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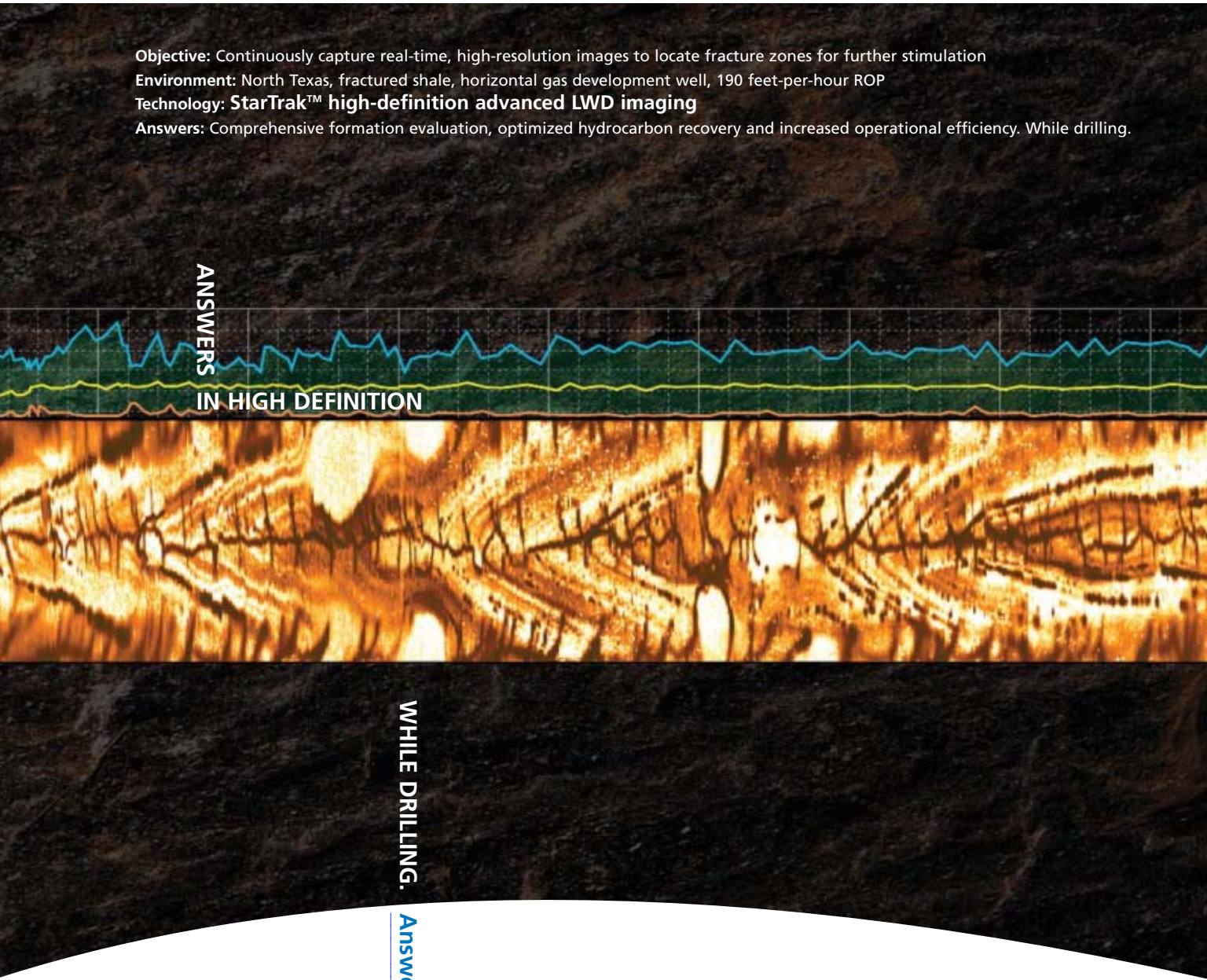

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U.S. Pipeline Study — There are 14 categories of operating and financial data on the liquids pipeline worksheet and 13 on the natural gas pipeline worksheet.
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Drilling Safety Practices

Santos oil discoveries added in ultradeep, shallow water
StatoilHydro assays Snohvit condensate
Procedure, FEA apply to NGL fitness-for-service assessment

OIL&GAS JOURNAL®

June 16, 2008
Volume 106.23

DRILLING SAFETY PRACTICES

REGULAR FEATURES

COVER

Drilling safety practices are enhanced through the use of remote-controlled tubular running systems. The cover shows Weatherford's Overdrive system, which eliminates the need for hazardous manual operation of casing-running equipment. The system involves several components that reduce the risk of operator errors through multiple safety interlocks. OGJ's special report on Drilling Safety Practices begins on p. 24 and includes discussion about rig mechanization, safety statistics, and planning a casing program to reach TD without mishap (p. 41). The special report also outlines how rig moves can be made safer using combination receptacles to make and break electrical connections (p. 44). Photo from Weatherford.

