Week of Jan. 25, 2010/US$10.00

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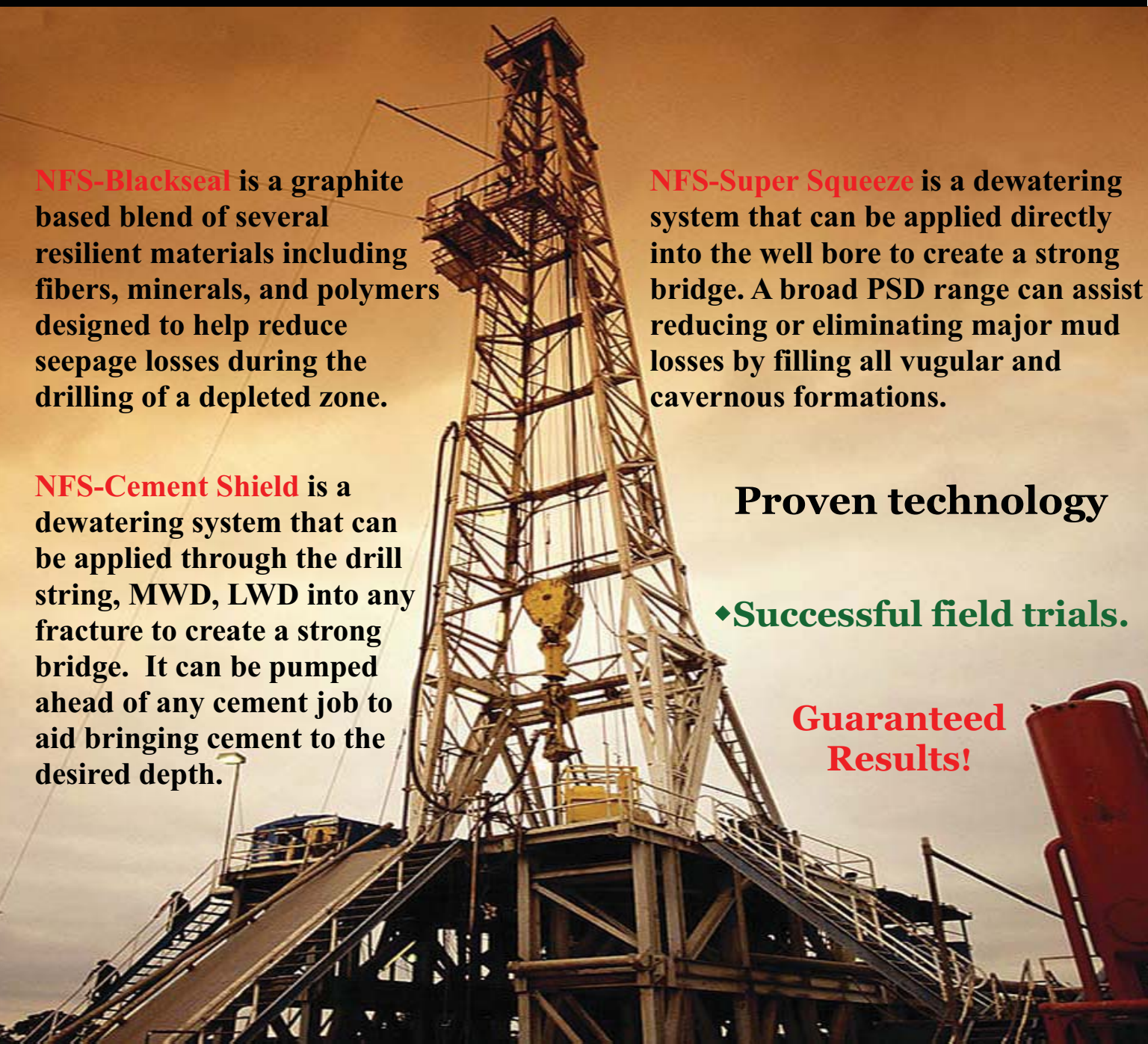
OGJ Focus: Transportation

Industry meets challenges out of Washington in 2009
McMoRan sees Davy Jones find revitalizing gulf shelf
Causes of Tarim oil field drillstring failures assessed
StatoilHydro publishes Troll Blend assay

Total loss circulation solutions
NFS-BlackSeal®, NFS-Cement Shield®
NFS-Super Squeeze™



NFS-Blackseal is a graphite based blend of several resilient materials including fibers, minerals, and polymers designed to help reduce seepage losses during the drilling of a depleted zone.

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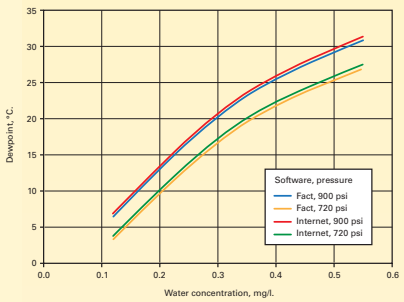
Jan. 25, 2010
Volume 108.3

OGJ Focus: Transportation

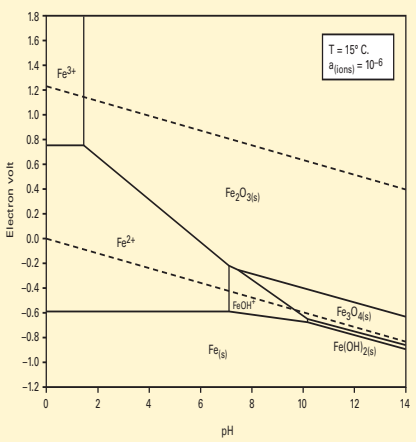
CALCULATED DEWPOINTS WITH ARGON

Fig. 1



EpH DIAGRAM, FE IN WATER

Fig. 2



BLACK POWDER COMPOSITION PER XRD TECHNIQUE

Table 1

Main compound	Approximate avg. weight, %
Magnetite—Fe_3O_4	60
γ—FeOOH	Trace amounts, <2
α—FeOOH	25
Iron sulfides	Not detected
Siderite—$FeCO_3$	10
Elemental sulfur	5

Regular Features

Cover

Dive crews aboard the DSV Joseph Bisso successfully laid 900 ft of 6-in. pipe at a water depth of 66 ft about 20 miles south of Grand Isle in the Gulf of Mexico. The pipeline was laid using a portable lay system and the vessel's 30-ton hydraulic crane. The month-long project also involved installing a 16 × 6-in. hot tap fitting that allowed the pipeline to continue to operate without disruptions. Photo from Bisso Marine Co.

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Exploration & Development

Technology

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General Interest — Quick Takes

KPO 'in talks' with Kazakhstan over Karachaganak

Kazakhstan's Prime Minister Karim Masimov said his country is negotiating to purchase a stake in the Karachaganak gas-condensate project from Karachaganak Petroleum Operating BV (KPO), a consortium of BG Group, Eni SPA, Chevron Corp., and OAO Lukoil.

"Currently, talks on this issue are ongoing between the energy ministry, [Kazakhstan's state-owned] KazMunaiGas (KMG), and all the project participants," said Masimov, referring to BG and Eni, each with a 32.5% interest, along with Chevron 20% and Lukoil 15%.

The government's aim of purchasing a 10% stake, first reported last month, has been linked with efforts by KPO—including international arbitration—to secure a refund of more than $1 billion for export duties it should not have to pay under its final production-sharing agreement.

Under the FPSA, signed in 1997 by the Kazakh government and KPO partners, the consortium is to operate the Karachaganak facilities until 2038.

Some industry analysts suggest the government is using export duties as a pretext for pressuring the consortium to sell a stake in the Karachaganak project similar to its successful effort to gain a stake in the Eni-led Kashagan project.

In 2008, the Kazakh government doubled its stake in Kashagan to 16.8%, following a protracted dispute with the Agip-led consortium over costs and production delays. Eventually, the newly formed North Caspian Operating Co. BV—including KMG—replaced the Agip consortium as operator of the field (OGJ, Feb. 2, 2009, p. 33).

However, according to one analyst, the government's current move is more about money than it is about control of the project. Karachaganak "is very profitable for investors and if you join the project at a later stage of development you have smaller operational and financial risks," Artem Konchin, an oil analyst at UniCredit SPA told Bloomberg News.

Kazakh officials are aware of the value of the KPO project. In December, Massimov and other officials joined KPO executives to launch the first leg of the Karachaganak-Uralsk gas pipeline being built by KPO in the Western Kazakhstan Oblast.

"The pipeline goes through the territory of five districts, and it potentially allows for gasification of 146 settlements within Western Kazakhstan Oblast," said Massimov, calling the development "a great achievement."

The second leg of the Karachaganak-Uralsk pipeline is due for completion in second half 2010. When complete, the Karachaganak-Uralsk pipeline will supply gas to the villages situated on the left bank of the Ural River along the way between Karachaganak field and Uralsk City.

According to KPO partners, Karachaganak is one of the world's largest oil and gas-condensate fields. Covering more than 280 sq km, it is estimated to hold more than 1.2 billion tonnes of oil and condensate and more than 1.35 trillion cu m of gas.

Tajikistan: Investment needed to boost production

Tajikistan needs a considerable increase of investment for the quickest development of the country's natural gas resources, according to a senior government official.

"A record amount of natural gas was produced in Tajikistan in the 1970s, 525 million cu m/year, when huge funds were invested in this sphere," said Azim Ibrohimov, who heads the country's main geology directorate.

Today—taking into account industrial enterprises—the country needs annual production of 800 million cu m to 1 billion cu m of gas, Ibrohimov said, adding, "A multifold increase of funding is needed today to produce at least similar amounts of domestic gas."

Ibrohimov, who noted that five companies prospect for gas in the country, said there is still no fully encouraging information that Tajikistan could fully supply all of its own gas.

"Taking into account prospecting work done by these companies, one cannot say that Tajikistan will (fully) be provided with its own natural gas in the near future," Ibrohimov said.

The comments come as Tajikistan faces a crisis over its gas supplies from neighboring Uzbekistan. Earlier this month, Uzekistan's state-owned Uzbektransgaz reduced its supplies of natural gas to Tajikistan by 50% due to a dispute over payment (OGJ Online, Jan. 11, 2010).

EU, Iraq sign strategic partnership MOU

European Union Energy Commissioner Andris Piebalgs and Iraq's Minister for Oil Hussain Al-Shahristani signed a memorandum of understanding outlining priorities for an "energy strategic partnership," which includes Iraq as a possible natural gas supplier to the Southern Corridor gas lines.

For its part, the EU could help Iraq develop its electric power system and tap its vast renewable resources.

Areas of cooperation covered by the MOU involve development of an Iraqi energy policy, an energy action program for 2010-15, assessment of Iraq's hydrocarbon pipeline network, enhancing pipeline safety and reliability, identifying sources and supply routes for gas from Iraq to the EU, and a plan for development of renewable energy in Iraq. ✦

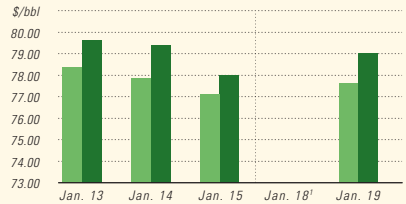
Exploration & Development — Quick Takes

Pioneer beefs up Eagle Ford shale efforts

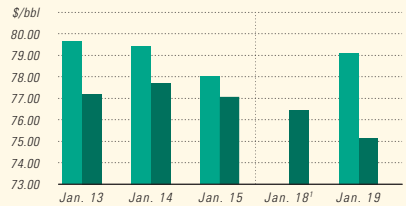
Pioneer Natural Resources Co., Dallas, completed its second South Texas Eagle Ford shale well, formed an Eagle Ford asset team, and is pursuing a joint venture with bids expected in the second quarter.

Industry Scoreboard

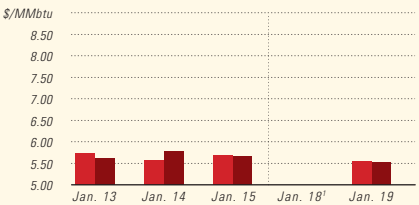
IPE BRENT / NYMEX LIGHT SWEET CRUDE



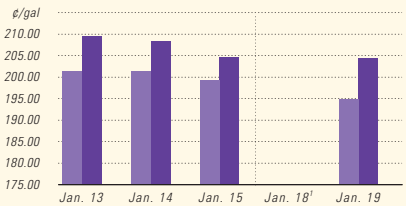
WTI CUSHING / BRENT SPOT



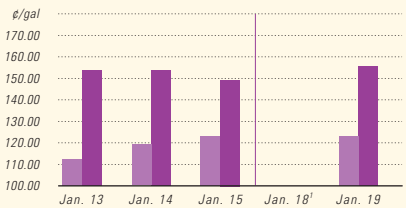
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



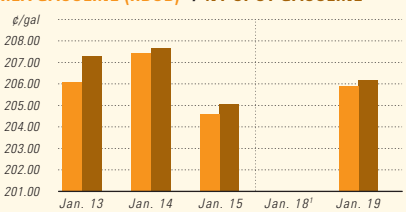
IPE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



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



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

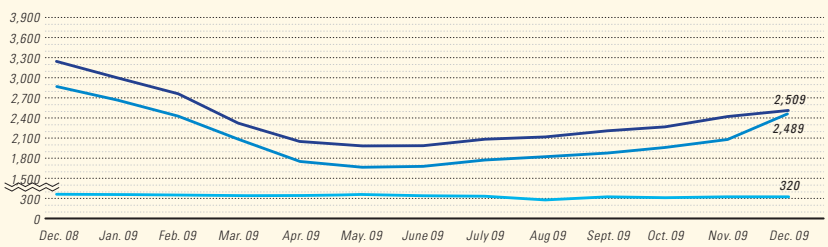
US INDUSTRY SCOREBOARD — 1/25

Latest week 1/8	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	8,900	8,868	0.4	8,741	8,690	0.6
Distillate	3,701	3,856	–4.0	3,580	4,075	–12.1
Jet fuel	1,430	1,386	3.2	1,442	1,357	6.3
Residual	472	740	–36.2	479	700	–31.6
Other products	4,455	4,288	3.9	4,456	4,302	3.6
TOTAL DEMAND	18,958	19,138	–0.9	18,697	19,124	–2.2
Supply, 1,000 b/d						
Crude production	5,510	5,104	8.0	5,502	5,246	4.9
NGL production[2]	2,048	1,789	14.5	2,039	1,797	13.5
Crude imports	8,246	9,527	–13.4	8,625	9,852	–12.5
Product imports	2,533	3,221	–21.4	2,662	3,321	–19.8
Other supply[3]	1,833	1,692	8.3	1,742	1,051	65.7
TOTAL SUPPLY	20,170	21,333	–5.5	20,569	21,266	–3.3
Refining, 1,000 b/d						
Crude runs to stills	13,863	14,418	–3.8	13,899	14,112	–1.5
Input to crude stills	14,209	14,707	–3.4	14,247	14,503	–1.8
% utilization	80.4	83.4	—	80.6	82.1	—

Latest week 1/8	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	331,036	327,337	3,699	326,563	4,473	1.4
Motor gasoline	223,492	219,701	3,791	213,505	9,987	4.7
Distillate	160,401	159,048	1,353	144,167	16,234	11.3
Jet fuel–kerosine	42,426	41,668	758	37,973	4,453	11.7
Residual	37,422	37,181	241	34,742	2,680	7.7
Stock cover (days)[4]			Change, %		Change, %	
Crude	23.9	23.7	0.8	22.6	5.8	
Motor gasoline	25.1	24.5	2.4	23.9	5.0	
Distillate	43.3	42.5	1.9	35.2	23.0	
Propane	29.7	31.6	–6.0	39.8	–25.4	
Futures prices[5] **1/15**			Change		Change	%
Light sweet crude ($/bbl)	80.07	82.37	–2.30	44.51	35.56	79.9
Natural gas, $/MMbtu	5.61	5.82	–0.21	5.81	–0.19	–3.4

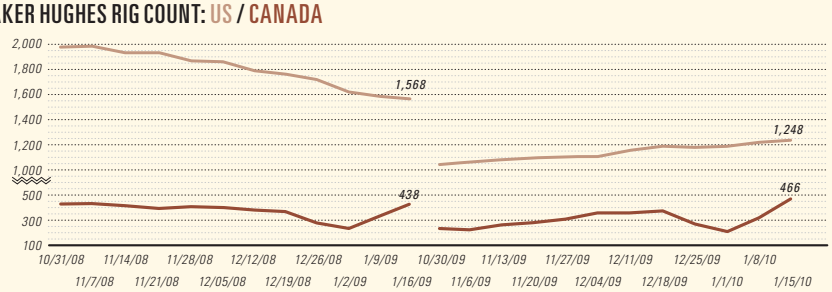
[1]Based on revised figures. [2]Includes adjustments for fuel ethanol and motor gasoline blending components. [3]Includes other hydrocarbons and alcohol, refinery processing gain, and unaccounted for crude oil. [4]Stocks divided by average daily product supplied for the prior 4 weeks. [5]Weekly average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

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



Note: Monthly average count

BAKER HUGHES RIG COUNT: US / CANADA



Note: End of week average count

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The company turned to sales its Robert Crawley Gas Unit-1 well in Live Oak County which flowed 17 MMcfd of gas with 7,300 psi wellhead flowing pressure on a 24/64-in. choke from a 5,400-ft lateral after a 16-stage frac. True vertical depth is 14,000 ft.

The Eagle Ford shale at the Crawley location, 3 miles south of Pioneer's liquids-rich Sinor-5 discovery well, is 1,000 ft deeper and has a 30% thicker pay zone than at the Sinor location.

The well's goal was to test productivity towards the dry gas window in a deeper, thicker Eagle Ford shale section with a longer lateral and additional frac stages. With the highest gas rate reported to date in the play, Crawley-1 exceeded the company's expectations and confirmed that dry gas wells provide strong economics at today's prices.

Pioneer holds more than 2,000 sq miles of 3D seismic data, logs from more than 150 operated wells, proprietary core samples, and microseismic results in the Eagle Ford play. It is operating two horizontal rigs with wells in DeWitt and Karnes counties under way, both targeting liquids-rich areas.

Two asset teams will report to William F. Hannes, formerly executive vice-president business development, who is named executive vice-president South Texas operations. They are the existing South Texas asset team and the newly formed Eagle Ford shale asset team.

Pioneer named three other executive vice-presidents: Danny L. Kellum over Permian operations, Jay P. Still over Midcontinent operations in addition to Rockies, Alaska, and Barnett shale assets, and Chris J. Cheatwood over business development and geoscience-engineering technology.

PTTEP joins Australian exploration project

Thailand's PTT Exploration & Production PLC (PTTEP) agreed to farm into a 20% interest in three exploration blocks off northwestern Australia.

It became the fourth stakeholder in blocks WA-378-P (3,634 sq km), WA-396-P (4,467 sq km), and WA-397-P (3,886 sq km), joining the joint venture led by Woodside Energy Ltd.

The farm-in represents PTTEP's fifth venture in Australia where the state-owned firm is seeking to further its presence.

The joint venture plans to drill an exploration well this year after seismic showed ``great potential for gas,'' said PTTEP chief executive Anon Sirisaengtaksin.

After PTTEP's 20% farm-in, Woodside Energy has a 50% stake in those permits, Mitsui E&P Australia Pty Ltd. holds 20% and Toyota Tsusho Gas E&P Browse Pty Ltd. has 10%.

Pakistan Petroleum signs exploration pacts

Pakistan Petroleum Ltd. (PPL) has signed two oil and gas exploration agreements with the Pakistani government.

PPL signed concession agreements for the 2,459-sq-km 2467-12 Jungshahi block and the 2,436-sq-km 2568-18 Gambat South block, both in Sindh.

PPL intends to invest more than $17.05 million in the blocks over 3 years for work including 2D and 3D seismic surveys and drilling.

The agreement resulted from a Sept. 30, 2009, bidding round.

PPL operates Sui, Kandhkot, Mazarani, Adhi, and Chachar fields in Pakistan with total production of 786 MMcfd of gas, 4,989 b/d of oil, and 150 tonnes/day of LPG. ✦

Drilling & Production — *Quick Takes*

Shell, Petronas sign Majnoon contract with Iraq

Iraq's Ministry of Oil has signed a 20-year contract with Royal Dutch Shell PLC and Malaysia's Petronas to provide technical assistance in the development of the Majnoon oil field.

The consortium targets a production plateau of 1.8 million b/d of oil, up from a current level of 45,000 b/d. Majnoon, which lies in southern Iraq, is one of the world's largest oil fields.

Lead operator Shell will hold a 45% share, with partner Petronas holding 30%. The Iraqi state holds 25% of the participating interests in all licenses.

"Iraq's oil and gas reserves are among the largest in the world and we look forward to applying our experience and technology to support ongoing efforts to rebuild the country's energy infrastructure," said Shell Chief Executive Officer Peter Voser.

The signing follows the contract award on Dec. 11, 2009, and the approval of the Iraqi Council of Ministers on Jan. 5.

Shell begins drilling for shale gas in Sweden

Royal Dutch Shell PLC, despite opposition from environmentalists, has begun to drill for shale gas in Sweden, saying there may be enough gas to make the country self-sufficient for a decade.

"There could be enough gas to cover Sweden's gas needs for at least 10 years," said a Shell spokesman, adding that the firm is drilling its first well now and expects to finish three wells by the end of March.

Shell's drilling program has met with resistance from local residents, according to the Skanska Dagbladet newspaper which last week said neighbors to the planned drilling site appealed to the Environmental Court over an earlier approval by the county administrative board.

Last November, the county administrative board of Sjobo gave the green light to Shell's application to conduct test drilling for gas in the municipality. That approval came after an earlier one by the Swedish Mining Inspectorate.

The approvals have been granted despite objections of some local residents and activists who fear the drilling program could have adverse effects on the environment, especially on the region's water supplies.

Goeran Gustafson, a science teacher active in a green group which seeks to stop the project, expressed concern about the impact on ground water, saying that it could be contaminated by heavy metals and other dangerous substances.

Sweden is one of several countries in Europe where exploration for shale gas is being carried out by international oil and gas companies. Others include the UK, France, Germany, Austria, Poland, and Hungary.

In addition to Shell's work in Sweden, ExxonMobil is explor-

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ing Lower Saxony, while OMV is testing formations near Vienna. By yearend, ConocoPhillips and 3 Legs Resources are expected to have test results from northern Poland (OGJ Online, Sept. 21, 2009).

The International Energy Agency estimates that unconventional gas resources in Europe, including coalbed methane, could amount to 35 trillion cu m, six times higher than the continent's conventional gas resources.

Ensco takes delivery of ultradeepwater semi

A subsidiary of Ensco International PLC has taken delivery of the third of seven ultradeepwater semisubmersible rigs being built for it by Keppel FELS Ltd., Singapore (OGJ, July 20, 2009, p. 43).

After sea trials and final outfitting in the Gulf of Mexico, the new rig, Ensco 8502, will begin drilling late in the second quarter under a 2-year contract with a subsidiary of Nexen Inc., which has the option to extend the term by 1-2 years.

Dan Rabun, Ensco chairman, president, and chief executive officer, said construction is on schedule for delivery of the fourth 8500-series semi later this year.

Rigs in the series can drill to 35,000 ft in 7,500 ft of water. Each has a hoisting capacity of 2 million lb and 8,000 tons of variable deck load. Each has an open layout to accommodate subsea completion work.

The rigs can be modified to drill and complete wells in 10,000 ft of water.

ConocoPhillips advances Surmont expansion

ConocoPhillips Canada Resources Corp. said it will start construction this year of the second-phase of its steam-assisted gravity drainage (SAGD) Surmont oil sands project in Alberta. The company expects production from Phase 2 to start in 2015.

Phase 2 will increase Surmont bitumen production capacity to 110,000 b/d from 27,000 b/d, the company said. Production from Phase 1 started in October 2007.

