**	**11,721**	**11,916**	**12,950**	**–1,034**	**–8.0**

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

OECD total net oil imports

	Sept. 2009	Aug. 2009	July 2009	Sept. 2008	Chg. vs. previous year Volume	Chg. vs. previous year %
	Million b/d					
Canada	–1,288	–1,295	–1,444	–1,185	–103	8.7
US	9,616	9,124	9,704	10,239	–623	–6.1
Mexico	–961	–856	–1,001	–805	–156	19.4
France	1,556	1,790	1,710	1,722	–166	–9.6
Germany	2,068	2,113	2,071	2,577	–509	–19.8
Italy	1,418	1,292	1,451	1,471	–53	–3.6
Netherlands	1,265	848	621	939	326	34.7
Spain	1,407	1,429	1,417	1,530	–123	–8.0
Other importers	3,826	3,600	3,869	4,129	–303	–7.3
Norway	–1,997	–1,896	–2,156	–1,567	–430	27.4
United Kingdom	190	491	278	84	106	126.2
Total OECD Europe	**9,733**	**9,667**	**9,261**	**10,885**	**–1,152**	**–10.6**
Japan	4,094	4,273	3,886	4,533	–439	–9.7
South Korea	2,302	2,124	2,263	1,854	448	24.2
Other OECD	992	817	974	770	222	28.8
Total OECD	**24,488**	**23,854**	**23,643**	**26,291**	**–1,803**	**–6.9**

Source: DOE International Petroleum Monthly **NOTE: No new data at press time.**
Data available in OGJ Online Research Center.

OECD* total gross imports from OPEC

	Sept. 2009	Aug. 2009	July 2009	Sept. 2008	Chg. vs. previous year Volume	Chg. vs. previous year %
	Million b/d					
Canada	427	358	388	544	–117	–21.5
US	5,021	4,567	4,623	5,097	–76	–1.5
Mexico	10	21	18	28	–18	–64.3
France	666	641	831	1,111	–445	–40.1
Germany	341	395	390	501	–160	–31.9
Italy	889	846	982	1,329	–440	–33.1
Netherlands	665	643	516	685	–20	–2.9
Spain	652	650	577	847	–195	–23.0
Other importers	1,151	948	1,288	1,593	–442	–27.7
United Kingdom	266	259	257	275	–9	–3.3
Total OECD Europe	**4,630**	**4,382**	**4,841**	**6,341**	**–1,711**	**–27.0**
Japan	3,375	3,637	3,597	3,940	–565	–14.3
South Korea	2,541	2,324	2,468	2,339	202	8.6
Other OECD	509	543	553	519	–10	–1.9
Total OECD	**16,513**	**15,832**	**16,488**	**18,808**	**–2,295**	**–12.2**

*Organization for Economic Cooperation and Development. **NOTE: No new data at press time.**
Source: DOE International Petroleum Monthly
Data available in OGJ Online Research Center.

Oil stocks in OECD countries*

	Sept. 2009	Aug. 2009	July 2009	Sept. 2008	Chg. vs. previous year Volume	Chg. vs. previous year %
	Million bbl					
France	174	178	174	177	–3	–1.7
Germany	277	284	277	274	3	1.1
Italy	129	130	127	130	–1	–0.8
United Kingdom	92	96	97	95	–3	–3.2
Other OECD Europe	726	724	717	688	38	5.5
Total OECD Europe	**1,398**	**1,412**	**1,392**	**1,364**	**34**	**2.5**
Canada	190	197	201	198	–8	–4.0
US	1,845	1,828	1,842	1,704	141	8.3
Japan	607	610	607	646	–39	–6.0
South Korea	167	160	157	141	26	18.4
Other OECD	117	111	108	117	0	0.0
Total OECD	**4,324**	**4,318**	**4,307**	**4,170**	**154**	**3.7**

*End of period. **NOTE: No new data at press time.**
Source: DOE International Petroleum Monthly Report
Data available in OGJ Online Research Center.

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Oil demand lift from icy weather not a sure thing

Shouldn't a cold Northern Hemisphere winter give oil demand, struggling to recover from recessionary doldrums, a huge lift? Maybe not.

Yes, heating oil users have been burning more of the fuel than they would have in warmer weather. But the effect on total demand is muted.

The International Energy Agency's Oil Market Report for February points out

The Editor's Perspective

by Bob Tippee, Editor

that heating oil consumption patterns are changing in the developed nations of the Organization for Economic Cooperation and Development (OECD).

"The share of oil for heating and power generation in the OECD has been shrinking uninterruptedly over the past decade," IEA explains. "Other energy sources, notably natural gas, renewables, and nuclear power, are becoming the fuels of choice for both purposes, displacing both distillate and residual fuel oil."

In the cold first quarter of last year, heating oil represented 9% of total OECD oil demand, IEA points out. In the early 1990s, the share was 15%. In the past 15 years, OECD first-quarter heating oil demand has fallen by a third.