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OGJ Newsletter

June 16, 2008

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General Interest — Quick Takes

Lehman: Global E&P spending to jump 20% in 2008

Worldwide exploration and production expenditures will increase 20% to $418 billion this year, according to a midyear survey of 398 companies by Lehman Bros.

The survey indicates greater acceleration in 2008 spending plans in North America and elsewhere than those indicated 6 months ago in the firm's previous survey.

E&P expenditures will rise 15% to $98 billion in the US, 11% to $27.5 billion in Canada, and 22% to $293 billion total in all other countries. Lehman said this represents a record percentage increase over a 6-month period from December to June since the firm began conducting these surveys.

Lehman's December 2007 survey indicated growth of just 3.5% in the US, a 12% spending reduction in Canada, and a 16% rise in spending elsewhere.

The latest survey indicates that operators added $35 billion to this year's budgets worldwide, with the largest boost to projects outside North America, an $18 billion increase in 2008 capital spending, said analyst James D. Crandell. Operators added $13 billion to their 2008 US budgets and $4 billion to budgets for spending in Canada.

In 2007, companies overspent their budgets by $8.5 billion, Crandell said. Outside North America, budgets were overspent by $5.5 billion, and US budgets were overspent by $3.5 billion, partially offset by $500 million of underspending of budgets in Canada.

This year's budget additions are being driven by higher commodity price expectations. The average price on which companies are basing their 2008 budgets has risen to $85.23/bbl for oil, up 25% from the level indicated in December, and $8.07/Mcf for US natural gas, up from $6.78/Mcf indicated in the December survey.

Of all the integrated oil companies, independents, and national oil companies Lehman surveyed, 70% anticipate that E&P spending growth will continue into 2009, with gains of at least 10% expected by 80% of these companies.

EU energy ministers reach unbundling compromise

At their June 6 meeting in Luxembourg, European Union energy ministers reached a compromise on the ownership unbundling dispute. Germany and France, which had led the opposition with six other EU countries, may retain ownership of their champions: Electricite de France and Gaz de France in France, and E.On AG and RWE in Germany. The two countries had been the strongest opponents to the dismantling of their integrated gas and electricity utilities.

The terms of the compromise are tough, however. Energy Commissioner spokesman Ferran Taradellas Espuny told OGJ that what was achieved at the Luxembourg meeting was that the die-hard unbundling proponents—the UK and the Netherlands together with about half the 27 member states—accepted a less drastic solution than the full ownership unbundling of production and transport. The final agreement will be shaped after the EU Parliament's formal vote in mid-July. While the sale of the transport-marketing networks has been avoided and ownership retained, the units will be operated independently from their parent company and supervised by a watchdog regulator with bolstered powers. If the compromise is approved, the integrated groups will have to introduce a number of measures to make sure the separation of production and networks is really "effective." The supervisory body of the network will be competent on all the main subjects that fall within the scope of the shareholder such as investments, debt, and return on investments.

It will be managed completely by an independent transmission operator, and the transmission network personnel will be strictly distinct from personnel of the historic operator.

The adoption of the relevant directives involving the full reorganization of the integrated groups should not take place before 2009 after which member states will have 2 years to incorporate them into their legislation.

Commenting on the compromise, Energy Commissioner Andris Piebalgs praised the good will that led to it, adding, "The agreement covers a wide package of measures, including unbundling, real powers and independence of national energy regulators, and the establishment of a new agency that will be responsible for ensuring much more effective and easy cross-border trade in electricity and gas."

Dorgan opposes CFTC chairman nomination

US Sen. Byron L. Dorgan (D-ND) said he opposes the nomination of Walter L. Lukken, acting chairman of the Commodity Futures Trading Commission, to become chairman because Lukken has not adequately addressed energy market speculation.

Speaking to the North Dakota and South Dakota Bankers Association in Bismarck June 9, Dorgan charged that the run-up in crude oil prices to nearly $140/bbl has been caused by speculators who are running circles around the federal agency, which is supposed to stop damaging commodities speculation.