Surmont is a joint venture of ConocoPhillips and Total E&P Canada Ltd. The project lies in the Athabasca oil sands region about 40 miles southeast of Fort McMurray. ✦

Processing — *Quick Takes*

Chevron plans downstream restructuring

Chevron Corp. plans to restructure its global downstream business in a move company officials said would leave the organization smaller and less complex.

A video message to employees from Mike Wirth, executive vice-president for the company's global downstream business, warned of unspecified workforce reductions.

According to a report by the Houston Chronicle, Wirth told employees details of the restructuring would be available in March. The plan is to be in place by the third quarter, he said.

Chevron confirmed that employees had been told of the reorganization and the streamlining of staff that will result. A company official told Oil & Gas Journal the video message made no new announcement about assets or the markets in which Chevron works.

The official said downstream assets and markets have been subject to "ongoing review" for many months and already have resulted in cutbacks of various forms.

The video message follows a Jan. 11 interim financial update from Chevron that warned fourth-quarter 2009 downstream earnings would be "sharply lower, mainly due to significantly weaker refining margins."

Chevron's global refining capacity totals 2 million b/d.

According to the 2008 annual report, the company has 937,000 b/d of capacity in wholly owned refineries in the US, including 265,000 b/d at El Segundo, Calif.; 54,000 b/d at Kapolei, Ha.; 330,000 b/d at Pascagoula, Miss.; 243,000 b/d at Richmond, Calif.; and 45,000 b/d at Salt Lake City, Utah. It also has an 80,000-b/d asphalt plant at Perth Amboy, NJ.

Outside the US, Chevron owns refineries at Burnaby, BC, 55,000 b/d; Cape Town, South Africa, 110,000 b/d; and Pembroke, UK, 210,000 b/d.

It also owns shares in refineries outside the US through international affiliates with net capacities totaling 747,000 b/d. The international capacities include 350,000 b/d through Chevron's 50% share of the Yeosu refinery in South Korea and 145,000 b/d through its 50% share of the Pualau Merlimau refinery in Singapore.

Aramco gets nod to build Jazan refinery

Saudi Aramco was tapped to build and finance the $10 billion Jazan refinery. Its capacity will be 250,000-400,000 b/d, said Minister of Petroleum and Mineral Resources Ali Al-Naimi.

Bidding by 8 Saudi firms and 42 international companies that concluded last year.

King Abdullah bin Abdul Aziz al-Saud approved the project in 2006 as part of a wider development plan for the southern province, but bidding had been delayed as the country tried to generate foreign company interest in the project.

A project fully built and owned by private companies had been a goal, but potential investors expressed concerns the distance of the planned refinery from its supply fields would undermine the plant's economics.

Shell Canada to shut Montreal refinery

Shell Canada Products plans to halt operation of its 130,000 b/d Montreal East refinery and to convert the facility into a terminal for gasoline, diesel, and aviation fuel.

In a press statement Shell said the refinery "no longer fits with Shell's long-term strategy."

Shell opened the refinery in March 1933 as a 5,000-b/d topping plant.

According to Oil & Gas Journal's latest Worldwide Refining report, the Montreal East refinery's processing capacities include 14,610 b/cd of visbreaking, 27,900 b/d of fluid catalytic cracking, 20,910 b/d of semiregenerative catalytic reforming, 14,100 b/d of

hydrocracking for distillate upgrading, 49,500 b/d of catalytic hydrotreating for cat reformer feeds, and 27,000 b/d of hydrotreating for kerosene/jet desulfurization.

BP, Husky JV to upgrade Ohio refinery

BP-Husky Refining LLC will undertake a $400 million equipment upgrade at its 155,000 b/d Oregon, Ohio, refinery outside Toledo.

Owned in equal parts by BP PLC and Husky Energy Inc., Calgary, the company plans to start work later this year and complete it in 2012, according to a company statement. BP operates the refinery.

The project targets improved efficiency and competitiveness by reducing energy consumption and lowering operating costs. The company said recession-driven low demand for gasoline and other fuels has squeezed profit margins. The upgrade also targets cutting operating costs.

Work will replace two older catalytic reformers and a hydrogen plant with a single reformer. The new unit will increase gasoline production, upgrade existing infrastructure, and improve overall plant reliability.

The new 42,000 b/d reformer will require less energy than both the ones it replaces and achieve higher production of gasoline and hydrogen per increment of feedstock by operating at lower pressures resulting in. By utilizing the higher-efficiency reforming technology, said BP-Husky, it expects to reduce overall regulated air emissions by more than 5%.

The gasoline product, with a lower vapor pressure, will help the refinery meet future gasoline environmental regulations.

Planned Mideast refinery lets compressor contract

The Saudi Aramco Total Refining & Petrochemical Co. (Satorp) has hired Elliott Co., Jeannette, Pa., to supply all 17 compressor trains for the joint venture's export refinery to be built in Jubail, Saudi Arabia.

When it comes online in 2013, the Jubail refinery will be a full-conversion, integrated complex with a variety of compression applications, including sour service, hydrogen service, and refrigeration. The project includes construction of distillation and hydrotreating, conversion, sulfur and amine saltwater treatment, aromatics, and coker.

The Jubail compressor trains will be built and tested at Elliott's manufacturing plant in Sodegaura, Japan, the company said. When complete, the refinery will be able to process 400,000 b/d of Saudi heavy crude to produce high-quality transportation fuels and petrochemicals for markets in Asia, the Middle East, and Europe.

HEC lets contract for DSU at Turkmenistan gas plant

Hyundai Engineering Co. Ltd. (HEC) let a contract to Jacobs Engineering Group Inc. for license and design of its proprietary Superclaus technology for a desulfurization unit at a gas plant to be built in Turkmenistan.

The unit will be integral to the gas plant operated by state-owned Turkmengas, which produces, processes, and exports all gas reserves. Officials did not disclose the contract or investment values.

HEC of South Korea will design and build the plant, which is scheduled to be operational in 2012. Gas produced from this plant will be supplied to China.

Fire hits crude unit at Holly refinery

Fire broke out Jan. 17 in the crude unit at Holly Corp.'s 100,000-b/sd Navajo Refinery at Artesia, NM. There were no injuries.

Refinery fire-fighters extinguished the fire in about 1 hr.

The company said an initial investigation indicated failure of a pump seal. It said damage seemed to be "minimal."

The crude unit was to be shut down the week of Jan. 18 for 3 weeks for a scheduled turn-around. Holly expected to complete repairs during that period. ✦

Transportation — *Quick Takes*

IEA: Tanker capacity outpacing demand

Tanker capacity will outpace demand growth in 2010, further depressing freight rates, the International Energy Agency says in its Jan. 15 Oil Market Report.

In 2009, the global recession cut seaborne oil volumes by 5% while oil demand declined 1.5%, IEA says. Westbound shipments from the Persian Gulf fell because of the recession while eastbound shipments from there and West Africa rose because of Asian refinery expansions.

IEA cites reports that tanker demand, adjusted for increased floating storage, fell by 2-3% last year. The global oil tanker fleet, meanwhile, grew 7% from delivery of new tankers representing a total of 30-35 million dwt.

Fleet additions will remain at 5%/year during the next 3 years, IEA says. Orders in place and due for delivery through 2012 represent about 125 million dwt.

"The ability of the industry to negotiate more cancellations of newbuilds will be critical to shipping sector fortunes, although few were obtained during 2009," IEA says.

Scrapping increased to an estimated 6.8 million dwt in 2009 from 2.8 million dwt in 2008, with most of the increase coming in August and later.

Kinder Morgan Partners expands in ethanol

Kinder Morgan Energy Partners LP is expanding its role in the transportation of renewable fuels.

The company reported the acquisition from US Development Group (USD) of three unit train ethanol handling facilities in Linden, NJ; Baltimore, Md.; and Dallas and the formation of a joint venture with USD to coordinate access to the facilities.

The acquisition value is about $195 million, including $80 million in Kinder Morgan Partners equity issued to USD.

The terminals, along with similar facilities already owned by Kinder Morgan Partners, "will create a nationwide distribution network of ethanol handling facilities connected by rail, marine, truck, and pipeline," the company said.

Kinder Morgan Partners said it expects to handle more than 218,000 b/d of ethanol in 2010. The new transaction brings its total investment in the renewable fuels handling business to about $500 million. ✦

Letters

Spending and jobs

As a marketing writer and technical editor for a major engineering firm, which includes oil and gas, I was struck by your comment that, according to "liberal theory," "…history suggests otherwise" that states create jobs by spending money (OGJ, Sept. 14, 2009, p. 88). Whatever history you are thinking about, it is a history mostly in your imagination and has no bearing on the real history about which historians write, students study, and the rest of us can, indeed do, know by reviewing even the most cursory evidence. States have always been catalysts for economic growth. This is demonstrated over and over, from ancient times to the present.

The industrial revolution began because states financed or guaranteed financing (as in pre-Civil War New England, for example) ships to bring raw cotton to mills that created finished textiles while states, especially the United States, paid for the forcible removal of domestic populations and paid for the means to establish the plantation system, including slavery.

State expenditures for military purposes have always been a catalyst for overseas commercial expansion and the source of new technologies, whether it was the shipping industry in Britain, the world's foremost naval power in the 18th and 19th centuries, or the host of industries—avionics, aeronautics, electronics, metallurgy—created by state expenditures for research and development, typically for military applications, here in the US after World War II.

The oil and gas industry benefited immeasurably by state expenditures for exploration technologies throughout the post-WWII period. In fact, the business literature immediately after WWII is replete with approval of state expenditures into the economy. Why? Because there was much fear by many in government and the private sector that with the end of wartime production, the US would simply go back to Depression-era conditions. State expenditure, largely through the military but elsewhere, was seen by the private sector, including the oil and gas industry, as the appropriate antidote.

And it wasn't just direct expenditure

into the economy. The GI Bill, passed after WWII, had the state paying for the education of millions: architects, chemists, engineers, mathematicians, physicists, construction specialists, and others. Yet somehow this had no role in contributing to the economy we have today?

Then there is digital technology for which the public paid 100%—I repeat, 100%—of the research and development from the 1940s through the 1960s, which was then handed over to the private sector, the Bill Gates mythology notwithstanding. And have you never heard that the internet started as the completely state-funded "milnet" in the 1960s for the Pentagon?

Of course, there is the oil and gas industry, which has benefited tremendously by public-sector subsidies in exploration technologies, sweetheart deals, preferential bidding, tax benefits, and—yes—military intervention. The entire post-WWII US military presence in the Middle East was understood, as stated in our postwar policy documents (now declassified), as "the big prize" in the US gaining access to and then controlling oil production. Our presence in the Middle East has served as an enormous subsidy to the US oil and gas industry in keeping domestic prices relatively low compared to European and Asian economies, especially our biggest competitor there, Japan, and now China. In fact, the whole system was set up precisely to keep competitors out, and the captains of the oil and gas industry have always been happy to oblige and dutifully filled the campaign coffers of politicians who pursued such policies. No doubt you want the tax benefits, the subsidies, and the military interventions to defend "our interests." No doubt what you also want is to not pay for it.

Are you unaware of this? Or do you simply consider massive public expenditures to the private sector, directly and indirectly, throughout our history and the history of every wealthy country worldwide, advancing the interests of the private sector—oil and gas, too—as shining examples of "conservative" theory?

Michael Grossman
Los Angeles

Calendar

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

OIL&GAS JOURNAL online

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

2010

JANUARY

API Exploration and Production Winter Standards Meeting, New Orleans, (202) 682-8000, (202) 682-8222, website: www.api.org. 25-29.

Health, Safety, Environment & Training Conference & Exhibition, Houston, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 26-27.

IADC Health, Safety, Environment & Training Conference & Exhibition, Houston, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@iadc.org, website: www.iadc.org. 26-27.

The European Gas Conference and Annual Meeting, Vienna, +44 (0) 20 7067 1800, +44 (0) 20 7242 2673 (fax), website: www.theenergyexchange.co.uk. 26-28.

API/AGA Joint Committee on Oil and Gas Pipeline Welding Practices Conference, New Orleans, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 27-29.

Annual Gas Arabia Summit, Abu Dhabi, +44 (0) 20 7067 1800, +44 (0) 20 7242 2673 (fax), website: www.theenergyexchange.co.uk. Jan. 31- Feb. 3.

International Process Analytical Technology Forum (IFPAC), Baltimore, (847) 543-6800, (847) 548-1811 (fax), e-mail: info@ifpacnet.org, website: www.ifpac.com. Jan 31-Feb 4.

FEBRUARY

Deep Offshore Technology International Conference & Exhibition, Houston, (713) 963-6271, (713) 963 6296 (fax), e-mail: registration@pennwell.com, website: www.dotinternational.net. 2-4.

IADC/SPE Drilling Conference and Exhibition, New Orleans, (713) 292 1945, (713) 292 1946 (fax), e-mail: info@.org, website: www.iadc.org. 2-4.

Russia Offshore Annual Meeting, Moscow, +44 (0) 20 7067 1800, +44 (0) 20 7242 2673 (fax), website: www.theenergyexchange.co.uk. 2-4.

Global Petrochemicals Conference & Annual Meeting, Vienna, Austria, +44 (0) 1242 529 090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. Feb 9-11.

SPE International Symposium & Exhibition of Formation Damage Control, Lafayette, (972) 952-9393, (972) 952-9435 (fax), e-mail:

Calendar

spedal@spe.org, website: www.spe.org. 10-12.

NAPE Expo, Houston, (817) 847-7701, (817) 847-7703 (fax), e-mail: info@napeexpo.com, website: www.napeonline.com. Feb 11-12.

Annual Petroleum Coke Conference, Seattle, (832) 351-7828, (832) 351-7887 (fax), e-mail: petcoke.conference@jacobs.com, website: www.petcokes.com. 12-13.

SPE North Africa Technical Conference & Exhibition, Cairo, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 14-17.

IP Week, London, +44 0 20 7467 7132, +44 0 20 7255 1472 (fax), e-mail: jbia@energyinst.org.uk, website: www.energyinst.org.uk. 15-18.

Pipeline Pigging & Integrity Management Conference & Exhibition, Houston, (713) 521-5929, (713) 521-9255 (fax), e-mail: clarion@clarion.org, website: www.clarion.org. 16-18.

Pipe Line Contractors Association Annual Conference (PLCA), Scottsdale, Ariz. (214) 969-2700, e-mail: plca@plca.org, website: www.plca.org. 17-21.

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.Photovoltaicsworldevent.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.subseatiebackforum.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.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.offshore-westafrica.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.

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.

Base Oils and Lubricants in Russia and CIS & Annual Meeting, Moscow, +44 (0) 1242 529 090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 23-25.

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.

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 529 090. +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.

Canadian oil trusts

Paula Dittrick
Senior Staff Writer

Canadian oil and gas trusts are in the midst of positioning themselves for a federal tax change effective next year in which trusts essentially will be taxed the same way that corporations are taxed.

An Oct. 31, 2006, proposal from Ottawa has been dubbed the great Halloween massacre by some in Calgary, headquarters for several of Canada's largest trusts. Existing trusts received a 4-year grace period from the tax change so their effective date is Jan. 1, 2011.

Traditionally, trusts paid little or no corporate tax, enabling them to distribute most earnings to their investors or unitholders. The 2006-07 legislation and resulting tax law applies to all Canadian income trusts, of which energy trusts account for more than half.

The Coalition of Canadian Energy Trusts unsuccessfully sought a tax exemption from the Canadian government, saying that without the exemption, energy trusts would be less likely to continue investing at the same levels, which could lower Canadian production.

Canadian Finance Minster Jim Flaherty said trusts cost the Canadian government hundreds of millions of dollars yearly in lost revenue. He said the plan was designed to "restore balance and fairness to the federal tax systems by creating a level playing field between income trusts and corporations."

Best route sought

In the intervening years since the income trust tax legislation was announced, oil and gas trusts and their attorneys have worked to determine the best route for their companies and their investors.

A spokesman for the Canadian Association of Petroleum Producers said trusts can continue doing business as trusts under the higher tax rate, adjusting their distribution policy, or they can convert into corporations. "These plans depend on the individual circumstances for each trust," he said.

Canadian Oil Sands Trust, Calgary, plans to retain the flow-through tax attributes of a trust structure as long as possible. Marcel Coutu, president and chief executive officer of Canadian Oil Sands, noted 2010 marks the company's last year as an income trust.

"We do not expect our transition to a corporate structure to change our approach to the business," he said while outlining the company's 2010 budget on Oct. 28, 2009. "We thus expect our dividends will be variable, similar to the distributions we have paid as a trust, reflecting changes in crude oil prices and economic conditions, and Syncrude operation performance and capital commitments." Canadian Oil Sands Ltd. is a joint venture owner of Syncrude Canada oil sands operation near Fort McMurray, Alta.

Enterra Energy Trust's board unanimously approved conversion to a corporation to be named Equal Energy Ltd. Don Klapko, Enterra president and chief executive officer, said the name change was intended to "create a new market brand with the conversion."

Klapko said, "We've worked extremely hard since late 2007 to stabilize our balance sheet, our asset base, and our credibility within the capital markets as we move toward a growth-oriented E&P corporation."

The corporate conversion remains subject to regulatory approvals and approval of at least two thirds of Enterra's unitholders. An information circular proxy statement is expected to be mailed to unitholders in late March with a special meeting expected to be scheduled in May.

Daylight Resources Trust bought Highpine Oil & Gas Ltd. for $530 million (Can.) in 2009 saying its rationale was the transaction "provides additional financial flexibility as the trust considers converting to a corporation."

In its 2010 outlook, Daylight Resources said it intends to propose to unitholders that Daylight convert into a corporation. "Timing of the conversion is dependent upon a number of factors; however, we expect to propose conversion no later than May 2010 at our annual general meeting."

Penn West Energy Trust said it continues to review organizational structures and alternatives. "The outcome of these evaluations will determine Penn West's most appropriate future business model however there are no current plans to convert out of the trust model until at least 2011," it said.

WoodMac report

Wood Mackenzie Ltd., Edinburgh, issued a report shortly after the tax change was announced, saying Canada's new tax structure for income trusts could reduce the value of the oil and gas trusts. WoodMac suggested some of the smaller, more-focused trusts might struggle while the larger trusts, having more diverse assets, will continue under a corporate structure.

The oil industry has a long history of being resilient, particularly the Alberta oil patch, despite financial roller coasters and legislative changes. ✦

Editorial

Massachusetts and oil

The US oil and gas industry has reason to treat with care the Republican takeover of a US Senate seat held for decades by the late Ted Kennedy representing steadfastly Democratic Massachusetts. It can assume no easing of antagonism from Democrats leading Congress and occupying the White House. And resurgent Republicans do not uniformly or automatically support oil, gas, or the companies that produce, process, and transport them.

State Sen. Scott Brown's special-election defeat of Massachusetts Atty. Gen. Martha Coakley, a Democrat, shook Washington, DC, of course. The vote clearly repudiated health care legislation shoved to the center of the political agenda by President Barack Obama and the liberal congressional leadership. It also probably showed revulsion for the political favors with which Democratic leaders finagled support for the measure. Less clearly but more broadly, the vote expressed concern about a government trying to intrude in unprecedented ways into individual lives and the national economy.

Ideological problems

The extent to which ideology and not just health care motivated Massachusetts voters aggravates problems for Democrats. Whatever its amplitude, the ideological signal means Democrats have lost more than the legislative clout that comes when the controlling party has enough votes to block opposition filibusters. They also have lost at least some claim to a mandate for liberal transformation of the economy and for reinstatement of aggressive governance.

On balance, this clarification of the national mood is good for the oil and gas industry. If nothing else, it should slow the crusade for big-government liberalism, with its inevitable preference for state-sponsored energy, under way since the general election of 2008. And another likely casualty of this retrenchment is Senate legislation for a cap-and-trade response to climate change.

Even before the Scott victory, senators were becoming reluctant to vote on a controversial cap-and-trade bill after the battering some of them were taking over health care with off-year elections due next November. Nevertheless, Sens. John Kerry (D-Mass.), Lindsey Graham (R-SC), and Joe Lieberman (I-Conn.) have been working quietly on a compromise. Kerry recently insisted the Senate could pass a bill this spring.

That his confidence now looks unfounded should especially relieve refiners, who would shoulder a heavy, disproportionate load under any cap-and-trade law resembling the bill passed by the House. But it should relieve all of the industry. The cap-and-trade approach to mitigation of climate change is deceptive, intrusive, and corruptible. Its implementation would distort energy markets—never good for economic energy forms—and channel undue blame to the oil and gas industry when costs and systemic flaws became clear.

Perils remain, however. No one should confuse this sudden shortening of the governmental leash with public adoration of the oil and gas industry. The industry remains unpopular. It gains little from an ideological chastening of its antagonists in Congress and the White House. Political threats have eased, not vanished.

In lieu of cap-and-trade, Democrats now are talking about a less-controversial energy bill able to win bipartisan support. Under discussion is legislation passed by the Senate Energy and Natural Resources Committee that would raise the renewable fuel standard for electricity and expand oil and gas leasing in the eastern Gulf of Mexico.

Lurking harm

For the industry, the measure has obvious appeal. But it quickly could absorb harmful energy ideas, of which plenty still lurk in a political atmosphere that remains toxic. For example, new oil and gas taxation, such as Obama included in his budget proposal last year, has a way of reappearing whenever Democrats—and some Republicans—discuss energy. And hydraulic fracturing, crucial to burgeoning shale gas plays, is fast becoming a target of environmental obstructionism and might come under assault in any new energy bill.

Stung by health care's likely collapse and the icing of cap-and-trade, lawmakers will feel new pressure to make law before November. Energy is a perpetual cause for misplaced activism, an easy platform for populist rant, and a ready vehicle for political revenge. The combination can mean trouble for oil and gas, however satisfying industry officials may find the political shock in Massachusetts. ✦

Industry embraces opportunities, meets challenges from Washington in 2009

Nick Snow
Washington Editor

As 2009 began, the US oil and gas industry wondered how the change Barack Obama promised in his successful 2008 presidential campaign would affect its business. It was clear as the year ended that changes could be substantial, and not necessarily good for all. But 2009 wasn't entirely bad as policymakers increasingly embraced natural gas as the primary fuel in the nation's energy future.

This year consequently began with a mixture of strong optimism about gas and equally strong concern for potentially onerous restrictions and regulations.

"There certainly will be opportunities, but there are also many moving parts in many areas…. There will be a lot going on. Whether a lot gets done may be a different matter."—
Tom Fry, president, National Ocean Industries Association

"I do not recall a year where so much has been going on. There's so much we don't know," said Tom Fry, a former US Bureau of Land Management and US Minerals Management Service director who will retire in early 2010 after 10 years as National Ocean Industries Association president.

"There certainly will be opportunities, but there are also many moving parts in many areas which could affect the oil and gas industry from cap-and-trade to taxes," he said during a late-December interview. "There will be a lot going on. Whether a lot gets done may be a different matter."

"We expect we'll always have challenges, but with every challenge comes opportunity," American Petroleum Institute Pres. Jack N. Gerard said. "We see those opportunities today in discussions over climate. We've had a great opportunity to talk about the oil and gas industry as a major job creator in the US economy. People are starting to pay attention."

'Opportunity to educate'

Gerard told OGJ, "Democrats and Republicans alike are saying they probably should look to oil and gas to help bring the US economy back to health. So each challenge is an opportunity to educate and help public officials understand the oil and gas sector's very important role."

For independent producers, 2009 was positive as it became increasingly apparent that shale gas supplies in the Lower 48 potentially offer a huge resource base improving the US balance of payments while providing a wide range of economic benefits in several parts of the country, Independent Petroleum Association of America Pres. Barry Russell observed. Offsetting this were proposed new taxes, hedging

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"It's frustrating because we believe we have so many ways to address what we believe is a nonpartisan issue: improving the US economy."—
Barry Russell, president, Independent Petroleum Association of America

rules, and permit processing and other fees, he continued. "It's frustrating because we believe we have so many ways to address what we believe is a nonpartisan issue: improving the US economy," he said.