"Even if first-quarter 2010 proves to be as cold as first-quarter 2009," IEA says, "the heating oil surge—and the concomitant fall in distillate stocks—predicted by many observers is unlikely to materialize."

A distillate drawdown would lower oil in inventory from unusually high levels, easing a downward force on oil prices.

IEA projects average OECD heating oil demand of 3.7 million b/d in the first quarter this year, 13% below the first quarter of 2009.

In its assessment of the trend underlying this outlook, IEA is not alone.

The Centre for Global Energy Studies, London, in a Feb. 3 report notes difficulties in isolating demand boosted by icy December and February from effects of the global recession. It sees early indications of a weather-related demand bump.

Overall, however, oil demand is becoming "less seasonal by the year," CGES says.

"Indeed, these days the hurricane season in the western Atlantic can have a more pronounced effect on oil prices than a cold winter as a result of storm-induced damage to the extensive oil and gas infrastructure in the US Gulf of Mexico."

(Online Feb. 12, 2010; author's e-mail: bobt@ogjonline.com)

Market Journal

by Sam Fletcher, Senior Writer

EIA may underestimate gas demand

The US Department of Energy's Energy Information Administration may be underestimating natural gas demand with much of the US South and Northeast enveloped in yet another round of cold weather that boosted gas and electricity demand in January through early February, said Adam Sieminski, chief energy economist, Deutsche Bank, Washington, DC.

The March natural gas contract climbed 10.4¢ to $5.40/MMbtu Feb. 11 on the New York Mercantile Exchange, "the largest 1-day gain since the beginning of the month," on "a drop in jobless claims, indicating industrial demand, which accounts for 29% of US [gas] consumption, is likely improving, and cold temperatures across the US likely resulting in higher residential demand," said analysts at Pritchard Capital Partners LLC in New Orleans.

On the US spot market that same day, gas at Henry Hub, La., gained 3¢ to $5.51/MMbtu. Gas prices continued rising to $5.47/MMbtu in the Feb. 12 session on NYMEX and to $5.55/MMbtu at Henry Hub as continued snowfall buried parts of the Northeastern US and the Mid-Atlantic states. Meanwhile, EIA reported January heating degree-days in the South Census Region—where 60% of households use electricity as the primary space heating fuel—were 13% higher in January than a year ago. Consequently, residential electricity sales in the South region also increased by about 12% to an average of 2,250 Gw-hr/day, "and a good part of this electricity was generated with natural gas," Sieminski said.

He noted that EIA estimated gas consumption by the entire US electric power sector jumped by more than 8% in January from the administration's preliminary estimate during that month. EIA's short-term energy outlook published in the week ended Feb. 12 estimated a new record for gas consumption by the electric power sector for January. "However, the EIA is reluctant to give up on its view that an increase in coal-fired generation capacity and higher natural gas prices through the remainder of the year should reduce the share of natural gas-fired generation in the baseload power mix in 2010." Sieminski said.

Data indicate a minispike in electric utility gas use during January before dropping off in February and March. Similarly, residential use in the EIA forecast is shown lower in this year's first quarter than the similar period in 2009.

"Could the EIA be underestimating gas demand?" Sieminski asked. "News reports this week show a severe and very unusual winter snowstorm across the South from Dallas, Tex., to Atlanta, Ga. This appears to be the same type of weather pattern that caused the unusual rise in electric utility gas use in January. Other parts of the US are also getting hit hard with cold, windy weather that boosts gas use in home heating. March might also be exceptionally cold across a large section of the central US." Analysts at Pritchard Capital Partners said, "Land drilling activity both in the US and abroad continues to move higher. The outlook for natural gas over the next 12 months, specifically in the US, is highly debatable."

Colder March forecast

Deutsche Bank's meteorologist Corey Lefkof is calling for unusually cold temperatures across much of the central US in March. His forecast is for another frigid month in the US, with data suggesting a 15-20% colder March compared with 10-year average temperatures. He said the "major meteorological themes from the winter so far" should extend into March as "the robust negative Arctic Oscillation and negative North Atlantic Oscillation signatures hold into mid-March" along with "a decaying El Nino in the Pacific that has traditionally lead to colder than normal US conditions as the Pacific jet calms down and allows more Canadian and polar air masses to influence the pattern."

EIA reported the withdrawal of 191 bcf of natural gas from US underground storage in the week ended Feb. 5. That reduced working gas in storage to 2.2 tcf, up by 172 bcf from year-ago levels and 114 bcf above the 5-year average. "After last week's relatively colder weather, the blizzard that blanketed the Mid-Atlantic this week, and forecasts for colder weather in late February, we could see significant withdrawals from [gas] storage over the next couple of week," said analysts in the Houston office of Raymond James & Associates Inc.

On the other hand, Olivier Jakob at Petromatrix, Zug, Switzerland, said, "The transportation fuel demand destruction that is associated with the record snowfall in the US East Coast should turn into greater-than-expected stock builds of gasoline and diesel, which given the limited storage capacity available pressures the cracks...."

(Online Feb. 15, 2010; author's e-mail: samf@ogjonline.com)

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