Lukken appeared as a nominee on June 4 before the Senate Agriculture, Nutrition, and Forestry Committee, along with current CFTC member Bart Chilton and Scott O'Malia, minority clerk on the Senate Appropriations Committee's Energy and Water Development Subcommittee, who have been nominated as CFTC commissioners. The committee has not yet acted on the nominations.

Dorgan, who serves on the Energy and Commerce Committee as well as the Agriculture Committee, told the bankers that testimony before both panels in recent months has convinced him that the fundamentals of supply and demand do not justify current oil price levels. He said he believes prices are 30-40% higher than is justified.

Dorgan urged US President George W. Bush to withdraw Luk-


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Industry Scoreboard

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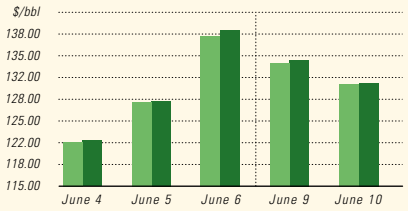
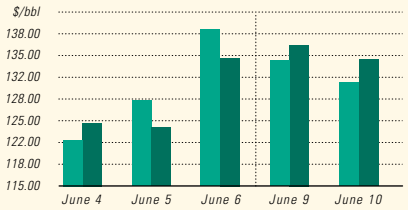
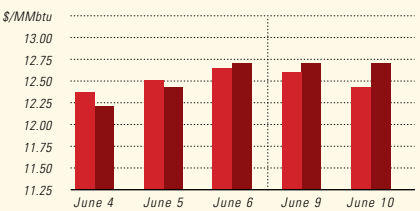


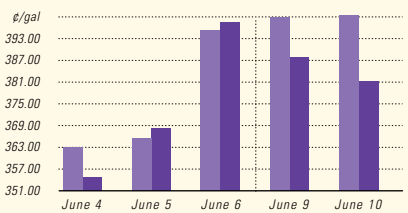
WTI CUSHING / BRENT SPOT



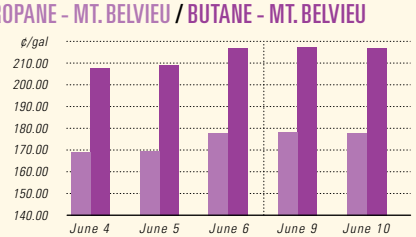
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



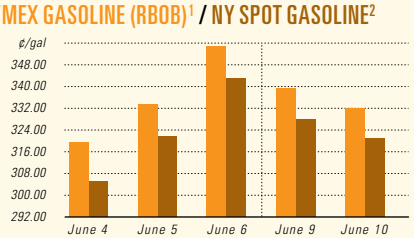
IPE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



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



[1]Reformulated gasoline blendstock for oxygen blending.
[2]Non-oxygenated regular unleaded.

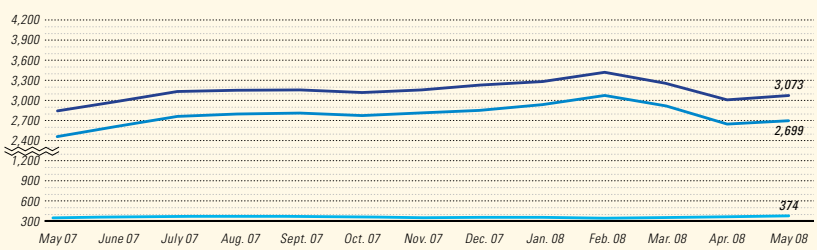
US INDUSTRY SCOREBOARD — 6/16

Latest week 5/30	4 wk. average	4 wk. avg. year ago[1]	Change, %	YTD average[1]	YTD avg. year ago[1]	Change, %
Demand, 1,000 b/d						
Motor gasoline	9,301	9,429	–1.4	9,056	9,147	–1.0
Distillate	4,125	4,060	1.6	4,188	4,291	–2.4
Jet fuel	1,619	1,614	0.3	1,556	1,613	–3.5
Residual	683	750	–8.9	657	783	–16.1
Other products	4,667	4,778	–2.3	4,853	4,872	–0.4
TOTAL DEMAND	20,395	20,631	–1.1	20,129	20,705	–2.8
Supply, 1,000 b/d						
Crude production	5,110	5,240	–2.5	5,111	5,196	–1.6
NGL production[2]	2,444	2,463	–0.8	2,284	2,353	–2.9
Crude imports	9,479	10,292	–7.9	9,708	10,023	–3.1
Product imports	3,290	3,872	–15.0	3,237	3,539	–8.5
Other supply[3]	1,458	1,119	30.3	1,418	887	59.9
TOTAL SUPPLY	21,781	22,986	–5.2	21,758	21,998	–1.1
Refining, 1,000 b/d						
Crude runs to stills	14,747	15,881	–7.1	14,747	14,939	–1.3
Input to crude stills	14,948	15,643	–4.4	14,948	15,279	–2.2
% utilization	85.4	89.7	—	85.4	87.5	—