The industry's downstream segment may have been hit hardest during 2009, first by a deepening recession, which reduced demand for its products, and then by "foolhardy policies posed by Congress and the Obama administration," according to National Petrochemical & Refiners Association Pres. Charles T. Drevna.

"We were shocked when the president published his budget proposal because the refining industry was a target to pay for all of his programs," Drevna said. "Right from the start, he laid down a gauntlet. We took that message to heart, and came up with what we believe were solid economic and technical reasons why these programs would be failures if enacted."

For 2010, said Drevna, "We would hope to see some temperance when it comes to proposals coming out of the administration and Congress. We're hopeful, but reality dictates that some of these folks are zealous when it comes to ruining the US economy. If they attempt to vilify the oil and refining industry in an attempt to use them to pay for some of these moronic policies, the American public is in for a lot of sleepless nights."

'All-encompassing issue'

"Climate change is the elephant in the room, an all-encompassing issue that affects everyone," said Interstate Natural Gas Association of American Pres. Donald F. Santa. Efforts to address climate change could affect what interstate gas pipelines transport as well as their own emissions, he told OGJ. Problems could arise if incentives to protect other forms of energy diminish gas's potential, he said.

"We hope gas does well. We think it will. Not every alternative will hit a homerun, so gas still looks promising," Santa said, adding, "The combination of reports about gas' abundance and new industry groups, such as the American Natural Gas Alliance, has improved its outlook. But there still are big hurdles to clear before gas is in a position to compete fairly, based on its attributes."

Congress took its first major steps in trying to address climate change in 2009 with two bills that would regulate greenhouse gases by establishing a domestic carbon cap-and-trade program. The House passed HR 2454 by three votes on June 26. The bill was cosponsored by Reps. Henry A. Waxman (D-Calif.) and Edward J. Markey (D-Mass.). The Senate Environment and Public Works Committee approved S 1773, cosponsored by Barbara Boxer (D-Calif.) and John F. Kerry (D-Mass.), on Nov. 5 despite a boycott by its Republican members.

Both measures posed significant problems for the oil and gas industry, both upstream and downstream. "Refiners would be required to take into account, in reductions targets, not only carbon dioxide emissions from the plants themselves, around 4% of the total, but also from our customers, which would be another 38%. We're in the crosshairs," said Drevna.

"When you look at the Waxman-Markey bill, the process was political and not designed to look at target reductions," said Lee O. Fuller, IPAA's vice-president of government relations. "They needed 30 votes to get it out of [the Energy and Commerce Committee] and 247 to get it passed on the floor. Many oil state Democrats were more focused downstream. The way the process worked, whatever allocations tried to protect other fuels took away from natural gas."

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Charles T. Drevna, president, National Petrochemical & Refiners Association

'Economic suicide'

"I'd like to see that vote in the House again on Waxman-Markey," Drevna said. "More members recognize the reality of the economy now and what we would be sacrificing as a nation if we tried to go it alone. The initial timeframes and targets, particu-

"We hope gas does well. We think it will. Not every alternative will hit a homerun, so gas still looks promising."—**Donald F. Santa, president, Interstate Natural Gas Association of America**

larly for the refining industry, are more than problematic. They're economic suicide. Meanwhile, other nations like China and Russia met in Copenhagen [at the United Nations climate-change conference in December] without us. That's a telling fact."

He and other oil and gas association officials noted that Kerry and two other senators, Joseph I. Lieberman (I-Conn.) and Lindsay O. Graham (R-SC), proposed a climate-change compromise framework on Dec. 10. "There are parts of it which speak to onshore and offshore oil and gas, but we really don't know the details," said Fuller.

"It was interesting in their framework that, for the very first time, members of the Senate were saying for the first time that this country needs a healthy and vibrant refining industry. That was monumental to us," Drevna told OGJ. "I sent them a letter thanking them for noticing us, but warned them that if they were going to try to pursue targets, it wasn't going to help much."

The domestic climate-change regulatory situation was complicated further when the US Environmental Protection Agency, in response to a 2007 US Supreme Court decision that GHGs fit the federal Clean Air Act's definition of pollutants, issued an endangerment finding on Dec. 7 that set the stage for it to move ahead on attempting to regulate GHG emissions under the law. "EPA may be trying to force Congress to move legislatively to avoid a bigger problem since the [CAA] was designed for local applications," Fuller said.

Drevna suggested, "Let's get back to what the situation looks like today and understand what happened in Copenhagen, then reassess everything. Whatever they have on their chalkboards should be erased so everyone can start with blank slates and participate in an interindustry fashion and determine what's possible and what makes sense instead of picking winners and losers. Heretofore, we haven't seen much which makes sense for the refining industry and the US economy."

Mixed signals

Many producers, meanwhile, entered 2010 trying to reconcile what they perceived as mixed signals from the Obama administration in 2009. Russell noted that US Department of the Interior officials "say the right things, but when you look at what they actually do, it's frustrating. They move more slowly on oil and gas but quickly on renewables, which they seem more interested in."

"We're seeing more [DOI] actions taken through the prism of climate change," added Daniel T. Naatz, IPAA's vice-president of federal resources and political affairs. He said that Rocky Mountain upstream independents were troubled when US Interior Secretary Ken Salazar directed BLM on Feb. 4 not to accept $6 million in successful bids on 77 tracts offered in BLM's Dec. 18, 2008, oil and gas lease sale in Utah.

Disputing Salazar's assessment that offering the tracts was an 11th hour maneuver by the Bush administration, Naatz told OGJ that the secretary's action raised questions about proximity to national parks and proposed wilderness areas. "Producers didn't get everything they wanted at that sale. The people in BLM are professionals," he said. "There are inherent costs to operating on federal lands in the West already. Independent producers with small operations don't have a large number of plays. "BLM's multiple use ethos has assumed that different activities coexist. When land turns to a single use, oil and gas revenues can be lost." The onshore situation of rising costs and permitting delays extends to federal offshore areas, he indicated.

NOIA's Fry said, "We are rid of the moratoriums and withdrawals, where 85% [of the US Outer Continental Shelf] was off-limits. Yet there's only 15% available under the current 5-year plan. It will take a new 5-year plan, with administration support to move forward." The arrival of S. Elizabeth Birnbaum as MMS's new director on July 15 probably has helped, he continued, but NOIA and its members plan to make certain DOI officials have all the information and are aware of proposed policies' possible unintended consequences.

Shorter offshore leasing periods, which Salazar announced on Nov. 13, are one example, Fry said. "The change itself is not that great if the government considers matters which are beyond lessees' control, such as rigs not being available or other government agencies not completing their reports," he said, adding, "MMS needs to have flexibility to grant extensions in cases where operators have been diligent but haven't, through any fault of their own, met development deadlines."

'Under the gun'

Fry said he hopes Salazar does not delay completion of a new 5-year OCS plan much longer, and warned that MMS is "under the gun" to keep a planned 2011 lease sale off Virginia on schedule in the current plan as the state's Gov.-elect, Robert F. McDonnell, requested in a Dec. 23 letter to Salazar. Fry said that officials in North Carolina, South Carolina, Georgia, and Florida have indicated that they're interested in seeing their states possibly be included in the next 5-year OCS plan.

But Fry doesn't expect much prog-

ress unless these coastal states receive federal revenue shares similar to those of Alabama, Mississippi, Louisiana, and Texas, which would require congressional action. "These states recognize that just having offshore resource development, whether from alternatives or from oil and gas, would create jobs and improve their economies," he said, citing one estimate that Virginia could get $165 million/year with a revenue share similar to that of some Gulf Coast states.

Other association officials said it also became apparent during 2009 that Congress and the Obama administration planned to regulate more aggressively. Interstate gas pipelines received a dramatic signal on Nov. 19 when the US Federal Energy Regulatory Commission launched new investigations into four pipelines' rates under Section 5 of the Natural Gas Act not in response to customer complaints, but following analysis of data which the pipelines submitted earlier in the year. "We're asking whether this is limited or a precursor of things to come. It certainly raised some eyebrows in the financial community," Santa said.

Santa told OGJ that the last decade-and-a-half's lighter regulatory approach at FERC spurred investments for pipelines to increase capacity. "Owners of existing facilities also felt that with certainty they would not be dragged into regular rate cases, they could pursue efficiencies and innovations," he said, adding that most pipeline rate of return cases in the last 15 years were settled before they reached an administrative law judge.

Independent producers and other end users had to fight hard to make certain they could continue to use commodity hedges as federal lawmakers considered proposals to regulate over-the-counter markets for the first time. Fuller said, "Most of our members hedge for a long time and use their reserves, instead of cash, as collateral. They also don't do daily clearing over-the-counter. The part we don't have the ability to shape, but have a concern about, is what happens after our trades."

'Very new territory'

Counterparties now have the flexibility to balance buyers and sellers, Fuller explained. Being required to use regulated exchanges could affect smaller banks which often act as first counterparties. "It's very new territory," he said, adding, "We haven't sought to be involved, but it's such a big part of many independents' cash management that we had to be there and explain how it could affect our members."

"We haven't sought to be involved [in commodities regulation], but it's such a big part of many independents' cash management that we had to be there and explain how it could affect our members."—
Lee O. Fuller, IPAA vice-president, government relations

NPRA's Drevna said refiners face threats not only from problems posed by fuel composition mandates but also from efforts to impose new plant security regulations as an indirect means of creating new environmental requirements.

"It's just emblematic of the proponents trying to debilitate the refining and petrochemical business in this country," Drevna said, adding, "We were at the forefront of chemical and refining plant security even before 9-11. That simply increased our diligence on these matters. To suggest a total reconfiguration of security procedures by having bureaucrats tell chemical engineers and plant operators how to run their facilities is foolish. It will simply just move more plants and jobs overseas."

As for cellulosic ethanol's potential, Drevna continued, it "reminds me of my favorite baseball team: the Pittsburgh Pirates." He explained, "We're 2 years away from being 3 years away." He noted that when the US Senate Energy and Natural Resources Committee held a hearing in 2008, cellulosic ethanol proponents said they were 6-7 months away from a breakthrough. "Fast forward 6-7 months to a House Energy and Natural Resources subcommittee hearing, and the same people say it's a year away," Drevna said.

Refiners would like the allowable ethanol limit in motor fuels to stay at 10% until full tests of potential impacts from higher levels cam be completed. "The corn ethanol folks say that we need to keep moving forward and meet the mandates so the cellulosic folks will have the incentive to keep researching and developing," said Drevna. "Plowing more corn ethanol into the system so cellulosic can come on? Come on—give us, and the nation, a break. This was a train wreck we saw coming. That blend wall will come a lot earlier than expected, which is one reason we're against mandates."

Election year factor

A final question is whether an upcoming election in November will stimulate or impede congressional climate change actions. "There's no question that Senate centrists' views differ from the two bills which are out there, while some House moderates have said it would be harder to vote for cap-and-trade this time around," Fry said. "I think the moderates are going to require some changes. It also will be

"The free allowances in the current climate bills confer significant benefits. Max Baucus and his committee exercise more influence in getting bills through the Senate than the Environment and Public Works Committee."—**Martin E. Edwards, INGAA vice-president, legislative affairs**

interesting to see what happens with EPA's pressure to regulate [GHGs] under the [CAA}. The whole concept of EPA's regulating this, as some have suggested, is more like a blunt instrument instead of carefully crafted legislation."

The US Senate Finance Committee could play an important part, suggested Martin E. Edwards, INGAA's vice-president for legislative affairs. "The free allowances in the current bills confer significant benefits," he said. "Sen. Max Baucus (D-Mont.) and his committee exercise more influence in getting bills through the Senate than the Environment and Public Works Committee because its issues require members to work together. Its members also better reflect the overall Senate's makeup."

International climate negotiations are in their 15th year and a lot has changed since they began, particularly in China, India, and Brazil, Edwards said. The Obama administration also made health care a legislative priority in 2009 so there won't be much appetite among Republicans and moderate Democrats to go very far on issues beyond jobs and the economy heading into next fall's federal elections, Edwards told OGJ.

"Somebody has to pay for this," said Drevna. "When cap-and-trade has been debated four or five times, no matter what path is taken, it always came out the same. The program makes no sense when you consider what we need to do in this country versus the rest of the world. I don't like sounding so negative. But there's nothing out there to be positive about. It's all costs and negative benefits. I can make the case today, looking at studies we have seen, that this is an all-cost, economic suicide kind of legislation."

Oil and gas industry associations plan to be more active than ever in conveying their views to Congress and the administration during 2010. IPAA will be working with regional independent producers' groups to bring producers to Washington and have them speak out in their home districts, especially since it expects punitive tax proposals which the White House put in its fiscal 2010 budget request but which were not enacted to reappear in its proposed fiscal 2011 budget in a few more weeks.

Associations also plan to continue spreading the good news about abundant domestic gas supplies. "People are starting to see beneficial impacts from new shale gas production," Naatz said. "Most policymakers understand this, but a certain segment is dead set against fossil fuels. That's what makes education so vital, not just for IPAA but for the industry as a whole." ✦

"People are starting to see beneficial impacts from new shale gas production. Most policymakers understand this, but a certain segment is dead set against fossil fuels."—**Daniel T. Naatz, IPAA vice-president, federal resources and political affairs**

SAFE: Industry, military can coexist in eastern gulf

Nick Snow
Washington Editor

Oil and gas activity in the eastern Gulf of Mexico will not encroach on US military missions in the area, a report commissioned by Securing America's Future Energy (SAFE) concluded.

The report, produced in collaboration with Commonwealth Consulting Corp., examined claims of potential impacts dating from 2005 before the US Department of Defense put systems in place to evaluate such claims. It concluded such tools clearly show oil and gas production will not interfere with military missions in the eastern gulf.

The finding is significant since the US Minerals Management Service estimates the eastern gulf contains 3.9 billion bbl of recoverable crude and 21.5 tcf of recoverable natural gas.

"If expanded energy production in the gulf put our armed forces or our

nation's readiness in danger, we would never support it," said Charles F. Wald, a retired US Air Force general on SAFE's Energy Security Leadership Council. "But this report makes clear that there is no conflict in the overwhelming majority of cases," he continued. "We can improve our energy security and remain at peak military readiness at the same time."

'Totally confident'

Wald said he frequently flew and fired missiles in the eastern gulf; he said there never have been any conflicts with surface activity in the area. "I for one am totally confident that drilling and military missions can coexist in the eastern Gulf of Mexico," he stated.

In a teleconference with reporters, US Sen. Byron L. Dorgan (D-ND), a senior member of the Energy and Natural Resources Committee, said the report's conclusion supports an amendment he sponsored authorizing oil and gas development in the eastern gulf, which became part of the energy bill approved by the committee last year. "It's my assessment that we'll not do climate change this year, but do an energy bill instead, which is friendly to climate," he said. "Today, the question is can we, should we, will we open the [eastern gulf] to additional oil and gas production. My answer to that is 'yes.'"

'No surprise'

US Sen. Bill Nelson (D-Fla.) strongly opposes the idea. "It should come as no surprise that a group that touts drilling off Florida should produce a study saying drilling there is okay," Nelson responded in a statement. "And it's probably no coincidence that the sponsor of the legislation today also touted the study in question while renewing a call for passage of his bill."

Nelson said while the report cited claims by former military officials that armed forces training off Florida could coexist with oil and gas activity, "the Pentagon for years has said otherwise," and it remains DOD policy that military exercises in the eastern gulf are incompatible with drilling operations.

But the report said the US Department of Defense's ability to assess encroachment impacts has only recently reached a level where it could credibly assert whether nonmilitary activities threaten national security.

"Therefore, the oft-referenced 2005 letter from then-secretary Donald Rumsfeld to the Senate Armed Services Committee and other assertions that oil and gas exploration and development in the [eastern gulf] would negatively affect military training and readiness were premature and based on incomplete information," the report continued.

The report said a government assessment in 2009 showed Air Force and Navy mission ranges in the gulf were minimally affected by encroachment. That includes areas of oil and gas exploration and production near Pensacola, Fla., New Orleans, and Corpus Christi, Tex.

John F. Lehman, a member of SAFE's energy security council, told reporters

he spent a lot of time as US Navy secretary in 1981-87 dealing with joint-use issues on the West Coast, in Hawaii and in the gulf. "Virtually all of our ranges have some joint use. We try to have minimal impacts on sea commerce, fishing, and geological evaluations. This is a well established process to resolve any difficulties that may arise. I believe it's one of the easier issues to resolve," he said.

Another member of SAFE's energy security council, Gregory G. Johnson, former commander of US naval forces in Europe, said the 1953 Outer Continental Shelf Lands Act gives military authorities and the president the right to designate specific areas vital for national defense.

"Cancellation of leases can occur at any time if the secretary determines that continued operation will threaten national defense," he observed. "There is nothing in the current law we are proposing which would mitigate that." ✦

API: US drilling activity falls 37% in 2009

Nick Snow
Washington Editor

Fewer US oil and gas wells were drilled in 2009 than in 2008, but the pace of activity grew during last year's final 6 months, the American Petroleum Institute reported.

The estimated 39,068 oil and gas wells and dry holes completed last year in the US was 37% lower than 2008's total, API said as it released its latest quarterly US drilling statistics. But the 10,609 completions during the fourth quarter were 19% higher than the third quarter, which in turn was 6% higher than the second quarter, it added.

"We are currently seeing US drilling activity picking up with the economic recovery," said Hazem Arafa, API's statistics department director. "But there is still a long way to go before activity begins to near the pace of 2008, which was helped by strong commodity prices."

"The rise of unconventional natural gas and the future growth of shale is the macro story," said Frederick Lawrence, vice-president of economics and international affairs at the Independent Petroleum Association of America.

"Gas is still over 60% of the wells drilled. It's the critical mass going forward, based on the available US resource base. Tactically speaking, however, oil has had its short-term victories over the last year," Lawrence observed.

Completions deferred

Certain analysts were not surprised by API's findings. Mark S. Urness, who follows oil and gas for Calyon Securities (USA) Inc. in New York, noted, "It's not a surprise that completions were down 37% from last year since the rig count was down 39.4%. There were a lot of wells drilled but not completed."

Lawrence said, "Horizontal drilling is increasingly becoming the norm. You look at Baker Hughes's numbers and horizontal drilling is about 48% of total wells drilled, compared to 26% 2 years ago. Directional drilling is about 26%, compared to 16%."

More than 1,500 wells were not completed late last year because gas prices were depressed and storage levels were high, Lawrence told OGJ. Urness said, "The colder temperatures have helped reduce the storage surplus to within 5% of the 5-year average. With prices around $6[/Mcf], we should start to see completions pick up going forward."

For 2009, the estimated number of exploratory wells fell by half, to 1,887, while the number of development wells dropped 38% to 32,490. For the fourth quarter, the number of exploratory wells plunged 58% from the comparable 2008 quarter to 411, while the number of development wells fell 35% year-to-year, the report said.

Natural gas was the primary 2009 domestic drilling target, with an estimated 18,269 wells completed. The gap between the number of oil and gas wells narrowed somewhat, API said. While the number of gas wells drilled was 42% less in 2009 than in 2008, the number of oil well completions fell 35% to 16,108 wells.

Oil price strength

Lawrence said 2009 will be the first year US oil production has risen since 1990 or 1991. "You look at [US Energy Information Administration price] projections and it's not surprising that a lot of producers switched to oil if they could. Its prices held up better than gas," he told OGJ.

He said independent producers such as EOG Resources Inc. have made strategic transitions from gas toward oil the past few years. "Its significant presence in the Bakken shale has given its portfolio a degree of depth in addition to its unconventional shale assets," the IPAA official said.

Urness said, "There's a lot less exploration and more development going on. There's also a continued shift to oil drilling, with more completions. If you're drilling an oil well, you're more likely to complete it because you don't have hydraulic fracturing and horizontal drilling expenses increasingly associated with gas."

Lawrence noted, "The ratio of oil to gas is around 35 to 64%. Two years ago, in January 2008, it was around 19 to 81. That's a pretty big difference as the market has moved back toward oil to take advantage of the relatively higher commodity price."

API also reported total estimated footage of 234,982,000 ft during 2009, 44% less than 2008. For the fourth quarter, estimated footage drilled stood at 57,566 ft, 51% less than in 2008's final 3 months, it said. ✦

API: US oil demand showed signs of recovery late in 2009

Nick Snow
Washington Editor

US oil demand fell during 2009 but began to recover as the year concluded, the American Petroleum Institute said. Gasoline, kerosene, and all other oils were strongest, but distillate fuel oil lagged, especially for on-highway uses, API's yearend 2009 and December statistics showed.

"Clearly, petroleum demand is mirroring the economic recovery," said John C. Felmy, API chief economist, on Jan. 15. "We are seeing December demand figures stronger than fourth-quarter figures and fourth-quarter figures stronger than full-year figures. But the data also indicate that the recovery still has a distance to go, particularly if you look at ultralow-sulfur diesel fuel."

API's domestic supply and demand figures for 2009 were similar to the US Energy Information Administration's global assessment 3 days earlier in its latest short-term energy outlook (OGJ Online, Jan. 13, 2009). It also showed a full-year drop in demand with a recovery gathering momentum as the year wound down.

Total US petroleum product deliveries, which API uses to measure demand, dropped 4% during 2009 to an average 18.7 million b/d from 19.5 million b/d in 2008. Deliveries during December rose 0.6% to an average 19.3 million b/d from December 2008's average 19.1 million b/d, the report said.

"We're seeing a firmer economy," Felmy told reporters during a teleconference. "Individual consumers feel a little more confident, which can lead to improvements in retail sales. That can affect gasoline demand from improved employment. Economic growth can lead to more travel, which can increase jet fuel demand. Resid fuel demand can

WATCHING GOVERNMENT

Nick Snow, Washington Editor

Blog at www.ogjonline.com

GHG rules bring higher costs

The US Environmental Protection Agency confirmed that businesses will be subject to significant regulations and higher costs and endure more regulation as a result of four greenhouse gas (GHG) rules the agency has proposed or finalized, two US House Republicans said.

Joe Barton (Tex.), ranking minority member of the House Energy and Commerce Committee, and Greg Walden (Ore.), a committee member, asked in their Nov. 19 letter if the agency considered cumulative impacts when it was developing its GHG endangerment finding.

EPA did not, Assistant Administrator Gina McCarthy said in her Jan. 12 response. She also said EPA has no documents regarding the potential shift or loss of jobs that may result from implementing regulations as a result of that finding including the final mandatory reporting rule, the proposed light-duty vehicles rule, and the proposed tailoring rule relating to the prevention of significant deterioration and Title V permitting programs.

'Absolute determination'

"The Obama administration's absolute determination to issue an endangerment finding within its first year without fully considering the potentially severe economic and job impacts raises real concerns," said Barton.

"EPA's endangerment finding, and the agency's proposed global-warming regulations, will cumulatively impose billions of dollars in new annual costs on businesses and consumers, drive up the costs of energy and other goods and services, and contribute to the flight of US manufacturing and industry overseas," he said.

He said McCarthy confirmed in her response that violations of the new reporting rule, proposed light-duty vehicles rule, and proposed tailoring rule could give rise to a range of civil enforcement and penalties along with possible citizen lawsuits.

Reviewing petitions

Responding to the questions about additional GHG rulemakings that EPA might consider, McCarthy said EPA was reviewing petitions from states and organizations asking that it use its authority under the Clean Air Act to regulate GHGs from other transportation sources including aircraft, ocean-going vessels, nonroad engines and vehicles, and fuels used in motor vehicles, nonroad vehicles, and aircraft.

"EPA has received petitions, public comments, and lawsuits seeking [GHG] emission controls under [CAA] Section 111 for seven categories of sources: petroleum refineries, nitric acid plants, utility boilers, oil and gas production, landfills, concentrated animal feeding facilities, and coal preparation facilities," she said, adding, "The agency has made no decision on these requests with one exception: [For] coal preparation facilities, we declined to set standards for GHGs."