Latest week 5/30	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	306,757	311,559	–4,802	342,345	–35,588	–10.4
Motor gasoline	209,090	206,155	2,935	201,537	7,553	3.7
Distillate	111,704	109,431	2,273	122,279	–10,575	–8.6
Jet fuel-kerosine	39,751	39,581	170	41,078	–1,327	–3.2
Residual	38,166	39,185	–1,019	35,866	2,300	6.4
Stock cover (days)[4]			Change, %		Change, %	
Crude	20.1	20.7	–2.9	22.1	–9.0	
Motor gasoline	22.5	22.1	1.8	21.3	5.6	
Distillate	27.1	26.4	2.7	29.3	–7.5	
Propane	40.9	36.9	10.8	39.8	2.8	
Futures prices[5] **6/6**			**Change**		**Change**	**%**
Light sweet crude, $/bbl	128.14	128.46	–0.32	63.93	64.21	100.4
Natural gas, $/MMbtu	12.36	11.72	0.63	7.84	4.52	57.7

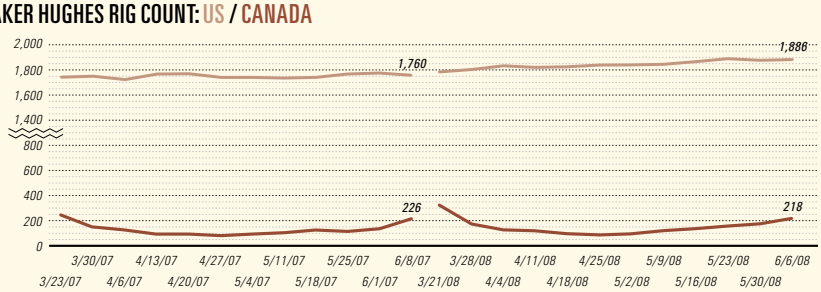
[1]Based on revised figures. [2]Includes adjustments for fuel ethanol and motor gasoline blending components. [3]Includes other hydrocarbons and alcohol, refinery processing gain, and unaccounted for crude oil. [4]Stocks divided by average daily product supplied for the prior 4 weeks. [5]Weekly average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

ken's nomination and select a nominee who will provide more leadership to address speculation. His remarks came one day before the CFTC's Energy Markets Advisory Committee was scheduled to hold its first meeting at the commission's Washington headquarters. The CFTC also plan to hold its second annual international antimanipulation conference June 11-12 with senior enforcement officials from other countries' commodity trading regulatory agencies. ✦

Exploration & Development — *Quick Takes*

Tullow tests oil from Jubilee field off Ghana

Tullow Oil PLC has tested 5,200 b/d of 36° oil and 5.3 MMcfd of associated natural gas from its Mahogany-2 well in Jubilee field off Ghana. The appraisal well is part of its program to assess the productivity and reservoir model.

The well, drilled by the Songa Saturn drillship, reached 3,443 m TD in 1,080 m of water on the West Cape Three Points license. Tullow said it was confident that Jubilee could flow more than 20,000 b/d when it comes on stream in 2010 (OGJ Online, May 26, 2008, p. 20).

Tullow Chief Executive Officer Aidan Heavey said the results support the decision by the Jubilee partnership to fast-track the project.

A single zone covering an interval of 17 m was tested through a 40/64-in. choke, resulting in a flowing tubing head pressure of 1,540 psi, Tullow said.

Later this year, the Blackford Dolphin and Eirik Raude deepwater rigs will carry out an appraisal, development, and exploration drilling program in both the West Cape Three Points and the Deepwater Tano licenses.

GDF, Dana test WEB prospect gas well off Egypt

Gaz de France has made a natural gas discovery on Egypt's West El Burullus (WEB) prospect off northeast Alexandria in the Mediterranean Sea. Gaz de France is operator in a 50-50 partnership with Dana Petroleum PLC.