Barton said McCarthy also refused to provide assurances that the proposed GHG regulations would not result in job losses or employment shifts, saying only that the agency and administration "are committed to taking actions that promote public health and safety, environmental protection, and economic prosperity" and that they believe these goals are complementary. ✦

be affected by industrial, electric utility, and shipping uses. There may not be as tight a link with diesel."

Distillate declines

In its statistical summary, API said distillate production and inventory levels declined in December as US manufacturing continued to grow for a fifth consecutive month as reported by the Institute of Supply Management. Domestic distillate inventories at the end of December totaled 162.6 million bbl, 3.3% less than the revised figure of 168.2 million bbl on Nov. 30 but 11.4% more than the 146 million bbl level at the end of 2008. Production during December averaged 3.8 million b/d, 0.5% less than a year earlier, while 2009's full-year average of 3.6 million b/d was 7.9% less than 2008's 3.9 million b/d.

Inventories of ultralow-sulfur distillate (ULSD), the type used in highway transportation, continued to build to multiyear highs, API continued. Its statistics showed that ULSD stocks finished 2009 at 117.4 million bbl, 1% more than their 116.2 million bbl level on Nov. 30 and 21.6% higher than their yearend 2008 level of 104.7 million bbl.

Refiners responded by reducing ULSD production by 3% year-to-year to an average 3.1 million b/d in December and by 3.2% to an average 3.2 million b/d for all of 2009. Felmy said that the pattern is consistent with what happened earlier when diesel fuel demand began to drop months after the recession began.

Domestic demand for other products began to recover late in 2009, however. Gasoline led the rebound with year-to-year increases of 2.3% in December to an average 9.1 million b/d and 0.3% for the full year to 9 million b/d. Jet kerosene deliveries soared 11% year-to-year during December to an average 1.5 million b/d in contrast a full-year 7.9% drop to 1.4 million b/d, according to API's statistics.

US oil and condensate production grew during 2009 by 7% to an average 5.3 million b/d from 2008's 5 million b/d level, API reported. Production during December averaged 5.5 million b/d, 8.6% more than the 5.1 million b/d average a year earlier. "There weren't hurricane impacts in 2009 as there were in previous years," said Felmy. "We also have new resources coming on that are very exciting, particularly deep offshore and in North Dakota's Bakken shale formation. The industry isn't finished producing oil in this country just yet." ✦

IPAA asks Salazar to reconsider onshore leasing regs

Nick Snow
Washington Editor

The Independent Petroleum Association of America urged US Interior Secretary Ken Salazar to reconsider implementing what the trade association believes are new duplicative and unnecessary onshore leasing regulations.

"These new regulations are not consistent with an American energy policy that provides more jobs and revenues to our nation's economy and strengthens our national security," IPAA Pres. Barry Russell said in a Jan. 13 letter to Salazar. "Not only are these new regulations duplicative and unnecessary, they will further restrict access to vital oil and natural gas resources our nation needs."

Salazar and US Bureau of Land Management Director Robert V. Abbey announced on Jan. 6 that BLM will consider site-specific conditions for individual onshore lease sales during comprehensive interdisciplinary reviews. The agency also will develop master leasing and development plans for areas where intensive new oil and gas production is expected and adopt new guidelines for using categorical exclusions, they said.

Russell said the current federal onshore leasing program already provides a thorough examination of any proposed activity's potential environmental impacts on a specific area. "The process currently includes an examination of the proposed action as part of an overall land use plan, a thorough review and project specific analysis under the National Environmental Policy Act (NEPA), consultation with the states, and the requisite permits to drill that include compliance with wildlife, air, water, and land quality regulations," he told Salazar.

Oil and gas producers operating on federal lands also must comply with the federal Endangered Species Act (ESA), Russell added. "No industry faces more scrutiny under the ESA than oil and gas operators on federal lands and any 'enhancement' of that process will only cause further delay, litigation challenges, and ultimately less resources being produced on federal lands," he said.

Russell said while independent producers recognize that operating on federal lands requires a partnership with federal land management agencies, they do not think it's necessary to expand the existing process. Russell said producers are particularly concerned with the master leasing and development process which Salazar mentioned because it would add "significant, new, and redundant" programs to the process without any requisite improvement.

Finally, IPAA and its members are concerned about changes that Salazar proposed in the use of categorical exclusions, which the 2005 Energy Policy Act authorized as a time and money-saving alternative to a full review under the National Environmental Policy Act where they were deemed appropriate, Russell said. "Efforts to revise or allow [their] use under 'extraordinary circumstances' will significantly limit the ability of independent producers to utilize these important tools," he told Salazar. ✦

Marcellus shale fight continues in New York

Eric Watkins
Oil Diplomacy Editor

Chesapeake Energy Corp. has warned that new rules proposed by New York regulators over shale gas drilling already are unnecessarily onerous and may deprive New York of badly needed revenue by scaring off energy firms.

"The measures proposed…will be more burdensome than any of those placed on our industry throughout the United States and will more than adequately ensure that the development of the Marcellus shale natural gas formation in New York will occur with sufficient environmental safeguards," Chesapeake said.

Objections concerning the methods used to extract the gas arose after the New York State Department of Environmental Conservation (DEC) extended the public comment period on the draft supplemental generic environmental impact statement (DSGEIS) governing natural gas drilling activities in the Marcellus shale formation to Dec. 31, 2009, from Nov. 30, 2009.

The DEC invited comments on the DSGEIS, which it said "addresses the range of potential impacts of shale gas development using horizontal drilling and high-volume hydraulic fracturing and outlines safety measures, protection standards and mitigation strategies that operators would have to follow to obtain permits."

The US Environmental Protection Agency responded by submitting documents of its own to the DEC during the public comment period which closed on Dec. 31, 2009.

EPA said it has "serious reservations" about allowing shale gas drilling in New York City's watershed, and warned of a threat to the drinking water for 9 million people.

"We have concerns regarding potential impacts to human health and the environment that we believe warrant further scientific and regulatory analysis," according to John Filippelli, head of EPA's strategic planning and programs branch.

"EPA has serious reservations about whether gas drilling in the New York City watershed is consistent with the vision of high-quality unfiltered water supply," Filippelli said in the report.

EPA's report coincided with statement by Tompkins County, which lies to the west of New York City, saying that its representative joined with federal, state, and local

WATCHING THE WORLD

Eric Watkins, Oil Diplomacy Editor

Blog at www.ogjonline.com

China, Japan sparring again

Disputed natural gas reserves beneath the East China Sea are once again making headlines, as China and Japan spar over which of the two countries has the rights to the underwater reserves.

That became clear last week when Japanese Foreign Minister Katsuya Okada warned his Chinese counterpart Yang Jiechi that Tokyo will take "certain" action if Beijing violates a bilateral accord to jointly explore for gas in the East China Sea.

In particular, Okada told Yang that Tokyo will take countermeasures if Beijing begins gas production in the Chunxiao gas field, arguing that his country would consider such action a violation of a 2008 agreement to jointly explore the area.

It's worth observing that the talks between the two men also touched on North Korea's nuclear issues, with Okada asking China to work toward bringing Pyongyang back to the six-party denuclearization talks "unconditionally."

Lukewarm response

The stalled six-party negotiations involve the two Koreas, China, Japan, Russia, and the US.

Yang reportedly told Okada that China, which is chairing the multilateral denuclearization talks, will "try" to get them resumed "soon." If you think that sounds a little lukewarm, you are right.

As everyone knows, Japan is the first and only country ever to suffer from a nuclear attack. It thus goes without saying that Japanese sensitivities run high on the issue of nuclear weapons, especially in the hands of North Korea.

The Japanese have justifiable concerns, too, for it was just 10 years ago that North Korea launched a ballistic missile that sparked heated debate in Japan over regional security. The temperature of that debate rose when two "mystery ships" violated Japanese territorial waters before escaping into North Korea.

Nuclear threat

As a refresher, the Aug. 31, 1999, launch of the Taepo Dong I was North Korea's first of a missile with a range of more than 1,500 km and brought any part of Japan well within North Korea's sights.

The three-stage missile was launched from North Korea's eastern seaboard. The first stage dropped off into the Sea of Japan, while the second stage flew over Japan into the Pacific.

For the record, the third stage—which US intelligence sources had failed to detect until reviewing data several weeks later—traveled 5,500 km downrange before eventually disintegrating.

Do such events have any bearing on last week's talks between China and Japan over gas in the East China Sea? You bet they do, and it takes no diplomat to recognize that the lukewarm response of Yang is meant to play into those talks.

There is little room to doubt the prospect for Japan: if it wishes to have Chinese help on the nuclear issue, then—at least in Beijing's mind—it must be prepared to make some concession on the issues over gas in the East China Sea.

Hasn't it been said that diplomacy is war by other means? ✦

legislators to express "concern about the state's proposed regulatory document issued by the DEC."

Communicating the County's concerns about gas drilling at the protest in New York City, Tompkins County Legislator Martha Robertson said that many questions about drilling "remain to be answered."

Earlier, the Tompkins County Legislature "urged that the entire process be reevaluated and that no drilling be permitted using the hydraulic fracturing technique until an adequate environmental review is completed."

The debate emerged after New York Gov. David Paterson, who is seeking to reduce a $3.2 billion state budget deficit, last year proposed opening the Marcellus shale to drilling using horizontal hydraulic fracturing.

In December, the Independent Oil & Gas Association of New York urged Paterson in a letter to remain committed to his draft State Energy Plan, which supports the expansion of natural gas exploration in the Marcellus shale.

"We believe that New York cannot afford to turn away or postpone the tremendous opportunity for economic resurgence and a clean energy supply presented by the Marcellus shale," said IOGA, along with a coalition of business and economic development groups (OGJ Online, Dec. 29, 2009).

IOGA's letter followed DEC's extension of the commentary period as well as reports that New York City urged the state to ban natural gas drilling in its watershed, becoming the most powerful opponent to date of a process that critics say is poisoning drinking water.

Chesapeake has reportedly accused critics of creating fear and panic with misleading or incorrect information with concerns "that have no basis in science or reality."

Earlier this month, Chesapeake Energy Corp. announced a $2.25 billion joint venture agreement with Total E&P USA Inc. in which Total will acquire a 25% interest in Chesapeake's upstream Barnett shale assets (OGJ Online, Jan. 4, 2010). ✦

McMoRan sees Davy Jones find revitalizing much of gulf shelf

Alan Petzet
Chief Editor-Exploration

An apparent Eocene-Paleocene discovery just off the central Louisiana coast could eventually produce 2 tcf of gas or more from Wilcox, appears to have shallower Eocene pay, and is being deepened to test more of the Paleocene section, said McMoRan Exploration Co., New Orleans.

McMoRan cautioned that flow tests and confirmation drilling are needed to identify the content of liquids, if any, in the hydrocarbons and the areal extent of the Wilcox sands, but it hailed the Davy Jones well as an important data point in overall Gulf Coast/Gulf of Mexico exploration.

The Davy Jones well, in 20 ft of water 10 miles south of Marsh Island, La., is about 85 miles south of the nearest deep Wilcox production to the north in the 30-year-old Cretaceous Tuscaloosa Trend just north of Baton Rouge and 170 miles north of Lower Tertiary discoveries such as Shenandoah in the Walker Ridge area of the deepwater Gulf of Mexico.

The apparent pay in Wilcox below the salt weld is a "great signal" that operators might also encounter Tuscaloosa sands if they drilled even deeper on the shelf, said James R. Moffett, cochairman. In the deepwater gulf discoveries, sands are thicker in the Lower Wilcox than in the Upper Wilcox, Moffett noted.

McMoRan, leader of a group of five entities with interests in four federal blocks that the shallow-water discovery appears on seismic data to cover, said the Davy Jones well could revive exploration on a broad area of the Gulf of Mexico shelf. It could be one of the largest shelf discoveries in decades (OGJ Online, Jan. 11, 2010).

Davy Jones progress

The McMoRan group had drilled the Davy Jones exploratory well to 28,262 ft by Jan. 11 and run logs to 28,134 ft.

The Rowan Mississippi jackup is drilling the well, and McMoRan has an option on its sister rig, Rowan Ralph Coffman.

Pipe-conveyed wireline logs indicate 135 net ft of hydrocarbon bearing sands in four zones in Eocene-Paleocene Wilcox, all of them full to base. Two zones have a combined 90 net ft of apparent pay.

Logs indicate porosity in excess of 20% and 10-20 ohms of resistivity, the best of any sands McMoRan has seen in the Wilcox, Moffett said.

The high resistivity suggests the hydrocarbons will be gaseous with low water saturation, and hydrogen sulfide and carbon dioxide are possible if not likely. Advanced well design handled the problems of producing high pressure-high temperature Jurassic gas in Mobile Bay in the 1980s, he noted.

The presence of condensate and gas liquids is unproven, but McMoRan has obtained as much as 100 bbl/MMcf from some Miocene wells, Moffett said.

The quality of the Wilcox sands "assures us…that we're just a mirror image of what's going on out in the Shenandoah-Kaskida-Tiber Wilcox trend" in the deepwater gulf, he said.

"If development drilling confirms what we see on seismic, which is one big uniform structure that covers 20,000 acres…this is going to be a huge reserve and significant to the entire strike and dip sections in the shallow-water shelf," he said.

The quality of the Wilcox sands "assures us…that we're just a mirror image of what's going on out in the Shenandoah-Kaskida-Tiber Wilcox trend" in the deepwater gulf.

If present, Tuscaloosa sands would be below the Davy Jones well's projected total depth of 29,000 ft.

Moffett said, "The whole landscape of the subsurface geology of the shelf has been reshaped."

The logs also indicated more than 400 ft of multiple porous sand intervals in the Yegua/Sparta interval of

the shallower Eocene, McMoRan said. Logs indicate porosity as high as 24%, a record for a Yegua sand, Moffett said.

The group is considering whether to attempt rotary or sidewall cores at the discovery well.

Shelf implications

McMoRan envisions the shelf extent of the Eocene depositional fairway, sourced from areas in and north of the present-day Atchafalaya Basin, at 19,000 sq miles: from shore to the northern Garden Banks and Green Canyon areas and from easternmost Texas waters to western Mississippi Canyon.

Results from Davy Jones and the Blackbeard West exploratory well about 90 miles east-southeast on South Timbalier Block 168 brighten the outlook for ultradeep hydrocarbon potential on 200-300 sq miles of gulf shelf, Moffett said.

A McMoRan group drilled Blackbeard West to 32,997 ft. Permitted to 35,000 ft, it logged four potential hydrocarbon-bearing zones in Miocene Rob-L below 30,067 ft. The group is considering whether to run production tests, which require specialized equipment, or deepen the well to the Wilcox (OGJ Online, Oct. 24, 2008).

These two wells are the only ultradeep control points on the vast shelf, on which thousands of wells have been drilled to unlock the potential of the shallower Miocene and Plio-Pleistocene sections, Moffett pointed out.

McMoRan topped Wilcox at 26,000 ft at Davy Jones and expects to encounter it below 34,000 ft at Blackbeard West, he said.

McMoRan groups have 12-13 other drill-ready Wilcox prospects below the salt weld plus 15-20 prospects and several leads above the salt weld in what it calls the Flat Rock-JB Mountain-Blueberry Hill minibasin, which encompasses more than 200,000 acres roughly between the two wells.

The prospects aren't necessarily contiguous because geologic frameworks are different above and below the salt.

The company controls 150,000 acres associated with ultradeep gulf shelf exploration.

Most of the 12-13 subsalt prospects would have Miocene and Wilcox potential, although some farther south would have less chance for Tuscaloosa potential, Moffett said.

Moffett said, "We envision a very busy 3 years on the exploration side and the development side of Davy Jones, Blackbeard, and other discoveries we hope to make."

Moffett also noted that the Tuscaloosa penetrated north of Baton Rouge in the 1970s-80s had much better sand quality than the Wilcox. Tuscaloosa had thicknesses of 300-500 ft and less fine material.

Testing and completion

The individual Wilcox sands in the Davy Jones well appear more like twins than brothers on gamma ray, resistivity, and porosity profiles and therefore might not require separate tests, Moffett said.

The Davy Jones well is toward the east flank of the structure, and probably 7,000-10,000 of the 20,000-acre structure is updip from the well.

Moffett said McMoRan should be able to drill development wells at Davy Jones for $100 million/well plus $50-75 million for completion.

Cost so far at the apparent discovery well exceed $70 million, including $15 million for logging. Six logging attempts were needed before the group got the right combination of drillpipe-conveyed logs and tools that had enough resistence to temperature and pressure, Moffett said.

Larger diameter holes will be needed at development wells to accommodate larger tubing to handle expected flow rates of 100-125 MMcfd and ultimate recovery of at least 100 bcf/well, he said. Formation tests of Wilcox at the discovery well are probably at least a year away.

A conventional platform will likely serve as a central production facility.

McMoRan operates the Davy Jones prospect and is funding 25.7% of the exploratory costs. It holds a 32.7% working interest and 25.9% net revenue interest.

Other working interest owners include Plains Exploration & Production Co. 27.7%, Energy XXI Bermuda Ltd. 15.8%, Nippon Oil Exploration USA Ltd. 12%, W.A. "Tex" Moncrief Jr. 8.8%, and a private investor 3%.

Energy XXI is funding 14.1% of the exploratory costs to earn its 12.6% net revenue interest in the prospect. ✦

Cameroon

Victoria Oil & Gas PLC, London, encountered overpressured shale gas in a thick interval at an appraisal well in undeveloped Logbaba gas-condensate field on the outskirts of Douala, Cameroon.

The La-105 well went to TD 8,920 ft and also cut more than 300 ft of gross pay in multiple gas-bearing sands at virgin pressures at 6,017 ft to 8,330 ft. The sands can be correlated to those found and tested decades ago in the La-103 well, which flowed at rates of 5-12 MMcfd from individual sands.

After drilling the La-106 well, the company plans to build a gas processing plant. The field's pay intervals are in Upper Cretaceous Logbaba sands. Victoria Oil & Gas ran a passive seismic survey over the field in 2009.

Chile

GeoPark Holdings Ltd., Hamilton, Bermuda, plans a 14-16 well program in 2010 on Chile's Fell block at a cost of more than $50 million that follows the nine wells drilled and completed in 2009.

The Dicky-16 well is to be tested, while the Alakaluf-5 downdip appraisal well flowed 650 b/d of oil with 250 psi

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E1209 Current E1219C Historical, 1985 to current

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E1309 Current E1309C Historical, 1994 to current

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

	Current	Historical 1996–Current
Refinery	E1340	E1340C
Pipeline	E1342	E1342C
Petrochemical	E1341	E1341C
Gas Processing	E1344	E1344C

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

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E1345 Current E1145C Historical 1989 to current

Oil Sands Projects — Planned Canadian projects in four Excel worksheets. Includes mining, upgrading, in situ projects, and historical table with wells drilled back to 1985.
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Production Projects Worldwide — List of planned production mega-projects.
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wellhead pressure on a 14-mm choke from a 43-ft perforated interval in Cretaceous Springhill at 7,173 ft.

GeoPark Holdings, which is moving the rig to drill Alakaluf-6, will also shoot 2D and 3D seismic and expand infrastructure in 2010. Its certified proved and probable reserves are 42.2 million bbl of oil equivalent.

Italy

Northern Petroleum PLC launched a 3D seismic survey on four licenses in the West Sicily thrust belt off Italy.

Shooting of as much as 1,520 sq km on the G.R17.NP, G.R20.NP, G.R21.NP, and G.R22.NP licenses in the next 2 months is part of the work program funded by Shell Italia E&P SPA under a farmout announced in December 2008.

The survey aims to obtain a better quality and more complete definition of the encouraging structures identified from two previous 2D seismic shoots and firm up prospects for drilling.

Namibia

Namibia's state NAMCOR has been appointed by the Block 1711 Joint Operating Committee as interim operator, succeeding Sintezneftegaz Namibia Ltd.

Sintezneftegaz Namibia has transferred its interest in the 2.2 million acre block to Nakor Investments Ltd., a company affiliated with the Sintezneftegaz/Sintez Group of the Russian Federation.

EnerGulf Resources Inc., Houston, said it anticipates that the geophysics-geology work program required to evaluate Kunene-1 well data and correlate the data to existing 2D and 3D seismic should start soon (OGJ Online, July 23, 2009).

Poland

Polish Oil & Gas Co. will join Aurelian Oil & Gas PLC in exploring Aurelian's six exploration concessions in Poland's western Carpathians.

Aurelian will continue as operator, and PGNiG will gain a 40% participating interest in Karpaty West and 20% in Karpaty East that cover 2,230 sq km and 1,296 sq km, respectively.

Aurelian will reprocess and interpret 2,000 line-km of seismic provided by PGNiG, which is expected to lead to shooting new seismic in the second half of 2010.

Aurelian now partners with PGNiG in more than one third of the Polish Carpathian fold belt, where modern seismic and similar technologies have yet to be fully deployed.

PGNiG operates the Bieszczady blocks covering 3,547 sq km in Poland's eastern Carpathians, in which Aurelian has 25% interest.

Alberta

ProspEx Resources Ltd., Calgary, gauged a sharply higher gas-condensate flow rate at its second horizontal multifrac well in the East Kakwa area of the Alberta Deep Basin.

The second well, at 15-19-64-4w6m, produced up casing at a final rate of 24.4 MMcfd of gas on a 38-hr test at 1,570 psi flowing wellhead pressure. It flowed up tubing at the rate of 16 MMcfd at 1,690 psi.

The first well, at 2-33-63-4w6m, made 10.9 MMcfd at 2,380 psi on a cleanup test and 6.6 MMcfd at 2,300 psi on extended test last September. On production since early November, it averaged a facility-restricted 7.8 MMcfd net to ProspEx's 60% working interest including associated liquids.

ProspEx expects to finish drilling a third horizontal well by late January 2010. The 15-19 and 2-33 wells are 8 km apart, and the third horizontal well will extend the trend 5 km farther north. ProspEx didn't identify the formation, but the area produces from five Cretaceous zones including Falher channels at 2,400-2,600 m true vertical depth.

Kansas

S&W Oil & Gas LLC, private Wichita operator, tested the 24-1 Double H discovery well in southwestern Ford County, Kan., at 240 b/d, 75-98% oil, and 150-200 Mcfd of associated gas from Pennsylvanian Morrow sand.

The Rooney project area totals 7,040 acres adjacent to the north edge of existing Morrow sand oil and gas production 20 miles south of Dodge City, said interest owner American Petro-Hunter Inc., Scottsdale, Ariz.

The two companies negotiated an unspecified premium to the Kansas common oil price for the 44° gravity oil from National Cooperative Refinery Association, McPherson, Kan., American Petro-Hunter said.

Pennsylvania

Five operators submitted more than $128 million in bids for six tracts in five Pennsylvania state forests in the Marcellus shale gas play.

The high bidders are Seneca Resources Corp., Anadarko Petroleum Corp., Exco Resources Inc., Penn Virginia Corp., and Chesapeake Energy Corp. Bids ranged from $2,437/acre to $5,250/acre and averaged $4,100/acre.

The tracts total 32,000 acres in north-central Pennsylvania in Elk, Moshannon, Sproul, Susquehannock, and Tioga state forests.

Texas

Panhandle

Forest Oil Corp. plans to run four rigs in the eastern Texas Panhandle in 2010, where its third and fourth operated horizontal Pennsylvanian Granite Wash wells exceeded expectations.

The third well tested at a 24-hr rate of 15.1 MMcfd of gas, 1,200 b/d of oil and condensate, and 2,400 b/d of natural gas liquids in December 2009. The fourth well made 16 MMcfd, 1,300 b/d, and 2,200 b/d in January 2010.

Forest drilled 4,200-ft legs and ran 9-10 frac stages. Well costs are expected to improve from the averaged $6.8 million for the two wells. The Granite Wash acreage is in Roberts, Hemphill, and Wheeler counties.