The WEB-1X exploration well was drilled on the 1,364 sq km acreage within a production-sharing contract that became effective in late 2005. A 3D seismic survey shot in 2006 led to the WEB- X1 well's being drilled in 19 m of water.

The partners used the Ocean Spur jack-up to drill the well to 2,403 m TVD, targeting a Pliocene prospect consisting of a turbidite sandstone channel system. The well encountered good quality gas-bearing sands, the company said, and extensive wireline logs were run to maximize the acquired data.

In a multiflow rate drillstem test of the reservoir sequence, the well flowed at up to 27 MMcfd of gas.

The acquired data will now be analyzed and an appraisal program defined. Numerous additional prospects have been identified by Gaz de France and Dana within the WEB exploration and production license. In addition, other exploration targets within deeper horizons such as the Miocene and Oligocene will be considered. West El Burullus was described by the two companies as having "outstanding exploration potential."

PA Resources spuds another well in Didon field

PA Resources AB, Stockholm, has spudded another well on its wholly owned Didon field off Tunisia. The horizontal oil producer Didon-9 is being drilled into the western compartment, which is expected to hold recoverable oil.

Didon, on the Zarat block, is 75 km west of the Tunisia-Libya border in 75 m of water. Last March the field's average production was 20,000 b/d of oil.

The well is being drilled by the Ensco 85 jack up through a slot on the Didon platform.

The rig recently completed the Didon-7 horizontal production well, which is now producing 12,500 b/d of oil. The field's reserves will be increased after Didon-7's pilot hole encountered the top reservoir 5 m higher than originally estimated.

Wireline logs and pressure data confirmed good reservoir properties and a 30-m oil column, PA Resources said. A 500-m long drain was completed within the two upper layers of the reservoir at a horizontal level of 2,714 m, it added. Didon-7's length was 4,015 m.

The Didon-5 well, which was shut in before the Didon-7 startup, is being hooked up for production and is also expected to resume operations by the end of June.

The Didon-9 well also will be a horizontal oil producer in the crestal area of the western compartment on the field. A vertical pilot hole will first be drilled to confirm reserves and gather data, including pressure and saturation profiles, which will provide information on oil-water contact. Data also will be used to determine the optimal placement of the Didon-9 horizontal well, after which the horizontal production drain will be drilled, the company said.

"This new well Didon-9 is expected to recover oil from the western compartment and contribute with additional reserves and production capacity," said PA Resources Pres. and Chief Executive Officer Ulrik Jansson.

Upon completion of Didon-9, the Ensco 85 will continue with the exploration drilling program on the Zarat permit, including the Didon North prospect. ✦

Drilling & Production — *Quick Takes*

Norway averts oil production strike

Oil workers on the Norwegian continental shelf have pulled their strike threat after reaching an agreement with trade unions over pay.

Offshore wages will be increased by 6.1%, effective from Apr. 1, said the Norwegian Oil Industry Association (OLF) after it arrived at a compromise with trade unions Industry Energy, the Federation of Oil Workers' Trade Unions, and the Norwegian Organization for Managers and Supervisors (Lederne).

A 5% wage increase, to start from June 1, was agreed to under the oil service agreement.

Lederne had threatened to stop producing 155,000 b/d starting June 6.

OLF described the negotiations as tough because the unions had high demands and priorities that differed from those in discussions held earlier in the year.

Staff in operating companies, drilling, and catering are covered by the agreements, which are valid until the next tariff revision occurs in 2010.

Marathon's Alvheim oil field begins production

Marathon Petroleum Norge AS has begun producing oil from Alvheim field off Norway via its floating production, storage, and offloading vessel. It expects to increase output with a third development later this year.

Alvheim and Vilje fields are expected to ramp up production to 75,000 boe/d by early next year from a reserves base estimated at 250 million boe. Six wells have been drilled and completed on production licenses 203 (PL230), 088BS, and 036C on the Norwegian continental shelf.

Volund is a satellite scheduled to start production in the second half of 2009 on nearby PL150. Marathon operates Volund with a 65% stake, and its partner Lundin Norway AS has a 35% interest.

Plans originally called for Alvheim to come on stream by year-end 2007, but production was delayed because of the tight supply market for oil equipment. It is a significant asset for Marathon and Norway. The company spent $1.2 billion developing the project, which lies 224 km from Stavanger in 125 m of water. The Alvheim purpose-designed FPSO vessel has a design capacity of 120,000 b/d of oil and 125 MMcfd of natural gas with storage capacity of 560,000 bbl of oil.

Marathon will send gas to the existing UK SAGE system using a new 38 km cross-border pipeline. "The Alvheim FPSO will serve as a central hub in the area," the company said. "The nearby Vilje field is already tied back to Alvheim. As a regional hub, the Alvheim FPSO is well positioned to deliver significant production for the long-term."

Marathon's partners in the Alvheim development are ConocoPhillips Skandinavia AS with a 20% working interest, and Lundin Norway AS, with a 15% stake. Ashley Heppenstall, president and chief executive of Lundin Petroleum, said its production would increase the company's output by 50%.

Seadrill to buy four newbuild jack up rigs

Seadrill has ordered four newbuild jack up rigs from KFELS and PPL Shipyard in Singapore under contracts totaling $850 million. Seadrill's fleet will increase to 12 units, up from 8, when the rigs are delivered 2010.

According to the $420 million contract with KFELS, two of the rigs will have the capability to operate in 400 ft of water and reach drilling depths of 30,000 ft. They will be built at KFELS and will be based on the KFELS Mod V 'B' design. These will be ready for delivery in June and November 2010. They will be the fifth and sixth jack up orders that Seadrill has placed with KFELS.

The rigs to be built by PPL Shipyard will be able to operate in 375 ft of water and drill to 30,000 ft. They will be modelled on the Baker Marine Pacific Class 375 Deep Drilling design. Deliveries are scheduled in March and November 2010. The contract price is $430 million. Seadrill said these were the second and third jack up orders it has placed with PPL Shipyard.

The company also has struck option agreements for additional jack up newbuilds in 2011.

Alf C. Thorkildsen, chief executive of Seadrill Management AS, said the offshore rig market would remain tight in the years to come. "The decision to initiate the $850 million building program was taken based on expected high return on invested equity due to the following factors: the current jack up order book is less than 20% of the existing aging fleet (which has an average age of 23 years), the newbuild jack up capacity before 2011 at first class yards is limited, and the number of term contract for jack ups is increasing, he said."

Petrobras to study oil shale development in Utah

Brazil's Petroleo Brasileiro SA (Petrobras) has signed an agreement with Oil Shale Exploration Co. LLC (OSEC), Mobile, Ala., and Japanese investment and trading company Mitsui & Co. Ltd. to jointly conduct a study into the development of oil shale projects in Utah.

"Petrobras will undertake a technical, economic, and environmental commercial feasibility study testing its oil shale technology called Petrosix on mineral resources controlled by OSEC in Utah," Petrobras said. Petrobras said that, along with Mitsui, it obtained the right to acquire a 10% to 20% stake in the OSEC project.

The Petrosix oil shale processing technology is a proprietary retort technology, developed by Petrobras.

"The OSEC oil shale project in the state of Utah encompasses the lease of a oil shale property from the Bureau of Land Management for oil shale research, development, and demonstration and the recent purchase of more than 22,000 acres of privately owned oil shale property in the Green River Basin of Utah," said Petrobras.

"The combined lease and owned property provides OSEC with ownership or rights to more than 30,000 acres of oil shale property, with a discovered resource base in the range of 3 billion bbl, according to Norwest Corporation estimates," it said.

In June 2007 the US Department of the Interior issued a research, development, and demonstration lease to OSEC for 160 acres of public land in eastern Utah. An analysis determined that the project would have no significant environmental impacts (OGJ Online, June 16, 2007). ✦

Processing — *Quick Takes*

UK motorists urged for calm over planned strike

The UK government has urged motorists not to buy petrol in a panic ahead of a planned strike by oil tanker-truck drivers on June 13.

The drivers, protesting poor wages among other things, are threatening to strike for 4 days, which would seriously impact oil supplies at service stations across the country.

The tanker-truck drivers supply oil to nearly 1,000 of Royal

Dutch Shell PLC's garages, small airports, and factories. According to Unite, the union representing the drivers, the strike will hit 14 terminals across mainland UK.

The Department for Business, Enterprise, and Regulatory Reform (BERR) estimated that Shell had one in 10 filling stations in the UK and that it was "inevitable" that there would be fuel shortages at some.

The government is preparing contingency plans to address the potential crisis and has suspended competition rules to allow oil companies to cooperate with each other on sharing oil distribution information.

The union is seeking a 13% pay increase,which it believes would cost Shell less than £1 million to settle. It has accused Shell of applying pressure on the haulage companies, Hoyer UK and Suckling Transport, to keep their salaries low.