OGJ FOCUS

Thermodynamics help determine underlying black powder processes

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Thermodynamics can assist with understanding the underlying chemical processes of internal corrosion and black powder formation in dry gas pipelines. This is the case despite the presence of a wide range of corrosion products (iron oxides, iron carbonates, and elemental sulfur) sampled from the pipelines suggesting nonhomogeneous processes at play that are not thermodynamically controlled.

Intermittent ingress of oxygen from process upsets and cyclical wet-dry conditions resulting from process upsets and seasonal temperature changes are the main cause of these corrosion products, complicating the task of correlating the iron phases obtained at well-defined thermodynamic experimental conditions to the composition of the black powder formed in the pipelines at varying field conditions.

Background

The product of reactions between the steel of natural gas pipelines and components in processed natural gas concerns the gas industry. This corrosion product, commonly referred to as black powder, is a mix of iron oxides, sulfides, and carbonates, which causes erosion in valves and must be periodically removed by pigging the pipelines.[1-4] Black powder samples collected from Saudi Aramco sales gas pipelines showed only the presence of iron oxides and carbonates (Table 1).[4]

BLACK POWDER COMPOSITION PER XRD TECHNIQUE Table 1

Main compound	Approximate avg. weight, %
Magnetite-Fe_3O_4	60
γ-FeOOH	Trace amounts, <2
α-FeOOH	25
Iron sulfides	Not detected
Siderite-$FeCO_3$	10
Elemental sulfur	5

Nonuniform conditions in the pipeline complicate understanding the mechanisms for black powder formation. Water content and dewpoints, H_2S and CO_2 concentrations, and the presence of oxygen all affect formation.

Water dewpoints were calculated under several operating parameters to determine which iron ion species would be predominant in the aqueous environment.

One of the main thrusts of this article's thermodynamic analysis was understanding, in sales gas with oxygen ingress, the predominance of iron oxide phases (magnetite-Fe_3O_4 and FeOOH) in the collected black powder, knowing from the literature[5-7] to expect $FeCO_3$ as the dominant species.

Iron oxide's predominance reflects the complexity of the corrosion problem caused by changing conditions in the gas phase (such as oxygen ingress or changes in the H_2S, CO_2, or H_2O levels), the effect of kinetics on the reaction of pipeline steel with the solution, and the subsequent potential conversion of reaction products in a dry environment (i.e., the conversion of $FeCO_3$ to Fe_3O_4).

The lack of definition regarding the specific location and time at which the black powder formed further complicates analysis. Analyzed samples instead represent the sum of black powder products formed at varying locations and times along the pipeline (i.e., water condensation might have occurred only at low points and for a few hours during the winter season, or oxygen ingress took place at low-pressure points, etc.).

These factors complicate correlating the results of thermodynamic analysis

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

SALES GAS COMPOSITION, %

Table 2

CH_4	C_2H_6	C_3H_8	iC_4	C_4	iC_5	C_5	C_6, hexanes plus	N_2	Dewpoint, °C. at 130 psi	Calculated water content, mg/l.
78.81	8.12	3.01	0.48	0.83	0.20	0.16	0.03	7.38	–19	0.12
85.34	7.26	0.79	0.17	0.30	0.10	0.09	0.04	5.78	0.0	0.55

with field X-ray diffraction results. The wide range of potential conditions and kinetic limitations on the reactions means an attempt at quantitative analysis of thermodynamics as they apply to the formation of black powder could be misleading.

Although thermodynamics can be useful in predicting what can and cannot possibly form under dewing conditions, the fact that a wide range of products (iron oxides, carbonates, and elemental sulfur) is sampled from the pipelines shows this is not a homogeneous process controlled by thermodynamics. If the gas phase is relatively constant, thermodynamics would predict one stable phase for each of the nonmetallic components in the gas phase (i.e., S and C).

The presence of all the mentioned phases means there are regions of kinetic control in the pipeline. These uncertainties, however, mean the results should be used as a guide to better understand the corrosion mechanisms inside the pipeline.

System definition

Before thermodynamic analysis, it is important to define the terms of the calculations. Table 2 shows sales-gas compositions and measured dewpoints as obtained from two spot analyses each.[4] Table 3 shows impurity levels and properties of sales gas.[4] These levels set the conditions for the calculations outlined in the balance of the article.

The analysis presented here uses two main assumptions:

- CH_4 and N_2 were removed from the calculations and replaced with argon, so as not to affect reaction equilibrium.
- Sales gas would behave as an ideal gas. Dewpoint calculations, which match exactly when the ideal gas model is used but are not comparable when a real gas model is used, validate this assumption.

SALES GAS COMPOSITION, PROPERTIES

Table 3

H_2S	2.0, 6.0 ppm
CO_2	0.1, 0.5, 1.6 mol %
O_2	0.01, 0.02, 0.05 mol %
H_2O	0.12, 0.55 mg/l.
Ambient temperature	15-30° C.
Pipeline pressure	720, 900 psi

One problem with thermodynamic calculations is reactions that normally do not occur due to kinetic barriers cannot be prevented in the calculations without the removal of some species from the calculation. An important example of this is the reaction between oxygen and methane (Equation 1).

At pipeline temperatures methane is kinetically stable with respect to other gases. It is reasonable to assume the interaction of methane and nitrogen with other gases in the pipeline will be limited. It is not possible to conduct thermodynamic calculations with methane and nitrogen in the calculation because this kinetic barrier to reaction prevents thermodynamic calculations with methane and nitrogen, but the reaction still occurs in thermodynamic calculations, causing CH_4 and N_2 to be removed from the calculations and replaced by Ar so as not to affect reaction equilibrium. Since this article intends to show the potential for thermodynamic calculations as they relate to black powder formation, this assumption must be made to allow calculation.

EQUATIONS

$$2\ O_2 + CH_4 = CO_2 + 2\ H_2O \quad (1)$$
$$2\ H_2S + O_2 = 2\ H_2O + 2\ S \quad (2)$$
$$2\ Fe + H_2O^{(l)} + 3/2\ O_2 = 2\ FeOOH \quad (3)$$
$$4\ FeS + 2\ H_2O + 3\ O_2 = 4\ FeOOH + 4\ S \quad (4)$$
$$Fe_3O_4 + 3/2\ H_2O + 1/4\ O_2 = 3\ FeOOH \quad (5)$$

The article will compare calculation results will be compared with experimental work currently under way on gas phase stability.

Another example of this gas phase kinetic barrier issue is CO-CO_2 equilibrium. At low (less than 100° C.) temperatures, CO and CO_2 can exist together at any ratio despite thermodynamics stating there would be a reaction between them creating elemental carbon. CO-CO_2 gas blends in cylinders can remain at the same ratio virtually indefinitely.

Oxygen is the critical factor in the internal corrosion of sales-gas pipelines. Oxygen ingress in gas lines can cause corrosion in small concentrations and combustion in larger amounts. A 1988 survey of 44 natural gas transmission pipeline companies in North America showed gas-quality specifications allowing maximum O_2 concentrations of 0.01-0.1 mol % with a typical value of 0.02 mol %.[6 8] Oxygen content of about 0.01 mol % has little effect on steel corrosion in the presence of stagnant water inside sales gas transmission pipelines, while 0.1 mol % produces fairly high corrosion rates.[6 8]

This range points to the difficulty in making a quantitative analysis of the entire system. A general recommendation holds that operators of transmission pipelines should consider limiting maximum oxygen concentration to 10 ppmv (0.001 mol %).[6 8] O_2, due to

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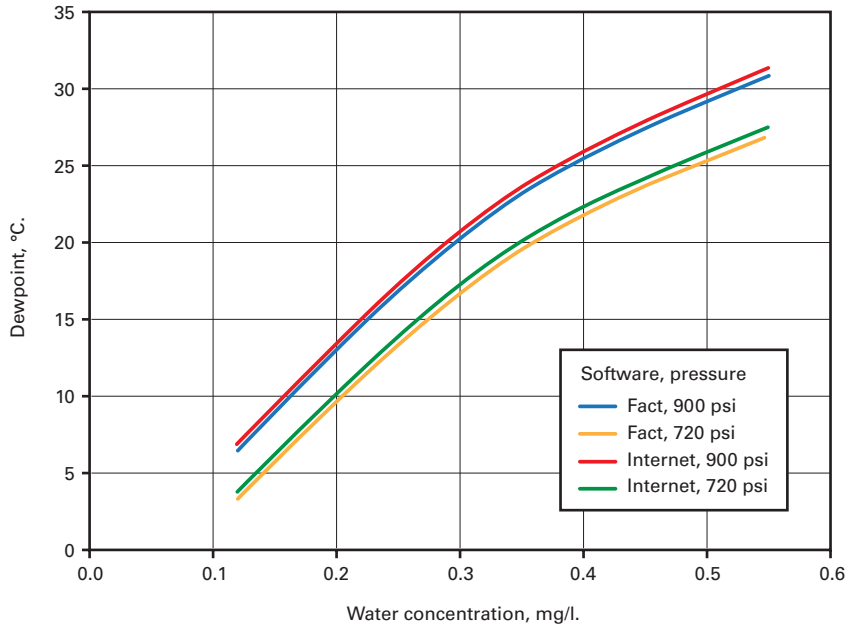
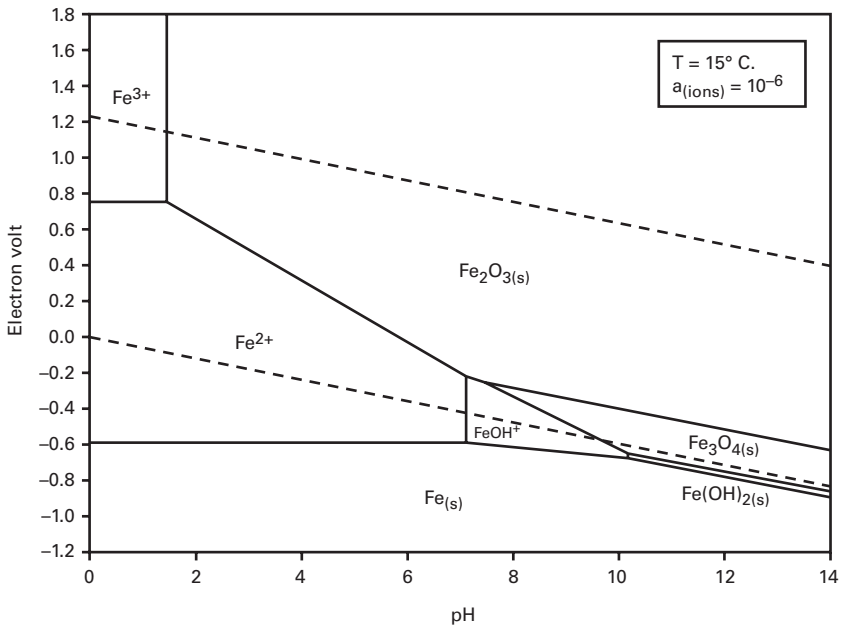
CALCULATED DEWPOINTS WITH ARGON

Fig. 1



EPH DIAGRAM, FE IN WATER

Fig. 2



air ingression in the gas, will not be at equilibrium with the other gases in the methane stream, due to the low kinetics of methane reacting with oxygen at operating temperatures.

Oxygen cannot exist (thermodynamically) in a reducing environment such as sales gas (Equation 1) because it would react with methane. If oxygen were at equilibrium with the methane, the partial pressure of O_2 would be undetectable and CO_2 and water concentrations would increase. H_2S would remain relatively unaffected.

Conditions indicated by the equilibrium gas composition (i.e., the Eh and pH of the water or the equilibrium CO_2 in the gas phase) will therefore not reflect the true kinetically controlled situation, requiring any calculations or diagrams based on the gas phase equilibrium be interpreted in light of expected kinetics (i.e., oxygen could remain in the system as a kinetically stable gas phase).

Specific reactions in black powder production problematic with regards to the application of thermodynamics follow. Kinetic barriers complicate accurate prediction of the equilibrium aqueous phase. But suppressing reactions in the calculations not occurring in the pipeline allows a reasonable estimate of the aqueous phase, increasing the usefulness of analyzing iron reaction products by EpH diagrams and aqueous-phase chemistry.

Dewpoint

Dewpoint calculations for a range of conditions demonstrated the validity of the calculations (Fig. 1). The operating temperature and pressure ranges measured 15-30° C. and 720-900 psig, respectively. Dewpoint calculations considered the balance of the sales gas as N_2 and CH_4 (CH_4/N_2 = 15.67), or Ar for purposes of the calculations.

Pressure has the largest effect on dewpoint. Calculations determined if dewpoint temperature changes as a function of contaminant concentrations and pipeline pressure. Fig. 1 compares the results obtained from a commercially available software package and the dewpoint calculated using the alpha moisture system dewpoint calculator. In all cases the results are within about 2° C. of each other. Impurities (H_2S and CO_2) had no effect on the dewpoint, while pipeline pressure and H_2O affected dewpoint temperature.

Point calculations are thermodynamic calculations done to attempt to simulate the conditions in the precipitated water in the pipeline. They most effectively identify reasonable ranges of pH or redox for EpH diagrams or to

help better understand reaction mechanisms. All calculations are based on 1 l. of gas and are in units of moles. The output from the thermodynamic model gives the equilibrium gas phase and the aqueous condensed phase.

Changing the values of CO_2, H_2S, and O_2, allows a range of values for pH, Eh, and aqueous species concentrations. The concentration of aqueous species is important in setting the EpH diagrams to the correct values. Oxygen can be used in these calculations because Ar has replaced methane and nitrogen. This condition represents a transient condition where O_2 has entered the pipeline, but does not react with methane due to kinetic constraints.

Changing gas conditions affect the solution's Eh and pH, low and high CO_2 content. Maximum water concentration equaled 0.55 mg/l. CO_2 will buffer the aqueous solution to a pH of about 4, typical of carbonate solutions. Adding H_2S in a reducing environment has little effect on pH. Oxygen naturally drives up the Eh value, creating the potential for localized increases of Eh along the pipeline due to oxygen ingress.

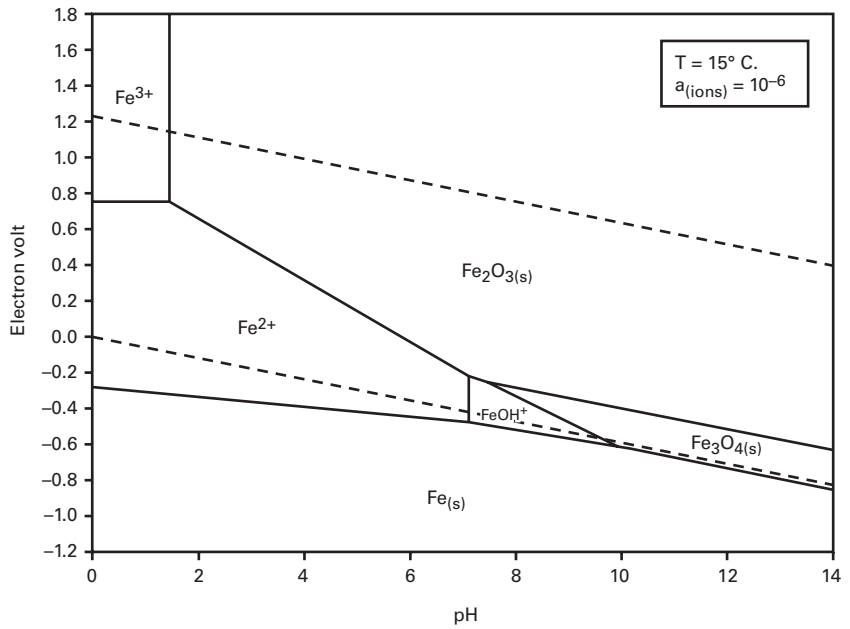
The fact there are no pH conditions that would be above about 5 is consistent with work by Sridhar et al.[5] using a range of conditions with CO_2 at 10 psi and all conditions (except the one loaded with NaOH) showing a pH around 5. These results reinforce the difficulties of studying the problem in isolation from its surroundings, these relatively highly acidic pH conditions not being encountered in the pipeline.

The presence of iron in the system dramatically affects its chemistry. System pH normally lies between 5 and 6.5, due to the reaction of CO_2 with iron. When iron is introduced into the calculation, $FeCO_3$ precipitates, the pH increases to 5, and $FeOH^+$ is found in the aqueous solution, much more in line with the actual field findings.

Formation of Fe_3O_4 is thermodynamically possible but depends on the availability of iron to the system (ratio of iron to gas phase), helping explain the range of compounds found in the pipeline.

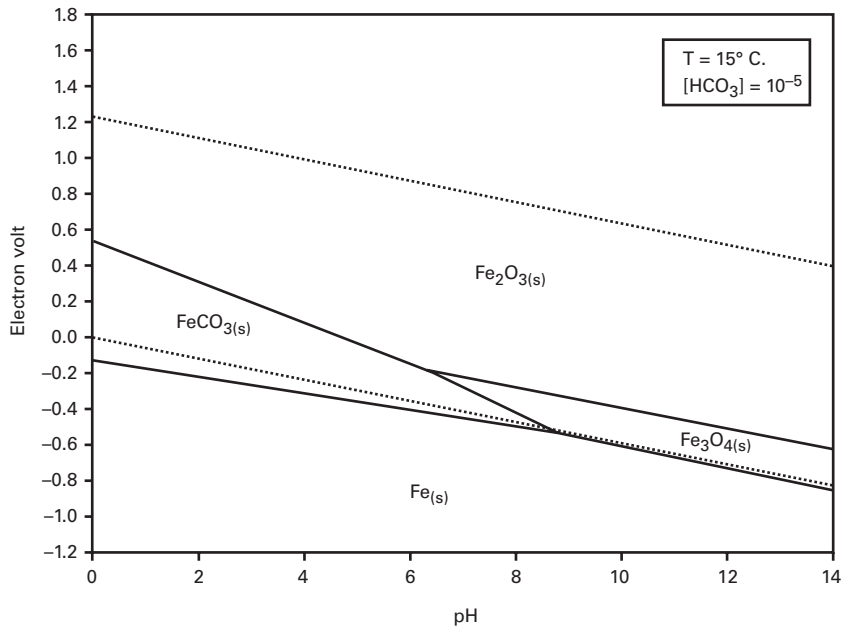
EpH, Fe-C in water, low CO_2 in gas phase

Fig. 3



EpH, Fe-C, low CO_2, minus ionic species

Fig. 4

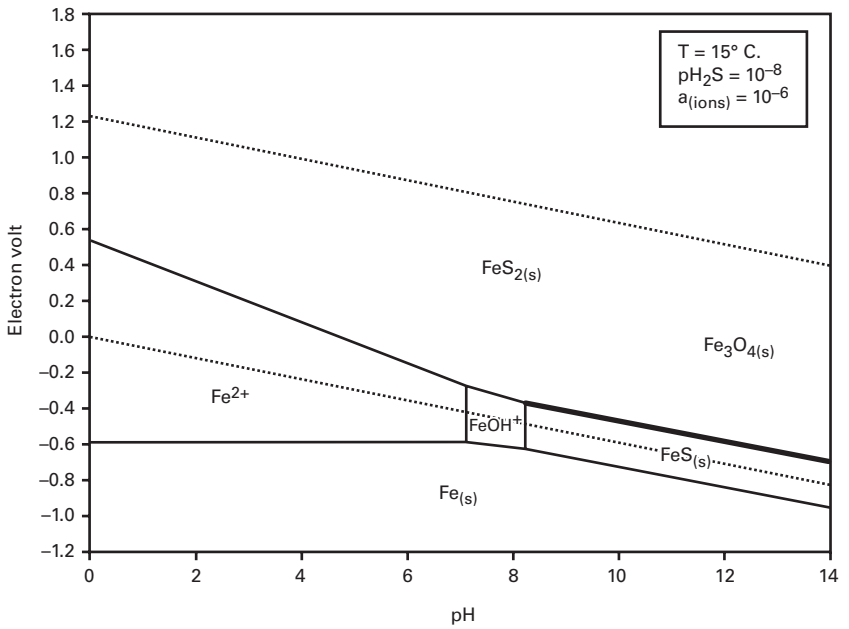


Looking at the calculated reaction products as iron is introduced into the system allows study of the progression of product formation. In the presence of Fe (given an oxygen free system), FeS_2 is the first iron compound to form (at pH ~4). $FeCO_3$ forms next if the available sulfur is exhausted, increasing the pH to above 5. Relative rates of these reactions are not known and are affected by the relative concentrations of the gases.

Literature states the presence of both CO_2 and H_2S in condensed moisture

EPH, FE-S IN WATER

Fig. 5



produces a corrosion product that is a function of the partial pressure of both acid gases and temperature.[6] Investigation suggests different CO_2-H_2S ratios, such as 200 and 500, representing the change from predominately $FeCO_3$ to FeS_6.

The preference for CO_2 forming carbonate over H_2S forming FeS (both reactants in aqueous form) is a kinetic phenomenon, and not based on thermodynamics. Thermodynamically, iron will preferentially react with S over CO_2 at virtually any concentration of reactants. The fact that $FeCO_3$ is found preferentially at high levels of CO_2-H_2S shows the kinetic reaction for S is less than for CO_2, perhaps due to a passivating film occurring with sulfur or, as mentioned earlier, to exhaustion of S at the reaction site due to the slow dissolution of more H_2S into the water (slow replenishment of S in the water).

As with CO_2, calculations involving S as described are kinetically controlled. The prediction of the formation of SO_4^{2-} from thermodynamics does not occur in the field. Reactions of oxygen and H_2S appear to be kinetically slow, and the preferential reaction is as per Equation 2.

EPH diagrams

EpH diagrams can identify regions of pH and E (redox potential, or the oxidizing or reducing environment of the solution). Presentation of these diagrams often occurs in a series with varying conditions of activity of one of the species, because while EpH diagrams can be constructed for metals in water, when a nonmetallic element is introduced (in this case carbon or sulfur), another degree of uncertainty is added to the system. This uncertainty must be removed by setting the activity level or partial pressure of a compound containing that nonmetallic element.

Providing a series of diagrams with no reference to the actual system provides little value in understanding the mechanism of a reaction, making the point calculations performed in this work useful in helping determine reasonable concentrations of aqueous species for carbon and sulfur. Fig. 2 is the baseline EpH diagram for water.

FeOOH, the data entered into the commercial software package,[8] did not appear. Conditions for its formation are not clear, but it can be assumed it forms in the presence of oxygen via Equation 3, or through conversion of reaction products via Equations 4 and 5.

This diagram is at 15° C., although temperature's effect is negligible over the range experienced by the pipelines. The region of interest lies between the two dashed lines, showing the region where water is stable. With only pure water and a basic pH Fe_3O_4 can form, as shown by this region in Fig. 2.

The progression moves from elemental Fe, to FeO (or $Fe(OH)_2$ as shown), to Fe_3O_4, and finally to $Fe_2O_3^-$, the most oxidized iron oxide. Removing the aqueous species from the diagram would show each phase field layered on top of each other as the electron volt increases (becomes more oxidizing).

CO_2 influence

Adding CO_2 changes the EpH diagram to that shown in Fig. 3 for a system with low CO_2 in the gas phase (0.1 mol %). Adding C to the system requires there be a species selected with a fixed concentration. This can either be a gas (i.e., CO_2) or an aqueous species (i.e., HCO_3^-).

This article selected HCO_3^- and took a representative value from the point calculations done in the last section. The carbonate phase, $FeCO_3$, is covered by the aqueous $FeOH^+$ and Fe_2^+ fields. This coverage only shows the ionic concentration in the system since the diagram is set to the typical 10^{-6} concentration for the sum of ionic species (if the total of all ionic species is at least 10^{-6}, the predominant ionic species will be shown on the plot).