Unite will hold last minute peace talks with the haulage companies, Shell's contractors, at the Advisory, Conciliation, and Arbitration Service (ACAS). But there is little hope that the talks will be fruitful, although the government, motoring organizations, and Shell have urged the parties to reach an agreement.

The strike action follows shortly after the shutdown at Grangemouth refinery, where employees walked out after pay discussions collapsed (OGJ Apr. 30, 2008, Newsletter). These incidents are worrying the government as they echo similar protests in 2000 when truckers protested soaring fuel prices and nearly brought the UK to a standstill in a "drive slow" action.

Across Europe, the haulage industry, farmers, and fishermen are also increasing pressure on their governments to address high fuel prices because of its negative effect on their businesses (OGJ Online, May 30, 2008).

Pakistan PVC producer to raise plant capacity

Pakistan's primary producer of polyvinyl chloride (PVC) resins, Engro Asahi Polymer & Chemicals Ltd. (EAPC), is planning to expand its PVC resin production capacity by 50,000 tonnes/year to 150,000 tpy.

PVC resin demand in Pakistan has steadily increased, reaching 120,000 tpy in 2006 from 62,000 tpy in 2000. PVC resin demand is expected to reach 168,000 tpy in 2010, EAPC said.

In 2006, EAPC's share of the PVC resin market was 92%. ✦

Transportation — *Quick Takes*

Aussie gas flow may take 60 days after fire

Apache Energy Ltd. reported it will be 2 months before partial gas supplies are restored following a fire and explosion that ripped through its gas processing plant on Varanus Island, about 100 km from Karratha on Australia's North West Shelf.

"Our specialist team of engineers, including assessment and recovery experts, have made an initial assessment that partial restoration of gas supply is likely to take a couple of months," said Tim Wall, managing director, Apache Energy.

Apache reported the accident on June 3, saying that no one had been injured and 153 people were evacuated. It said the incident involved a pipeline transporting oil and gas from offshore production facilities to the island's processing facilities. Thirteen people remain on the island to monitor the situation, the company said.

Wall said the incident caused visible damage to piping infrastructure and to some supporting equipment. He said the firm's engineering team is working to determine the full extent of damage.

The operations at Varanus Island, which provide 30% of Western Australia's domestic gas requirements, account for 330 MMcfd of gas and 8,000 b/d of oil; Apache's net production is about 200 MMcfd and 5,000 b/d.

"The majority of the gas delivered through Varanus Island is supplied to industrial customers," Wall said. He said Apache, which has declared force majeure, would keep the state government informed and would be in "ongoing dialogue with all stakeholders to reduce the impact on the state's gas supply as best as possible."

Woodside Petroleum Ltd., which operates the NWS venture and is now the state's only major domestic gas source, will be able to make up about 25% of the lost gas Apache Energy was producing before the explosion.

"There's minimal spare capacity," a Woodside spokeswoman said. "We're likely to supply up to 100 terajoules[/day], depending on the conditions of the day."

As a result of the accident, many mining operators in the region have been forced to switch to diesel power or to temporarily shut down operations.

Alcoa Inc., which sources about 25% of its energy needs for its Pinjarra and Kwinana alumina refineries from Apache, is said to be using diesel power to keep both plants at full capacity, while mineral sands miner Iluka Resources Ltd. has shut down operations as it seeks an alternative source of gas.

Other companies that could be adversely affected include BHP Billiton Ltd., Newcrest Mining Ltd., Newmont Mining Corp., and Minara Resources Ltd.

It's the second time this year that industrial users have faced disruption to their supplies of natural gas. In January, an electrical fault shut down the gas plant at the NWS joint venture, which provides about 65% of the state's gas.

Shell unit to assess Sonatrach pipelines

Sonatrach has contracted Shell Global Solutions to review the integrity of its pipeline transmission networks to ensure that they meet stringent legislative standards. Shell's report will help Sonatrach reduce its risk of pipeline failures and offer recommendations to improve the reliability and availability of the system.

Shell will identify the integrity and reliability management process for Sonatrach's pipelines and evaluate the technical integrity of part of the pipeline system. Sonatrach operates more than 16,000 km of transmission pipelines.

Hocine Chekired, vice-president of Sonatrach's pipeline transportation branch, said the assessment would enable it "to get an accurate assessment of where we are now and how to best optimize moving forward." ✦

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.