To see the solid phases, the ionic species can be suppressed in the output (Fig. 4). This plot, without aqueous species shown, clearly demonstrates $FeCO_3$ as the phase of interest in the E and pH range, supporting the point calculations showing $FeOH^+$ is present with CO_2 and influences system pH.

EpH diagrams often display with the

aqueous phase boundaries as dotted lines over the top of the solid phases. The concentration of aqueous species over a phase field shows the development rate of any corrosion, since corrosion will occur with greater intensity if the dissolved Fe ions build to a high concentration before equilibrium is reached.

Setting the concentration of aqueous species at 0.001 allows observation of the solid phase fields with the aqueous species. Fe_3O_4 forms at pH values greater than about 6.5, but the phase field overlaps the $FeCO_3$ for a given pH, depending on the Eh of the system.

This overlap could explain why both $FeCO_3$ and Fe_3O_4 are found in the black powder, since a pH of 6.5 or greater is found in laboratory tests at Saudi Aramco, and Eh could change depending on oxygen availability.

H_2S influence

The effect of H_2S on the pipeline depends on the atmosphere in the pipeline and kinetics. Oxygen does not react kinetically with H_2S to create sulfates, meaning EpH diagrams can vary widely as to fields of stability depending on the situation in the system. Fig. 5 shows a simple EpH diagram using pH_2S as the basis for the calculation yields.

Fe_3O_4 lies between FeS and FeS_2. The Fe_3O_4 field is narrow (only visible as a thicker line), but at lower H_2S concentrations it is more predominant, demonstrating a likelihood of FeS and FeS_2 formation depending on redox potential.

Since oxygen ingress will affect redox potential and is a nonuniform event (sometimes minor, sometimes major), it is likely both FeS and FeS_2 will be found in a range of concentrations with one another.

Examination of both CO_2 and H_2S demonstrates why a variety of solid material is found in black powder.

Oxygen ingress can widely change system Eh and favor formation of one compound over another. The nature of the ingress—in terms of both concentration and location—leads to nonuniform residue, complicating the overall analysis of its formation.

Acknowledgments

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Causes of Tarim oil field drillstring failures assessed

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A statistic analysis found that drillstring failures in Tarim oil field were related to the difference between specifications and working conditions.

The analysis documented the drillstring failures from January 2005 to March 2006.

During this time, Tarim oil field had 36 failures in 2005 and 21 from January to March 2006. These failures caused extensive lost time for fishing the broken strings and the loss of several holes.

References 1-3 provide information on some drillstring failures used in this statistical analysis.

2005 failure

The 36 failures in 2005 (Fig. 1) resulted in 3,739 hr of lost time. The failures break down as follows:

- 38.9% from 14 drilling jar fractures.
- 25% from nine drill collar fractures.
- 19.4% from seven drilling stabilizer fractures.
- 8.3% from three heavy wall pipe and drill pipe fractures.

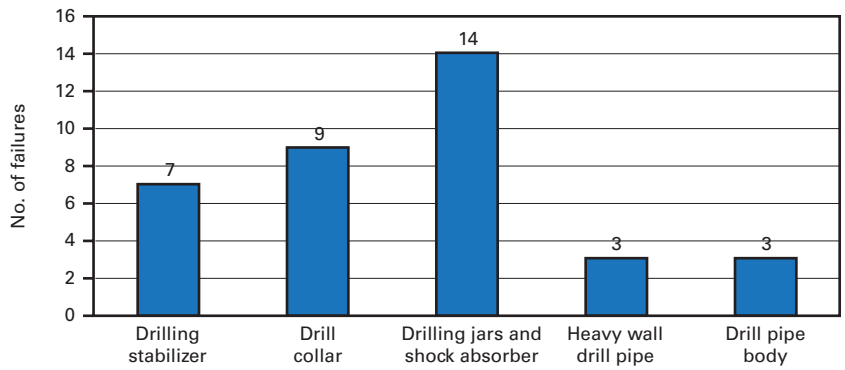
The fractures in four of the 120.7 mm (4¾ in.) drill collars were at the pin's last engaged thread. Three 158.8 mm (6¼ in.) drill collars broke at the box and one broke at the pin. The one 203.2 mm (8 in.) drill collar failure was at the pin's last engaged thread.

In the drilling stabilizers, all fractures were at the pin's last engaged thread. Four of the failures were in the 311.2 mm (12¼ in.) stabilizers and one each in the 165.1 (6½ in.), 406.4 mm (16 in.), and 444.5 mm (17½ in.) stabilizers.

The drilling jar failures were in four 203.2 mm (8 in.) jars and three 158.8 mm (6¼ in.) jars with two failures at the box of the two outer canisters. The other fractures were along the length of two 228.6 mm (9 in.) jars, one 120.7 mm (4¾ in.) jar, and one 279.4 mm (11 in.) shock absorber.

FAILURES, 2005

Fig. 1



2006 failures

Fig. 2 shows the failures from January to March 2006. These include:

- 76.2% from 16 drill collar failures.
- 14.3% from three drilling jar failures.
- 9.4% from two drill pipe failures.

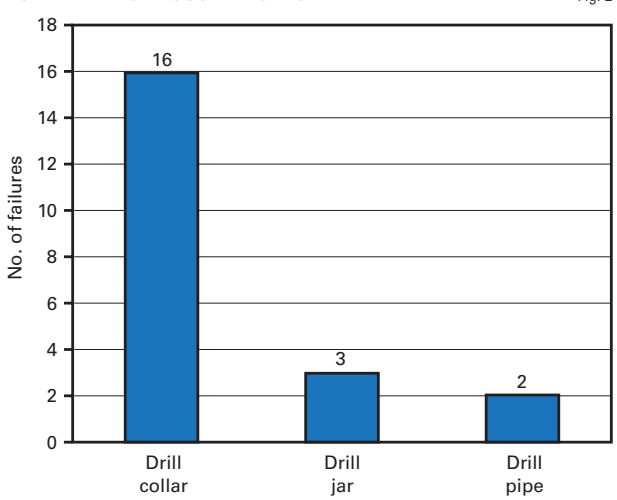
Seven of the 120.7 mm (4¾ in.) drill collars broke at the pin's last engaged thread (Fig.3). Six 158.8 mm (6¼ in.) drill collars broke at the box and the failures were 102-110 mm from the box seal shoulder (Fig.4). One 203.2 mm (8 in.) collar broke at the pin's last engaged thread and another one broke at the box. One 104.8 mm (4⅛ in.) drill collar broke at the pin.

Fig. 3 shows a fracture due to over torsion. In Fig. 4, the fracture is from a fatigue fracture with the crack originating from the bottom thread.

The IDs of the drill collars were 57.2 mm (2¼ in.) in the 120.7-mm collars, and 71.4 mm (2 13/16 in.) in the 158.8 mm collars. The OD of 158.8 collars ranged from 153 mm to 160 mm. All failed drill collars had no stress decentralization grooves.

JANUARY-MARCH 2006 FAILURES

Fig. 2



In Well Milan 1 (photo on the left), the fracture failure in a 120.7 mm (4¾ in.) drill collar is in the pin's last engaged thread (Fig. 3). During January-March 2006, six 158.8 mm (6¼ in.) drill collars broke at the box (photo on the right). The fractures were 102-110 mm from the box seal shoulder, as seen in this failure from Well Gucheng 4 (Fig. 4).

Failure causes

Bend, torsion, and impact fatigue loads during drilling cause fatigue cracks to grow easily. Fatigue fractures will occur once cracks extend to a certain size.

The wells in Tarim oil field are deep, and the field has complex geology. These factors contribute to difficult drilling conditions. During drilling, frequent bit bouncing and jumping will cause fatigue failures.

Doglegs in wells caused the drillstring to bear extra bending load that causes drill pipe to crack or fracture.[4 5] Three drill pipe joints leaked because of fatigue cracks at a 500 m depth where the dogleg was 3.7°/30 m in Well LG42. Another 15 joints of drill pipe leaked because of fatigue cracks at 1,870-930 m where the dogleg was 6.5°/30 m in Well LG13 (Fig. 5).

Another reason for some of the failures was large-size polycrystalline-diamond compact (PDC) bits that increase torsion load on the drillstring.

The drilling program used shock absorbers in 54 wells in 2005. Four of the drillstrings with 406.4 mm (16 in.) PDC bits had fracture failures. Bit bouncing and jumping added extra loads on the drillstring resulting in severe service conditions.[6]

Three examples of these failures are:

1. In Well Q 601, the rotary table suddenly reversed because of bit bouncing and jumping, thereby breaking two pins in the corner of the rotary table.

2. In Well YL 101, five drillstring elements broke because of bit bouncing and jumping while drilling with a 444.5 mm (17½ in.) PDC bit, resulting in four drillstring elements having cracks.

3. One joint of 139.7 mm (5.5 in.) S135 drill pipe broke in Well Q 601 well because of the large size PDC bit bouncing and jumping.

Fast rotation speed can increase the force away from the axes of the drillstring and result in extra bend stress borne by the drillstring. This can cause strong torsion and shock loads that damage drillstrings. High-inertia torque and kinetic energy can cause abnormal torque borne by the drillstring in the case of a bit bouncing and jumping.

Fast rotation speed also can increase the total stress borne by the drillstring, resulting in the initiation and spreading of cracks.

Statistical data show that failures increase with rotational speed. For example, in wells LG 802, HD 1-28, and LN 621 rotary table speeds were 110, 100-120, and 120 rpm, respectively.

In well LG 802, 24 drill pipe joints washed out in 15 days, and 2 joints broke off after being washed out. The well had four drill pipe breaks in 2 days.

In Well HD 1-28, six joints washed out in 7 days with two joints washing out in 1 day. In Well LN 621, eight joints broke off in 4 days with three joints washing out in 1 day.

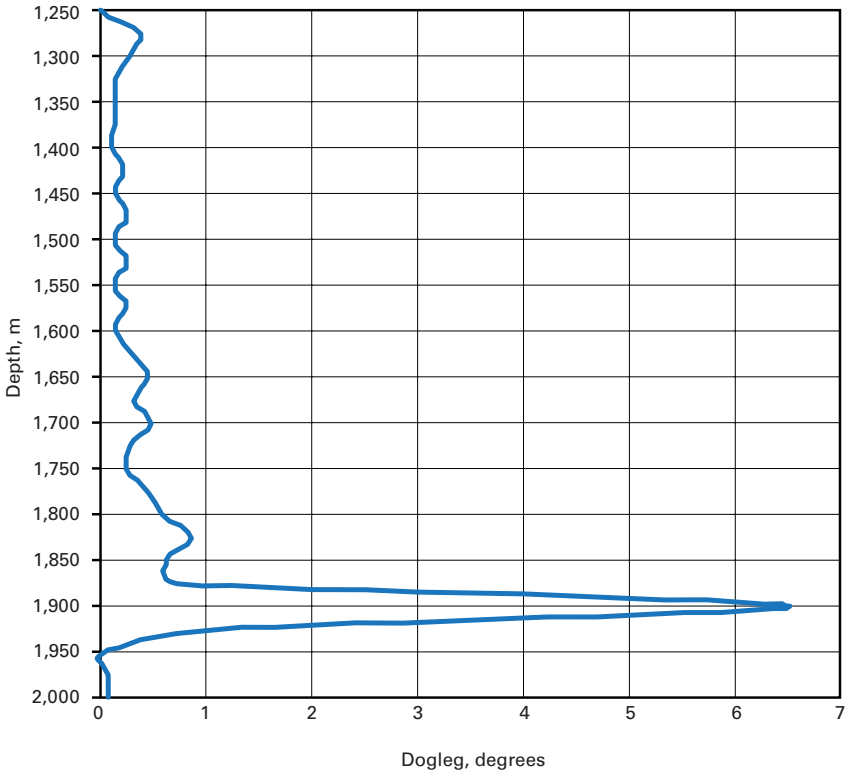
Washouts stopped with the introduction of composite thread drillstring elements and the decrease of the rotary table to 50-60 rpm. In these wells, the pump pressure was more than 2 MPa (290 psi) greater than when the washouts occurred.

Drillstring standards

In China, the drillstring standards

WELL LG 13 DOGLEG

Fig. 5



used are from API, ISO, SY, and GB. User and manufacturer committees have established API and ISO standards. SY and GB are steel grade standards based on API and ISO standards with some improvements.

Because of difficult drilling conditions in Tarim oil field, it is not enough to use API, ISO, SY, and GB standards; therefore, the field has adopted several other standards for reducing drillstring failures.

Two joints of new drill collars broke during January-March 2006 and their quality was in accordance with API Specification 7, and SY 5144.

Although the quality of imported drill collars is better than for the collars made in China, many imported drill collar failures took place. The analysis concluded that decreasing these failures required a study of the techniques used for drilling the wells.

Test results showed that the material toughness and yield strength of the drilling stabilizer run at Tarim were not in accordance with standards. To ensure drilling stabilizer quality, required additional supervision and research.

Also the material toughness was lower than the standards for 14 of the drilling jar and shock absorber failures that occurred in 2005.

The drilling jars that broke from January to March 2006 included one jar that fractured with standard torque being applied during make up in a workshop. This indicates that the failure was due to the coarseness of the material in the jar.

Analysis results

Table 1 lists the analysis of the failures in 2005.

Drilling jars and shock absorbers had the most failures in 2005. Most of these jars and shock absorbers were made in China, and the causes of the fractures relate to material toughness

2005 FAILURE ANALYSIS

Table 1

Well	Failure	Failure analysis
KL 2-11	406.4-mm drilling stabilizer pin fracture	Toughness low, yield strength low, and no stress decentralization groove.
KL 2-12	139.7-mm drill pipe body fracture	Material quality is in accordance with the standard. Surface scar places a premium on fatigue crack.
KL 2-14	139.7-mm drill pipe body fracture	Fatigue fracture. Heavy wall drill pipe not in use.
AK 2	203.2-mm drill collar pin fracture	Material is in accordance with the standard. Forepart fatigue fracture.
AK 2	311.2-mm drilling stabilizer pin fracture	Fatigue fracture.
YL 101	127.0-mm drill pipe body fracture	Forepart corrosion fatigue fracture.
HD 2-10H	120.7-mm drill pipe body fracture	Fatigue fracture.
Q 601	139.7-mm drill pipe pulled out	Fatigue crack. Thread engagement change.
DN 2-3	127.0-mm tool joint box longitudinal crack	Friction crack.
Q 601	228.6-mm shock absorber fracture	Toughness low. Severe stress concentration and machining trace.

and yield strength, and the stress concentration.

Broken drill collars were the second most failure in 2005 and the most in January-March in 2006. The analysis used bend-strength ratio and stress centralization factors for assessing these failures.

The bend-strength ratio was for checking whether the drill collar joint was in accordance with API RP 7G. For the same pin and box life, the bend-strength ratio should be 2.50:1. A larger bend-strength ratio indicates a weaker pin and a lower bend strength ratio indicates a weaker box.

The bend-strength ratio increases as the drill collar ID increases.

The fractures in the 120.7-mm drill collars were all at the pin's last engaged thread. This is related to a larger collar ID and a higher bend-strength ratio.

API Specification 7 calls for a 2.58:1 bend-strength ratio for NC 35, 120.7-mm drill collar with 50.8-mm ID. The broken drill collar (120.7 mm OD, 57.2 mm ID) had a 2.80:1 bend-strength ratio. This indicates that the pin strength is less and the pin will fracture easily as the ID changes to 57.2 mm from 50.8 mm.

Three joints of 158.8-mm drill collars broke at the box, and one joint broke at the pin in 2005. The 2006 fractures were all at the box of the 158.8-mm drill collar.

The 158.8-mm drill collar had a 158.8-162.0 mm OD, and its bend-strength ratio will decrease as its OD wears down.

The ODs of most of the broken drill collars were 153.0-156.0 mm, and the fractures were mainly at the box. These failures are related to product quality and diminished bend-strength ratio because of a worn OD. To prevent drill collars from fracturing, the field needs to grade the collars according to their dimensions and grades so that collars are used in appropriate wells.

Reducing the last engaged thread's height reduces the stress concentration and pin failures. Tarim field now requires all new 158.8-mm drill collars to have a last-engaged thread.

Most of the 158.8-mm drill collars broke at the box. The effect of last-engaged thread on stress decentralization is not obvious for drill collar boxes according to the experience from other oil fields; therefore, the field should consider a groove for preventing the drill collar box from fracturing.

A stress decentralization groove reduces stress concentration in the critical sections of the threads.

Fractures in the drill collars without stress decentralization grooves were all in the critical section of the thread, so that the fractures seen relate to the lack of a stress decentralization groove.

The fractures in the 120.7-mm drill collars were all at the critical section on pin. These pins should have both LET and stress decentralization groove applied.

In 2005, seven drilling stabilizers had fractures because of material properties, bend-strength ratios, and stress centralization.

Test results show that the material toughness and yield strength of the broken drilling stabilizers was insufficient and reduced their capability for resisting crack initiation and growth.

Fractures in all the drilling stabilizers in 2005 were all at the pins. This is related to a large bend-strength ratio (Table 2). Pins of NC 56 and NC 61 joints are weaker than that of the box because the bend-strength ratios are large and not in accordance with API Specification 7.

The 311.2-mm drilling stabilizer with an NC 56, 228.6-mm OD joint easily broke at the pin because of a large bend-strength ratio. The 406.4-mm drilling stabilizer with an NC 61, 241.3-mm OD joint also easily broke at pin because of a large bend-strength ratio.

A LET thread on the drilling stabilizers would enhance their lives and reduce failures, according to successful applications in Tarim oil field.

The field now requires LET thread on new and repaired drilling stabilizers.

Seven drilling stabilizers broke at the pin's critical section without stress decentralization grooves in 2005. A stress decentralization groove should reduce these failures. ✦

DRILLING STABILIZER BEND-STRENGTH RATIO Table 2

Size, mm	Thread type	OD	ID	Bend-strength ratio
		mm		
165.1	NC 35	121	50.8	2.572:1
	3½-in. reg.			4.060:1
311.2	NC 56	203.2	71.4	2.993:1
		228.6	76.2	4.569:1
406.4	NC 61	228.6	76.2	3.190:1
		241.3		3.834:1
444.5	NC 61	228.6	76.2	3.190:1

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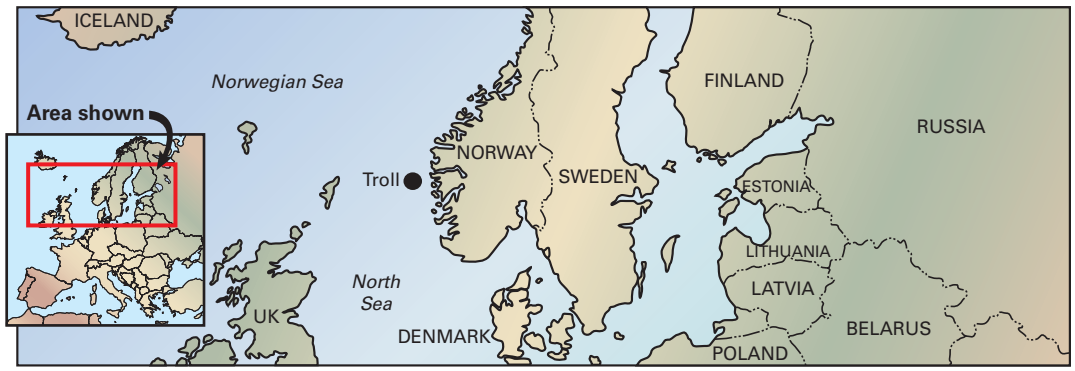
GUIDE TO WORLD CRUDES

TROLL FIELD



StatoilHydro publishes Troll Blend assay

StatoilHydro late last year published an assay of its Troll Blend crude oil, a commingling of Troll B, Troll C, Fram, and Kvitebjorn fields off Norway and operated by the company.

Troll field lies in the northern part of the North Sea, about 65 km west of Kollsnes, near Bergen (map). It consists of the main Troll East and Troll West structures in Blocks 31/2, 31/3, 31/5 and 31/6.

The field contains, according to StatoilHydro, about 40% of total gas reserves on the Norwegian continental shelf, one of the largest oil fields on the shelf. In 2002 the oil production was more than 400,000 b/d. In addition to Troll A, B, and C platforms, StatoilHydro operates the landfall pipelines. Gassco operates the gas processing plant at Kollsnes on behalf of Gassled. StatoilHydro is a technical services provider for Kollsnes operations.

StatoilHydro expects the reservoirs 1,400 m below sea level to produce for at least another 70 years.

Proved

When Block 31/2 was awarded in April 1979, Norske Shell was chosen as operator. A large gas find with an underlying oil zone was proven later that year. The block was declared commercial in 1983.

Neighboring blocks were awarded to StatoilHydro, Norsk Hydro, and Saga Petroleum in 1983. Block 31/2 contains 32% of Troll field's reserves, while the remaining 68% lies in the three other blocks.

License terms for Block 31/2 specified that StatoilHydro could take over as operator for this acreage 8-10 years after a discovery had been declared commercial.

In 1985, the two licenses were unitized so that Troll could be developed as a single field.

StatoilHydro took over as production operator for Troll gas on June 19, 1996, while Hydro started production from Troll oil in fall 1995.

Whole crude

Density at 15° C., kg/l.: 0.8577
Specific gravity at 60/60° F.: 0.8581
API gravity at 60/60° F.: 33.4
Dry oil density at 15° C., kg/l.: 0.8573
Sulfur, mass %: 0.180
Total acid no., mg KOH/g: 0.64
Reid vapor pressure, kPa: 33.6
Pour point, °C.: –9
Kin. vis. at 20° C., cst: 9.16
Kin. vis. at 40° C., cst: 4.75
Nitrogen, mg/kg: NA
Hydrogen sulfide, mass %: ND[1]
Vanadium, mg/kg: 0.6
Nickel, mg/kg: 0.6
Sodium, mg/kg: 28
Salt as NaCl, mg/l.: 94
Wax content, mass %: 5.7
Flash point, °C.: <10
Water content, mass %: 0.21

Pentanes to 65° C.

Yield on crude, mass %: 2.16
Yield on crude, vol %: 2.81
Density at 15° C., kg/l.: 0.6548
Specific gravity at 60/60° F.: 0.6548
API gravity at 60/60° F.: 84.6
Mercaptan sulfur, mg/kg: <3
n-Paraffins, mass %: 40.8
i-Paraffins, mass %: 43.5
Naphthenes, mass %: 12.9
Aromatics (incl. benzene), mass %: 2.8
n-Paraffins, vol %: 42.5
i-Paraffins, vol %: 44.4
Naphthenes, vol %: 11.0
Aromatics (incl. benzene), vol %: 2.1
Vapor pressure (DVPE), kPa: 117.8
Research octane no.: 77.8

Legend:

[1]ND = not detectable; NA = not analyzed due to instrument problems; HPLC = high performance liquid chromatography; DVPE = dry vapor pressure equivalent. [2]Corrected in accordance with EN 228. [3]Calculated density for 525+ fraction.

Motor octane no.: 75.7
Research octane no.: [2]77.6
Motor octane no.: [2]75.5

65-90° C.

Yield on crude, mass %: 2.77
Yield on crude, vol %: 3.22
Density at 15° C., kg/l.: 0.7358
Specific gravity at 60/60° F.: 0.7360
API gravity at 60/60° F.: 60.8
Sulfur, mass %: <0.001
Mercaptan sulfur, mg/kg: <3
n-Paraffins, mass %: 15.6
i-Paraffins, mass %: 22.3
Naphthenes, mass %: 54.5
Aromatics (incl. benzene), mass %: 7.5
Benzene, mass %: 5.9
n-Paraffins, vol %: 17.2
i-Paraffins, vol %: 24.2
Naphthenes, vol %: 52.2
Aromatics (incl. benzene), vol %: 6.3
Benzene, vol %: 4.9
Vapor pressure (DVPE), kPa: 31.1
Research octane no.: 74.0
Motor octane no.:72.7
Research octane no.: [2]73.8
Motor octane no.: [2]72.5
Nitrogen, mg/kg: NA

90-150° C.

Yield on crude, mass %: 10.08
Yield on crude, vol %: 11.20
Density at 15° C., kg/l.: 0.7692
Specific gravity at 60/60° F.: 0.7694
API gravity at 60/60° F.: 52.4
Sulfur, mass %: 0.002
Mercaptan sulfur, mg/kg: <3
n-Paraffins, mass %: 12.7
i-Paraffins, mass %: 17.7
Naphthenes, mass %: 50.3
Aromatics (incl. benzene), mass %: 19.4
Benzene, mass %: 0.4
n-Paraffins, vol %: 13.9
i-Paraffins, vol %: 19.0
Naphthenes, vol %: 49.9
Aromatics (incl. benzene), vol %: 17.1
Benzene, vol %: 0.3
Flash point, °C.: <10
Nitrogen, mg/kg: NA

Test conditions: true boiling point distillation

Equipment

Distillation up to 375° C. is performed according to D-2892/90; from 375° C., according to internal HiVac method (Modified D-5236).

Conditions

Cut points are as follows:

- Atmospheric distillation: C_5-205° C. AET*
- 100 Torr: 205-240° C. AET
- 10 Torr: 240-320° C. AET
- 5 Torr: 320-375° C. AET
- 1—0.1 Torr: 375-525° C. AET

Volume

Volume expansion or contraction is normalized among fractions boiling at less than 150° C. in proportion to their yields. (Usually the "loss" is negative due to volume expansion.)

Holdup

Holdup at 375° C. AET is distributed as follows: 50% on the first fraction of the HiVac method (375-420° C.) and 50% in accordance with the mass ratios of the fractions from 420° C. AET.

Loss

Loss up to 375° C. AET is distributed with two-thirds in the gas fraction and one-third in the first liquid fraction.

*AET = average equivalent temperature; Torr. ≈ 1 mmHg ≈ 19.3 lb_f/sq in.

150-180° C.

Yield on crude, mass %: 4.99
Yield on crude, vol %: 5.38
Density at 15° C., kg/l.: 0.7954
Specific gravity at 60/60° F.: 0.7957
API gravity at 60/60° F.: 46.3
Sulfur, mass %: 0.008
Mercaptan sulfur, mg/kg: <3
Copper corrosion: 1a
Total acid no., mg KOH/g: <0.01
n-Paraffins, mass %: 13.6
i-Paraffins, mass %: 21.3
Naphthenes, mass %: 41.0
Aromatics, mass %: 24.2
n-Paraffins, vol %: 14.9
i-Paraffins, vol %: 22.6
Naphthenes, vol %: 40.5
Aromatics, vol %: 22.1
Aromatics (HPLC)
Total, mass %: NA
Monoaromatics, mass %: NA
Diaromatics, mass %: NA
Polycyclic aromatics, mass %: NA
Naphthalenes, vol %: 0.04
Aniline point, °C.: 45.0
Smoke point, mm: 21.5
Flash point, °C.: 36.5
Freezing point, °C.: <-60
Cetane index (D-976): 26.1
Calculated cetane index (D-4737): 30.4
Kin. vis. at 20° C., cst: 1.11
Kin. vis. at 50° C., cst: 0.78
Nitrogen, mg/kg: NA
Distillation D-86 (50%), °C.: 160.4

180-240° C.

Yield on crude, mass %: 10.65
Yield on crude, vol %: 11.08
Density at 15° C., kg/l.: 0.8248
Specific gravity at 60/60° F.: 0.8251
API gravity at 60/60° F.: 40.0
Sulfur, mass %: 0.016
Mercaptan sulfur, mg/kg: <3
Copper corrosion: 1a
Total acid no., mg KOH/g: 0.01
Aromatics (HPLC)
Total, mass %: NA
Monoaromatics, mass %: NA
Diaromatics, mass %: NA

Test methods: Troll Blend

Density at 15° C., kg/l.: D-4052/D-5002
Specific gravity at 60/60° F.
Dry density at 15° C., kg/l.: IP-479

Total sulfur, mass %: D-4294
Total sulfur, mass %: D-5453 for sulfur content less than 0.01%
Hydrogen sulfide, pos./neg.: lead acetate paper
Mercaptan sulfur, mg/kg: D-3227

n-Paraffins, mass %, GC*
i-Paraffins, mass %: GC
Naphthenes, mass %: GC
Aromatics, mass %: GC
Benzene, mass %: GC
Aromatics (HPLC*), mass %: IP-391

Naphthalene, vol %: D-1840
Watson K: UOP 375
Vapor pressure (DVPE*), kPa: D-5191
Reid vapor pressure, kPa: D-323
Flash point (Pensky Martens), °C.: D-93

Freezing point, °C.: D-2386
Cloud point, °C.: D = 2500/D-5772
Pour point, °C. : D-5853/D-5950
Cold filter plugging point, °C.: IP 309

Kin. vis. at 20° C., cst: D-445
Kin. vis. at 40° C., cst: D-445
Kin. vis. at 50° C., cst: D-445
Kin. vis. at 80° C., cst: D-445
Kin. vis. at 100° C., cst: D-445

Aniline point, °C.: D-611
Research octane number: D-2699
Motor octane number: D-2700

Cetane index: D-976
Calculated cetane index: D-4737
Cetane number: D-613
Smoke point, mm: D-1322
Distillation of whole crude <375° C.: D-2892
Distillation of individual fractions: D-86
Distillation of ≥375°+ C.: Internal HiVac method (modified D-5236)

Total acid number, mgKOH/g: D-664
Copper corrosion: D-130
Nitrogen, <100 mg/kg: D-4629
Nitrogen, >40 mg/kg: D-5762

Basic nitrogen, mass %: UOP 269

Vanadium, mg/kg: ICP-AES
Nickel, mg/kg: ICP-AES
Sodium, mg/kg: ICP-AES
Salt as NaCl, mg/l.: IP 265

Carbon residue (micromethod), mass %: D-4530
Asphaltenes, mass %: IP 143

n-C_5 insolubles, mass %: D-4055
Ash, mass %: D-482

Penetration at 25° C., 0.1 mm: D-1321

Refractive index at 67° C., Abbe refractometer
Wax content, mass %: UOP 46 (mod. acetone precip.)
Water content mg/kg: D-4928

Compositional analysis of crude oil, mass %: D-5134

*GC = gas chromatograph; HPLC = high performance liquid chromatography; DVPE = dry vapor pressure equivalent; ICP-AES = inductively coupled plasma-atomic emission spectrometry.

Polycyclic aromatics, mass %: NA
Naphthalenes, vol %: 2.83
Aniline point, °C.: 54.8
Smoke point, mm: 20.0
Freezing point, °C.: –57.0
Cloud point, °C.: <–50
Cold-filter plugging point, °C.: <–50
Pour point, °C.: <–50
Cetane no.: 41.1
Cetane index (D-976): 37.5
Calculated cetane index (D-4737): 37.6
Kin. vis. at 20° C., cst: 1.95
Kin. vis. at 50° C., cst: 1.23
Nitrogen, mg/kg: NA
Distillation D-86 (50%), °C.: 206.2

240-320° C.

Yield on crude, mass %: 19.86
Yield on crude, vol %: 19.80
Density at 15° C., kg/l.: 0.8601
Specific gravity at 60/60° F.: 0.8605
API gravity at 60/60° F.: 32.9
Sulfur, mass %: 0.072
Total acid no., mg KOH/g: 0.15
Aromatics (HPLC)
Total, mass %: NA
Monoaromatics, mass %: NA
Diaromatics, mass %: NA
Polycyclic aromatics, mass %: NA
Aniline point, °C.: 65.0
Cloud point, °C.: –25
Cold-filter plugging point, °C.: –25
Pour point, °C.: –24
Cetane no.: 49.7
Cetane index (D-976): 45.3
Calculated cetane index (D-4737): 47.0
Kin. vis. at 20° C., cst: 5.50
Kin. vis. at 50° C., cst: 2.69
Nitrogen, mg/kg: NA
Basic nitrogen, mass %: <0.001
Distillation D-86 (50%), °C.: 272.9

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320-375° C.

Yield on crude, mass %: 11.18
Yield on crude, vol %: 10.81
Density at 15° C., kg/l.: 0.8869
Specific gravity at 60/60° F.: 0.8874
API gravity at 60/60° F.: 28.0
Sulfur, mass %: 0.207
Total acid no., mg KOH/g: 0.76
Aromatics (HPLC)
Total, mass %: NA
Monoaromatics, mass %: NA
Diaromatics, mass %: NA
Polycyclic aromatics, mass %: NA
Aniline point, °C.: 74.2
Watson K-factor: 11.6
Cloud point, °C.: 4
Cold-filter plugging point, °C.: 8
Pour point, °C.: 3
Cetane no.: 56.2
Cetane index (D-976): 46.5
Calculated cetane index (D-4737): 55.4
Carbon residue (micromethod), mass %: <0.10
Kin. vis. at 20° C., cst: 21.4
Kin. vis. at 50° C., cst: 7.45
Kin. vis. at 100° C., cst: 2.49
Nitrogen, mg/kg: NA
Basic nitrogen, mass %: 0.005
Refractive index at 67° C.: 1.474
Distillation D-86 (50%), °C.: 336.5

375-420° C.

Yield on crude, mass %: 8.56
Yield on crude, vol %: 8.12
Density at 15° C., kg/l.: 0.9036
Specific gravity at 60/60° F.: 0.9041
API gravity at 60/60° F.: 25.0
Sulfur, mass %: 0.236
Total aid no., mg KOH/g: 1.00
Aniline point, °C.: 85.2
Watson K-factor: 11.7
Pour point, °C.: 24
Carbon residue (micromethod), mass %: <0.10
Kin. vis. at 50° C., cst: 21.3
Kin. vis. at 100° C., cst: 5.07
Vanadium, mg/kg: <0.1
Nickel, mg/kg: <0.1
Nitrogen, mg/kg: NA
Basic nitrogen, mass %: 0.013
Refractive index at 67° C.: 1.483

420-525° C.

Yield on crude, mass %: 15.85
Yield on crude, vol %: 14.83
Density at 15° C., kg/l.: 0.9165
Specific gravity at 60/60° F.: 0.9170
API gravity at 60/60° F.: 22.8
Sulfur, mass %: 0.299
Total acid no., mg KOH/g: 1.30
Aniline point, °C.: 92.4
Watson K-factor: 11.8
Pour point, °C.: 39
Carbon residue (micromethod), mass %: <0.10
Kin. vis. at 50° C., cst: 65.0
Kin. vis. at 100° C., cst: 10.4
Vanadium, mg/kg: <0.1
Nickel, mg/kg: <0.1
Nitrogen, mg/kg: NA
Basic nitrogen, mass %: 0.025
Refractive index at 67° C.: 1.490

375°+ C.

Yield on crude, mass %: 37.40
Yield on crude, vol %: 34.47
Density at 15° C., kg/l.: 0.9308
Specific gravity at 60/60° F.: 0.9313
API gravity at 60/60° F.: 20.4
Sulfur, mass %: 0.377
Total acid no., mg KOH/g: 1.10
Aniline point, °C.: 93.2
Watson K-factor: 11.7
Pour point, °C.: 39
Carbon residue (micromethod), mass %: 3.2
Asphaltenes, mass %: <0.50
n-Pentane insolubles, mass %: 0.9
Ash, mass %: 0.011
Kin. vis. at 50° C., cst: 159.2
Kin. vis. at 100° C., cst: 19.0
Vanadium, mg/kg: 1.3
Nickel, mg/kg: 1.6
Nitrogen, mg/kg: NA
Basic nitrogen, mass %: 0.055
Penetration at 25° C., mm: 0.1
Refractive index at 67° C.: 1.502

525°+ C.

Yield on crude, mass %: 12.99
Yield on crude, vol %: 11.51
Density at 15° C., kg/l.: [3]0.9678
Specific gravity at 60/60° F.: 0.9684
API gravity at 60/60° F.: 14.6
Sulfur, mass %: 0.547
Aniline point, °C.: 100.0
Watson K-factor: 11.8
Pour point, °C.: 36
Carbon residue (micromethod), mass %: 9.6
Asphaltenes, mass %: <0.50
n-Pentane insolubles, mass %: 2.9
Ash, mass %: 0.056
Kin. vis. at 80° C., cst: 584
Kin. vis. at 100° C., cst: 194
Vanadium, mg/kg: 3.9
Nickel, mg/kg: 4.6
Nitrogen, mg/kg: NA
Basic nitrogen, mass %: 0.116
Penetration at 25° C., mm: 290

Composition, mass %

Normal paraffins

Methane: <0.01
Ethane: 0.04
Propane: 0.21
Butane: 0.43
Pentane: 0.50
Hexane: 0.53
Heptane: 0.56
Octane: 0.67
Nonane: 0.57
Total n-paraffins: 3.50

C_4 hydrocarbons

i-Butane: 0.20

C_5 hydrocarbons

Isoparaffins
2,2-Dimethylpropane: <0.01
i-Pentane: 0.42
Total C_5 i-paraffins: 0.42

Naphthenes
Cyclopentane: 0.11

C_6 hydrocarbons

Isoparaffins
2,2-Dimethylbutane: 0.03
2,3-Dimethylbutane: 0.08
2-Methylpentane: 0.37
3-Methylpentane: 0.23
Total C_6 i-paraffins: 0.71

Naphthenes
Methylcyclopentane (incl. 2,2-Dimethylpentane): 0.59
Cyclohexane: 1.00
Total C_6 naphthenes: 1.59

Aromatics
Benzene: 0.29

C_7 hydrocarbons

Isoparaffins
2,2,3-Trimethylbutane: <0.01
3,3-Dimethylpentane: 0.02
2,4-Dimethylpentane: 0.05
2-Methylhexane: 0.19
2,3-Dimethylpentane: 0.10
3-Methylhexane: 0.24
Total C_7 i-paraffins: 0.60

Naphthenes
cis-1,3-Dimethylcyclopentane: 0.13
trans-1,3-Dimethylcyclopentane: 0.12
trans-1,2-Dimethylcyclopentane: 0.24
Methylcyclohexane: 1.88
Ethylcyclopentane: 0.09
1,1-Dimethylcyclopentane: 0.08
Total C_7 naphthenes: 2.55

Aromatics
Toluene: 0.79

C_8 hydrocarbons

Isoparaffins
2,2,4-Trimethylpentane: <0.01
2,5-Dimethylhexane: 0.04
2,4-Dimethylhexane: 0.06
3,4-Dimethylhexane: 0.02
3,3-Dimethylhexane: 0.02
2,3-Dimethylhexane (incl. naphthenic compound): 0.09
2-Methyl-3-ethylpentane: 0.01
2-Methylheptane: 0.21
4-Methylheptane: 0.08
3-Methylheptane: 0.13
2,3,4-Trimethylpentane: 0.01
Total C_8 i-paraffins: 0.66

Naphthenes
1,1,3-Trimethylcyclopentane (incl. 2,2-Dimethylhexane): 0.09
trans, cis-1,2,4-Trimethylcyclopentane: 0.08
trans,cis-1,2,3-Trimethylcyclopentane: 0.08
trans-1,4-Dimethylcyclohexane: 0.16
1,1-Dimethylcyclohexane: 0.07
trans-1-Methyl-3-ethylcyclopentane: 0.03
cis-1-Methyl-3-ethylcyclopentane: 0.02
trans-1-Methyl-2-ethylcyclopentane: 0.07
trans-1,2-Dimethylcyclohexane: 0.20
2-Propylcyclopentane: 0.02
cis-1,2-Dimethylcyclohexane: 0.10
Ethylcyclohexane: 0.56
1-Propylcyclopentane: <0.01
cis,cis-1,2,4-Trimethylcyclopentane: <0.01
1-Methyl-1-ethylcyclopentane: 0.01
cis-1,3-Dimethylcyclohexane (incl. naphthenic compound): 0.41
Total C_8 naphthenes: 1.90

Aromatics
Ethylbenzene: 0.22
m-Dimethylbenzene (m-xylene): 0.69
p-Dimethylbenzene (p-xylene): 0.27
o-Dimethylbenzene (o-Xylene): 0.27
Total C_8 aromatics: 1.45

C_9 hydrocarbons

Isoparaffins
3,5-Dimethylheptane: 0.12
4-Methyloctane: 0.08
2-Methyloctane: 0.10
3-Methyloctane: 0.12
2,3,4-Trimethylhexane: <0.01
Unidentified paraffin: 0.05
Total C_9 i-paraffins: 0.47

Naphthenes
1,1,3-Trimethylcyclohexane: 0.14
1-Methyl-2-propylcyclopentane: 0.05
1-Methyl-3-ethylcyclohexane: 0.16
1-Methyl-4-ethylcyclohexane: 0.11
1,1,4-Trimethylcyclohexane: 0.08
Unidentified naphthenes: 0.04
Total C_9 naphthenes: 0.58

Total identified: 15.84
Total unidentified: 0.15

Total C_{10+}: 84.01

Editor's note: StatoilHydro's assay report contained the following: "A commercial assay was carried out on a representative sample of the crude. The contents of this report are for guidance only and StatoilHydro accepts no responsibility for any errors that it may contain." ✦

New shale shaker offers small footprint

The new MD-3 shale shaker promises operators with the ability to meet solids control challenges, offshore or onshore.

The small footprint of the shale shaker along with its solids control options and the ability to adapt quickly to changing drilling conditions are features of the compact, high performance unit. The shaker's footprint matches the BEM-650 shaker to help simplify retrofitting into existing shaker houses. The MD-3 comes with a fume-extraction hood that helps reduce operator exposure to vapors associated with drilling fluids and prevents fluids from splashing outside the shaker boundaries.

The shaker has three decks of solids control that translate to lower waste volumes as a result of drier cuttings, the firm says. The standard configuration has one scalping deck and two primary decks.

Two modes of operation, 6.3 G's of progressive elliptical or 7.2 G's of balanced elliptical movement, are available with a single-switch adjustment. And screens replacement is a snap with the pneumatic actuators that hold them in place. Simply deactivate the pneumatic pressure and remove the lightweight composite screens to replace.

Source: **M-I Swaco,** Box 42842, Houston, TX 77242-2842.

New packer provides openhole annular isolation

The newly developed Baker Oil Tools MPas packer system provides openhole annular isolation, which the company says helps to eliminate many of the operational, production, and remedial problems associated with cement jobs.

The MPas-e Remote-Set packer system with eTrigger technology allows operators to achieve selective zone isolation in open holes in extended reach wells.

Run on production casing or liner string, the MPas packer—plus the uniform production profile created by the BOT EQUALIZER inflow-control devices—enables flow in the annulus to be managed without the limits or risks associated with no isolation or more complex isolation methods. The MPas packer provides improved time-to-seal control and a wider hole-size range than swelling rubber technology, the firm says.

eTrigger controller technology is a method of electronically activating the MPas packer, eliminating the costs, complexity, and logistics of an inner string run for packer activation. eTrigger is computer programmed and once downhole, the controller activates the packer when the programmed temperature and pressure conditions are reached.

The successful use of Interventionless e-Trigger technology enables operators to economically isolate and control production from wells drilled with extended reach drilling methods, the company points out.

Source: **Baker Hughes Inc.,** 2929 Allen Parkway, Suite 2100, Houston, TX 77019.

Expro,

Aberdeen, has named Sergio Zubelli regional director, Latin America. In his new role, Zubelli is responsible for all aspects of the business in South and Central America. He has been with Expro since August 2006 and has played a key role in the development of Expro's business in Latin America. His posts with Expro include general manager, Latin America South, and business development/technical regional manager, Brazil. Prior to Expro, Zubelli served as Brazil country manager for PowerWell Services, which was acquired by Expro in 2006. Prior to that, he worked in various field and management positions in Brazil. Zubelli has a mechanical technical degree from the Federal Technical School of Rio de Janeiro and an electronic engineering degree from Nuno Lisboa Engineering School. In addition, Expro appointed Hank Glansbeek regional technical and business development manager, Brazil. Glansbeek has worked with Expro since 1993, both in the UK and Gulf of Mexico. He has held several senior operational and technical roles within Expro and has significant subsea experience.


Zubelli

Expro is a market leader in providing services and products that measure, improve, control, and process flow from high-value oil and gas wells.

SGS SA, Geneva,

and Halliburton have entered into a joint cooperation agreement combining formation fluid sample acquisition and analysis services. Halliburton will provide a comprehensive suite of solutions for acquiring fluid samples, and SGS's oil, gas, and chemicals division will deliver a full range of fluid analysis services. Halliburton and SGS are currently providing the joint fluid sample collection and analysis service to a client off Africa, helping the operator make critical decisions about production facilities design faster and with greater confidence.

SGS is a global leader and innovator in inspection, verification, testing, and certification services.

Halliburton is one of the world's largest providers of products and services to the upstream oil and gas industry throughout the life cycle of the reservoir.

Siemens Netherlands,

part of Siemens Energy, Erlangen, Germany, and GustoMSC, a subsidiary of the Dutch company SBM Offshore, have signed a strategic partnership for the use of electric-powered rack and pinion systems for jack up units in the offshore oil and gas industry. The variable-speed-driven rack and pinion systems for jack ups developed jointly by GustoMSC and Siemens Netherlands are used to lift drilling vessels and offshore platforms above sea level at their work location, making them impervious to waves. Two such systems are currently in use on two North Sea platforms, and the companies have booked 13 additional orders. GustoMSC and Siemens also foresee good opportunities for using the electric-powered jacking system on wind turbine installation vessels for installing offshore wind farms.

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

ANSYS Inc.,

Southpointe, Pa., has named Joshua Fredberg vice-president of marketing. Before joining ANSYS, Fredberg was senior vice-president of product and market strategy at Parametric Technology Corporation (PTC), where he worked on industry strategy, marketing, and business development. Prior to joining PTC, he held leadership roles with both ARIBA and Andersen Consulting Strategic Services. Fredberg has a BS in electrical engineering from Tufts University, an MS in systems engineering from the University of Pennsylvania, and an MBA in finance from the Wharton School.

ANSYS develops and globally markets engineering simulation software and technologies widely used by engineers and designers across a broad spectrum of industries, including the oil and gas and petrochemical industries.

Honeywell International,

Morris Township, NJ, has acquired rights to technology developed by Shell Global Solutions for gathering process plant field data and helping industrial plants to safely increase production while reducing maintenance and operating costs. The operational and technical task for efficient rounds (OTTER) technology is currently used at more than 25 plant sites to help guide field operators as they execute key field surveillance tasks that keep assets running within safe operating limits and at optimum performance. It also delivers best practices to all field operators, provides decision support capabilities, improves regulatory reporting, and facilitates communication between groups to address problems immediately. Honeywell Process Solutions will integrate the OTTER technology in its operational excellence solutions to provide operations teams complete sets of relevant data for all production assets.

Honeywell Process Solutions is part of Honeywell's Automation and Control Solutions group, a global leader in providing product and service solutions that improve efficiency and profitability, support regulatory compliance, and maintain safe, comfortable environments in homes, buildings, and industry.

Intergraph,

Huntsville, Ala., and Skire, Menlo Park, Calif., have formed a strategic partnership to enable engineering, procurement, and construction companies and operators to integrate their engineering enterprise with project management and enterprise accounting systems for comprehensive project financial visibility. As part of this strategic initiative, Intergraph is now the exclusive distributor of Skire's Unifier project management solution software in the US and Canadian process, power, and marine markets. Intergraph will begin working with clients to identify key opportunities where they can use Unifier and where they can better integrate Unifier within the engineering enterprise.

Intergraph is a leading global provider of enterprise engineering and geospatial software for the design, construction, and operation of plants, ships, and offshore facilities.

Skire is a leading provider of capital program, facilities, real estate, and project portfolio management software solutions.

RigNet Inc.,

Houston, has appointed three executives to key positions. The company named Joe Conboy vice-president, global sales. He brings over 15 years of industry experience, including progressive business development roles with increasing responsibility at Stratos Global Corp. and Seven Seas Communications. Most recently at Stratos, he served as senior director, US and Latin America, and as senior director for mobile satellite and broadband. Conboy has a BS in finance and international economics from Boston University and a JD from State University of New York. RigNet also appointed Molly McGuirk to the position of director, product management. She brings over 21 years of business experience, including staff and general management roles at United Technologies' UTC Fire & Security and IKON Office Solutions. Most recently at UTC Fire & Security, she served as general manager for the electronic and physical security firm Redhawk. McGuirk has a BS in accounting and psychology from the University of Oregon, an MBA from Marylhurst University, and is a graduate of United Technologies' Emerging Leaders Program at the University of Virginia's Darden Graduate School of Business. In addition, RigNet named Barise Hatfield director, global human resources. She brings over 14 years of HR experience, including stints at Huntsman International, Enbridge Energy Co., and Air Liquide America. Most recently at Huntsman, she served as global mobility advisor responsible for expatriate workers. Hatfield has a BBA in management and marketing from the University of Houston and an MBA from Letourneau University.

RigNet, Inc. is a leading global provider of managed communication services exclusively to the oil and gas industry.

Boots & Coots Inc.,

Houston, has been awarded a new secure and salvage project under its Safeguard contract with the Oil & Natural Gas Corporation of India (ONGC). The operation consists of recovering a subsea BOP stack in about 740 feet of water under 6,000 psi of pressure. Boots & Coots was mobilizing for this project around mid-January with 55 days to reach the job location, giving the project a projected start date of March. In April 2009, the BOP stack settled onto the seabed after it was unlatched from a well that was killed in India's eastern offshore after anchors separated from the Sagar Vijay drilling rig during pressure tests. In 2008 Boots & Coots completed a similar secure and salvage project for ONGC. The 5-year Safeguard contract under which these projects have been awarded is for training, inspection, and blowout control for ONGC's 28 offshore rigs and 94 land rigs. The contract also allows Boots & Coots to work on special projects for ONGC, both in and outside India.

Boots & Coots provides a suite of integrated pressure control services to onshore and offshore oil and gas exploration companies around the world.

Seismic Micro Technology (SMT),

Houston; JewelSuite, Delft, The Netherlands; and Computer Modeling Group Ltd. (CMG), Calgary, have announced the launch of the Seismic to Simulation (STS) Alliance. The STS Alliance integrates best-of-breed technologies encompassing all three components of the prospect evaluation workflow: interpretation, modeling, and simulation. SMT offers its KINGDOM Illuminator technology to improve seismic interpretation speed and accuracy. JewelSuite delivers its JewelGrid faulted S-grid modeling approach that overcomes the technical issues that arise from existing "first generation" gridding approaches. CMG provides high-performance simulation for all reservoir types, including conventional oil and gas and heavy oil.

SMT's software enables intuitive interpretation, 3D modeling, analysis, and data management in one integrated executable.

CMG is a leading supplier of advanced processes reservoir modeling software.

JewelSuite is part of JOA Oil & Gas BV, a Windows only-based software development company that leverages its patented gridding technology to build reservoir models cost-effectively.

GE Oil & Gas,

Florence, Italy, and Al Shaheen Energy Services, a wholly owned subsidiary of Qatar Petroleum established to develop partnerships in the oil and gas and energy industries, have signed two partnership agreements. Under the first agreement Al Shaheen becomes a 50% strategic joint venture partner in PII Pipeline Solutions. GE Oil & Gas will maintain operational control of the business. GE Oil & Gas and Al Shaheen have also signed a 50:50 JV agreement to perform aftermarket services for the GE Oil & Gas installed fleet in Qatar. It will provide an enlarged range of turbine, compressor, and related auxiliary equipment services. The JV will help Qatar achieve increased oil and gas capacity by providing the most advanced technologies for the inspection, maintenance, and repair needs of the local oil and gas industry. The broader application expertise available will include LNG and pipeline, gasification and storage, and refinery and petrochemicals.

GE Oil & Gas is a world leader in advanced technology equipment and services for all segments of the oil and gas industry, from drilling and production, LNG, pipelines and storage to industrial power generation, refining, and petrochemicals.

Helmerich & Payne Inc.,

Tulsa, has announced that it expects its second fiscal quarter of 2010 to be impacted by Venezuela's currency devaluation. The company's preliminary estimates regarding the impact of this devaluation on its consolidated financials indicate that it will probably result in an exchange loss of about $20 million to be recorded in the second fiscal quarter ending Mar. 31, 2010. Not included in this estimate is the decline in value of uncollected invoices issued since the company changed its revenue recognition to cash basis for its Venezuelan operation. H&P has not received any payments since its fiscal yearend earnings report on Nov. 19, 2009. All 11 H&P rigs that formerly worked for Petroleos de Venezuela SA remain idle.

H&P is primarily a contract drilling company.

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

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Planned Canadian Oil Sands development projects in four Excel worksheets. Includes: mining upgrading projects, in situ projects, reserves estimate of initial in-place bitumen, and historical table, commercial, experimental and exploration wells.

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Imports of crude and products

	Districts 1-4 1-8 2010	Districts 1-4 1-1 2010	District 5 1-8 2010	District 5 1-1 2010	Total US 1-8 2010	Total US 1-1 2010	Total US *1-9 2009
	1,000 b/d						
Total motor gasoline	812	725	80	59	892	784	797
Mo. gas. blending comp.	567	535	80	47	647	582	679
Distillate	514	289	23	0	537	289	215
Residual	284	333	81	31	365	364	431
Jet fuel-kerosine	28	53	59	49	87	102	10
Propane-propylene	121	153	18	14	139	167	131
Other	78	301	(19)	8	59	309	737
Total products	**2,404**	**2,389**	**322**	**208**	**2,726**	**2,597**	**3,000**
Total crude	**8,019**	**7,321**	**876**	**1,034**	**8,895**	**8,355**	**9,729**
Total imports	**10,423**	**9,710**	**1,198**	**1,242**	**11,621**	**10,952**	**12,729**

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

Purvin & Gertz LNG netbacks—Jan. 15, 2010

Receiving terminal	Liquefaction plant: Algeria	Malaysia	Nigeria	Austr. NW Shelf	Qatar	Trinidad
	$/MMbtu					
Barcelona	7.46	5.27	6.59	5.16	5.89	6.51
Everett	5.91	3.69	5.52	3.76	4.28	6.22
Isle of Grain	4.62	2.40	3.98	2.27	3.04	4.01
Lake Charles	3.18	1.19	2.95	1.36	1.62	3.82
Sodegaura	5.49	7.82	5.74	7.50	6.75	4.91
Zeebrugge	6.81	4.36	6.11	4.23	5.13	6.17

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	13,961	61,067	43,028	9,814	65,254	13,722	4,685
PADD 2	88,159	51,766	25,836	8,372	32,350	1,149	18,365
PADD 3	163,398	72,063	40,802	13,636	46,168	18,194	22,118
PADD 4	15,877	5,732	1,763	564	3,081	218	[1]1,461
PADD 5	49,641	32,864	28,068	10,040	13,548	4,139	—
Jan. 8, 2010	**331,036**	**223,492**	**139,497**	**42,426**	**160,401**	**37,422**	**46,629**
Jan. 1, 2010	**327,337**	**219,701**	**134,643**	**41,668**	**159,048**	**37,181**	**49,441**
Jan. 9, 2009[2]	**326,563**	**213,505**	**117,312**	**37,973**	**144,167**	**34,742**	**53,742**

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

Refinery report—Jan. 8, 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	1,012	1,020	2,128	64	314	71	34
PADD 2	3,299	3,284	2,201	224	983	33	234
PADD 3	7,200	6,957	2,554	679	1,949	348	707
PADD 4	477	478	263	24	146	5	[1]64
PADD 5	2,386	2,266	1,365	435	463	110	—
Jan. 8, 2010	**14,374**	**14,005**	**8,511**	**1,426**	**3,855**	**567**	**1,039**
Jan. 1, 2010	**14,120**	**13,792**	**9,071**	**1,448**	**3,809**	**573**	**1,076**
Jan. 9, 2009[2]	**15,018**	**14,586**	**8,813**	**1,468**	**4,666**	**550**	**994**
	17,681 Operable capacity		**81.3% 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

	*1-15-10	*1-16-09	Change	Change, %
	$/bbl			
SPOT PRICES				
Product value	87.75	54.06	33.70	62.3
Brent crude	78.31	42.99	35.32	82.2
Crack spread	9.44	11.06	–1.62	–14.7
FUTURES MARKET PRICES				
One month				
Product value	87.92	53.84	34.08	63.3
Light sweet crude	80.07	36.91	43.16	116.9
Crack spread	7.85	16.93	–9.08	–53.6
Six month				
Product value	91.91	60.38	31.53	52.2
Light sweet crude	82.84	53.34	29.50	55.3
Crack spread	9.07	7.05	2.03	28.8

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

OGJ GASOLINE PRICES

	Price ex tax 1-13-10	Pump price* 1-13-10	Pump price 1-14-09
	¢/gal		
(Approx. prices for self-service unleaded gasoline)			
Atlanta	234.0	265.4	167.3
Baltimore	227.0	268.9	163.3
Boston	224.5	266.4	168.2
Buffalo	215.8	279.0	169.2
Miami	230.5	283.4	171.5
Newark	228.4	261.3	158.7
New York	216.2	279.4	178.2
Norfolk	221.2	258.9	158.6
Philadelphia	223.7	274.4	177.2
Pittsburgh	221.5	272.2	182.0
Wash., DC	233.6	275.5	186.8
PAD I avg	225.1	271.3	171.0
Chicago	251.5	306.6	203.4
Cleveland	245.6	292.0	189.8
Des Moines	229.2	269.6	181.0
Detroit	243.4	295.0	188.8
Indianapolis	236.1	286.2	187.8
Kansas City	225.0	260.7	175.0
Louisville	233.2	274.1	181.0
Memphis	219.6	259.4	173.1
Milwaukee	232.7	284.0	185.6
Minn.-St. Paul	225.7	271.3	179.0
Oklahoma City	206.9	242.3	162.6
Omaha	220.6	266.3	171.1
St. Louis	218.2	253.9	174.0
Tulsa	205.0	240.4	167.0
Wichita	209.7	253.1	172.2
PAD II avg	226.8	270.3	179.4
Albuquerque	222.1	259.3	165.5
Birmingham	221.4	260.7	163.4
Dallas-Fort Worth	217.9	256.3	165.0
Houston	219.6	258.0	157.7
Little Rock	213.1	253.3	166.5
New Orleans	226.4	264.8	163.4
San Antonio	223.4	261.8	161.1
PAD III avg	220.5	259.2	163.2
Cheyenne	220.0	252.4	147.5
Denver	230.7	271.1	162.0
Salt Lake City	212.7	255.6	161.4
PAD IV avg	221.1	259.7	157.0
Los Angeles	241.6	307.4	195.5
Phoenix	237.0	274.4	174.2
Portland	247.0	290.4	200.8
San Diego	242.6	308.4	206.4
San Francisco	245.9	311.7	208.1
Seattle	243.5	299.4	198.3
PAD V avg	242.9	298.6	197.2
Week's avg.	**227.2**	**272.0**	**175.5**
Dec. avg.	**214.4**	**259.2**	**171.1**
Nov. avg.	**218.8**	**263.6**	**215.5**
2010 to date	**223.4**	**268.2**	—
2009 to date	**125.9**	**171.5**	—

*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

	1-8-10 ¢/gal		1-8-10 ¢/gal
Spot market product prices			
Motor gasoline (Conventional-regular)		Heating oil No. 2	
New York Harbor	215.46	New York Harbor	218.91
Gulf Coast	212.71	Gulf Coast	216.91
Los Angeles	212.46	Gas oil	
Amsterdam-Rotterdam-Antwerp (ARA)	202.54	ARA	213.29
Singapore	215.48	Singapore	209.88
Motor gasoline (Reformulated-regular)		Residual fuel oil	
New York Harbor	214.96	New York Harbor	183.64
Gulf Coast	213.71	Gulf Coast	185.43
Los Angeles	218.34	Los Angeles	196.94
		ARA	182.78
		Singapore	191.68

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

BAKER HUGHES RIG COUNT

	1-15-10	1-16-09
Alabama	2	3
Alaska	5	12
Arkansas	36	48
California	25	35
Land	24	34
Offshore	1	1
Colorado	42	95
Florida	0	1
Illinois	0	0
Indiana	3	3
Kansas	20	23
Kentucky	8	12
Louisiana	191	179
N. Land	129	89
S. Inland waters	13	10
S. Land	12	24
Offshore	37	56
Maryland	0	0
Michigan	0	0
Mississippi	9	13
Montana	4	4
Nebraska	0	0
New Mexico	51	58
New York	3	2
North Dakota	71	66
Ohio	7	8
Oklahoma	101	154
Pennsylvania	66	23
South Dakota	0	0
Texas	513	699
Offshore	3	5
Inland waters	0	1
Dist. 1	22	10
Dist. 2	18	32
Dist. 3	29	49
Dist. 4	42	60
Dist. 5	74	142
Dist. 6	63	116
Dist. 7B	9	20
Dist. 7C	51	52
Dist. 8	110	90
Dist. 8A	19	23
Dist. 9	33	44
Dist. 10	40	55
Utah	23	30
West Virginia	26	29
Wyoming	36	58
Others—HI-1; NV-4; TN-1	6	13
Total US	**1,248**	**1,568**
Total Canada	**466**	**438**
Grand total	**1,714**	**2,006**
US Oil rigs	425	324
US Gas rigs	811	1,235
Total US offshore	41	69
Total US cum. avg. YTD	**1,219**	**1,593**

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	1-15-10 Percent footage*	Rig count	1-16-09 Percent footage*
0-2,500	83	1.2	64	—
2,501-5,000	49	73.4	76	51.3
5,001-7,500	137	18.2	205	21.9
7,501-10,000	245	4.4	340	1.4
10,001-12,500	253	12.6	315	2.2
12,501-15,000	179	2.2	316	—
15,001-17,500	183	—	155	—
17,501-20,000	73	—	65	—
20,001-over	34	—	43	—
Total	**1,236**	**8.8**	**1,579**	**6.0**
INLAND	17		22	
LAND	1,178		1,504	
OFFSHORE	41		53	

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

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

OGJ PRODUCTION REPORT

	[1]1-15-10	[2]1-16-09
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	21	21
Alaska	718	687
California	647	651
Colorado	68	66
Florida	4	3
Illinois	23	23
Kansas	112	109
Louisiana	1,435	1,274
Michigan	17	18
Mississippi	63	62
Montana	85	82
New Mexico	165	158
North Dakota	227	194
Oklahoma	180	177
Texas	1,417	1,364
Utah	64	62
Wyoming	148	142
All others	69	75
Total	**5,463**	**5,168**

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

US CRUDE PRICES

	1-15-10 $/bbl*
Alaska-North Slope 27°	64.51
South Louisiana Sweet	81.00
California-Midway Sunset 13°	69.85
Lost Hills 30°	77.90
Wyoming Sweet	68.50
East Texas Sweet	74.00
West Texas Sour 34°	69.50
West Texas Intermediate	74.50
Oklahoma Sweet	74.50
Texas Upper Gulf Coast	67.50
Michigan Sour	66.50
Kansas Common	73.50
North Dakota Sweet	63.75

*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]	1-8-10
United Kingdom-Brent 38°	79.94
Russia-Urals 32°	79.21
Saudi Light 34°	77.82
Dubai Fateh 32°	79.29
Algeria Saharan 44°	80.24
Nigeria-Bonny Light 37°	81.27
Indonesia-Minas 34°	83.73
Venezuela-Tia Juana Light 31°	79.67
Mexico-Isthmus 33°	79.56
OPEC basket	79.66
Total OPEC[2]	78.91
Total non-OPEC[2]	78.24
Total world[2]	78.62
US imports[3]	77.16

[1]Estimated contract prices. [2]Average price (FOB) weighted by estimated export volume. [3]Average price (FOB) weighted by estimated import volume.
Source: DOE Weekly Petroleum Status Report.
Data available in OGJ Online Research Center.

US NATURAL GAS STORAGE[1]

	1-8-10	1-1-10	1-8-09	Change, %
	bcf			
Producing region	906	1,006	899	**0.8**
Consuming region east	1,532	1,678	1,478	**3.7**
Consuming region west	414	434	372	**11.3**
Total US	**2,852**	**3,118**	**2,749**	**3.7**
	Oct. 09	**Oct. 08**	**Change, %**	
Total US[2]	**3,807**	**3,399**	**12.0**	

[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.
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	641	551	491	540	–49	–9.1
Angola	414	364	486	512	–26	–5.1
Kuwait	246	148	189	197	–8	–4.1
Nigeria	894	917	752	1,014	–262	–25.8
Saudi Arabia	1,045	766	1,052	1,542	–490	–31.8
Venezuela	1,146	1,070	1,139	1,190	–51	–4.3
Other OPEC	635	751	791	1,017	–226	–22.2
Total OPEC	**5,021**	**4,567**	**4,900**	**6,012**	**–1,112**	**–18.5**
Canada	2,356	2,524	2,448	2,465	–17	–0.7
Mexico	1,271	1,159	1,266	1,284	–18	–1.4
Norway	59	52	116	107	9	8.4
United Kingdom	295	225	253	225	28	12.4
Virgin Islands	280	223	290	328	–38	–11.6
Other non-OPEC	2,439	2,493	2,764	2,501	263	10.5
Total non-OPEC	**6,700**	**6,676**	**7,137**	**6,910**	**227**	**3.3**
TOTAL IMPORTS	**11,721**	**11,243**	**12,037**	**12,922**	**–885**	**–6.8**

Source: DOE Monthly Energy Review **NOTE: No new data at press time.**
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
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.
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.
Source: DOE International Petroleum Monthly Report
Data available in OGJ Online Research Center.

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Dramatic education sometimes the best antidote for fear

Because antidevelopment environmentalists know how to manipulate fear, advocates of oil and gas development need to know how to combat it. Fear and its environmentalist promoters are impeding development of the huge Marcellus shale gas resource in New York and Pennsylvania.

Opponents to drilling have raised fear about hydraulic fracturing, the technique that has been used safely and often since the 1940s, modern refinements to which make shale development possible.

But use of hydraulic fracing is new to parts of Pennsylvania and New York, and drilling opponents say it threatens subsurface drinking-water supplies.

Gas operators and industry associations have made commendable efforts to educate the wary public, pointing out how technology and geology make fracing safe.

Yet fear persists. Education isn't enough.

New York state regulators have proposed rules that Chesapeake Energy Corp. says will discourage Marcellus shale drilling (OGJ Online, Jan. 14, 2010). And Exco Resources Inc. was under pressure from a zoning issue trumped up by environmental opposition (OGJ Online, Jan. 15, 2010).

Fear thus imperils development of a resource that some say represents 500 tcf of recoverable gas—and all the economic goodness that comes with it.

When education fails, what's left? Drama. That's what.

Fear gripped California in 1981 when an infestation of the Mediterranean fruit fly—the medfly—threatened agriculture.

After other eradication efforts failed, then-Gov. Jerry Brown ordered aerial spraying of the insecticide Malathion over an area that included Palo Alto, Los Altos, and Mountain View. In the uproar that followed, with environmentalists threatening to shoot helicopters spraying the chemical, officials began a massive educational campaign about Malathion's safety.

In the middle of it all, Brown's chief of staff, Republican Brien Thomas Collins, a wounded Vietnam War veteran, held a news conference during which he drank a beaker of Malathion to assure reporters they'd be safe covering the story up close.

The Malathion assault proceeded, stopped the medfly infestation, and created no health crisis. Collins died on Mar. 19, 1993, of a heart attack.

That's drama. That's education. Anyone for a glass of frac fluid?

(Online Jan. 15, 2010; author's e-mail: bobt@ogjonline.com)

The Editor's Perspective

by Bob Tippee, Editor

Market Journal

by Sam Fletcher, Senior Writer

Energy markets in transition

This year will likely see a transition of energy markets back to "traditional fundamentals" of supply, demand, and inventories in place of the financial, currency, and equity market drivers that dominated 2009, said Adam Sieminski, chief energy economist, Deutsche Bank, Washington, DC.

"This would mean that rallies in the oil price above $80/bbl will only become sustainable in 2011," he said. Deutsche Bank analysts also expect natural gas prices to average $6/MMbtu in 2010 and remain close to that average in 2011-12.

Oil prices in early January hit their highest levels since October 2008, peaking $10-12/bbl above December lows, as a result of rising equity markets, a weakening US dollar, and extreme winter weather over most of the US—indeed, much of the Northern Hemisphere.

While it's possible to explain the recent rise in oil prices, said analysts at the Centre for Global Energy Studies, London, "It remains difficult in our view to justify the base from which it rose. Dated Brent averaged $75/bbl in December, a price level that is hard to explain given that the recovery in oil demand has been weak and inventories remain very high, China excepted. Crude stocks at Cushing, Okla., the West Texas Intermediate contract's delivery point, are at a record high, for example, and the small draw in middle distillate stocks in the US for the week ending Jan. 1, despite the cold weather, suggests that tertiary stocks (those held by the end consumer) are still substantial. Had inventories come under serious pressure, then the contango in the oil futures market would have flattened noticeably, but there is little evidence of this." CGES analysts acknowledged, "The global economy is finally in recovery mode thanks to a veritable flood of cheap government money and fiscal stimulus programs in 2009, but the cost of generating the rebound will become increasingly evident during the course of this year and a growing awareness of this could lead crude prices lower, especially after the cold snap comes to an end." They said 2010 likely will present "its own set of debt-related challenges that will threaten the economic recovery."

In Arlington, Va., analysts at FBR Capital Markets & Co. said, "Overarching concerns about the value of the dollar and the ever-present global geopolitical risk only add to our bullish secular outlook." However, they warned, "It is important to keep in mind that increase in global environmental stewardship could cause near and intermediate-term upward pressure on the value of all hydrocarbon-based commodities; longer term, it could cause structural downward demand pressure."

Market forces

Some of the market forces that recently drove up energy prices are likely to be less supportive over the remainder of the year, Sieminski said. "We expect the US dollar will strengthen in anticipation of [Federal Reserve interest] rate hikes," he said. "Moreover, in terms of physical fundamentals, we believe the high levels of oil inventories in the US and across the Organization for Economic Cooperation and Development will be the Achilles heel for oil prices during 2010. Indeed, we find that the high level of Petroleum Administration for Defense District 2 inventories [in the Midwest] means the flattening in the crude oil forward curve may be difficult to sustain. We believe oil prices are therefore in danger of moving into overbought territory." The International Energy Agency in Paris reported global crude production increased 270,000 b/d to 86.2 million b/d in December with higher output from the Organization of Petroleum Exporting Countries and non-OPEC producers. OPEC production increased 75,000 b/d to 29.1 million b/d in December, putting spare capacity at 5.4 million b/d.

Deutsche Bank expects global oil demand to increase 1.3 million b/d this year, the same amount it declined in 2009. "Most of that growth should be in the non-OECD nations. Oil demand growth of 1.3 million b/d is consistent with global gross domestic product growth of 3.5%," said Sieminski. He noted, "Land-based OECD oil stocks are falling, but overall levels remain ample. Crude inventories are back to normal levels, but middle distillate stocks are exceptionally full. Floating inventories of both crude and distillates remain abundant."

Deutsche Bank analysts expect the Environment Protection Agency to approve a five percentage point increase in ethanol blend in US gasoline around midyear. "We estimate that this will increase US ethanol demand by an additional 7 billion gal and sustain strong demand side fundamentals for corn. Indeed on our estimates the proportion of US corn production employed in the US ethanol industry will rise to almost 40% by 2012," Sieminski said.

(Online Jan. 18, 2010; author's e-mail: samf@ogjonline.com)

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