2008

JUNE

CIPC/SPE GTS Joint Conference, Calgary, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 16-19.

American Association of Professional Landmen (AAPL) Annual Meeting, Chicago, (817) 847-7700, (817) 847-7704(fax), e-mail: aapl@landman.org, website: www.landman.org. 18-21.

LNG North America Summit, Houston, (416) 214-3400, (416) 214-3403 (fax), website: www.lngevent.com. 19-20.

IPAA Midyear Meeting, Colorado Springs, Colo., (202) 857-4722, (202) 857-4799 (fax), website: www.ipaa.org. 19-21.

PIRA Scenario Planning Conference, Houston, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 23.

API Tanker Conference, San Diego, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org/events. 23-24.

Purvin & Gertz Annual Asia LPG Seminar, Singapore, (713) 331-4000, (713) 236-8490 (fax), e-mail: glrodriguez@purvingertz.com, website: www.purvingertz.com. 23-26.

API Exploration & Production Standards on Oilfield Equipment & Materials Conference, Calgary, Alta., (202) 682-8000, (202) 682-8222 (fax), website: www.api.org/events. 23-27.

PIRA Understanding Global Oil Markets Conference, Houston, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 24-25.

Russian Petroleum & Gas Congress, Moscow, +44 207 596 5016, e-mail: oilgas@ite-exhibitions.com, website: www.ite-exhibitions.com/og. 24-26.

NEFTEGAZ Exhibition, Moscow, +44 207 596 5016, e-mail: oilgas@ite-exhibitions.com, website: www.ite-exhibitions.com/og. 24-26.

PIRA's Globalization of Gas Study Conference, Houston, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 25.

PIRA Understanding Natural Gas Markets Conference, Houston, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 26-27.

Russian Oil and Gas Exports International Forum, Amsterdam, +44 (0)20 7878 6888, website: www.C5-Online.com/OilGasExport. 26-27.

World Petroleum Congress, Madrid, +34 91 745 3008, +34 91 563 8496 (fax), e-mail: info@19wpc.com, website: www.19wpc.com. June 29- July 3.

JULY

International Offshore & Polar Engineering Conference, Vancouver, (650) 254 2038, (650) 254 1871 (fax), e-mail: meetings@isope.org, website: www.isope.org. 6-11.

Annual Rocky Mountain Natural Gas Strategy Conference & Investment Forum, Denver, (303) 861-0362, (303) 861-0373 (fax), e-mail: conference@coga.org, website: www.coga.org. 9-11.

AAPG/SPE/SEG Hedberg Conference, Casper,Wyo. (918) 560-2630, (918) 560-2678 (fax), e-mail: debbi@aapg.org, website: www.aapg.org. 14-18.

IADC Lifting & Mechanical Handling Conference & Exhibition, Houston, (713) 292-1945, (713) 292-1946 (fax); e-mail: conferences@iadc.org, website: www.iadc.org. 15-16.

Oil Sands and Heavy Oil Technology Conference & Exhibition, Calgary, Alta., (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.oilsandstechnologies.com. 15-17.

AUGUST

SPE Nigeria Annul International Conference & Exhibition, Abuja, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 4-6.

ACS National Meeting & Exposition, Philadelphia, 1 (800) 227-5558, e-mail: natlmtgs@acs.org, website: www.acs.org. 17-21.

✦International Petroleum Petrochemical Natural Gas Technology Equipment Exhibition, Shanghai, +86 21 55611008, +86 21 65282319 (fax), website: postmaster@aiexpo.com.cn, website: www.sippe.org.cn. 20-22.

IADC/SPE Asia Pacific Drilling Technology Conference, Jakarta, (713) 292-1945, (713) 292-1946 (fax); e-mail: conferences@iadc.org, website: www.iadc.org. 25-28.

Deep Water India Summit, New Delhi, +31 (0)26 3653 444, +31 (0)26 3653 446 (fax), e-mail: workshops@energywise.nl, website: www.energywise.nl. 26-27.

Offshore Northern Seas Exhibition & Conference, Stavanger, +47 51 59 81 00, +47 51 55 10 15 (fax), e-mail: info@ons.no, website: www.ons.no. 26-29.

Summer NAPE Expo, Houston, (817) 306-7171, (817) 847-7703 (fax), e-mail: info@napeexpo.com, website: www.napeonline.com. 27-28.

SEPTEMBER

Annual India Oil & Gas Review Symposium & International Exhibition, Mumbai, (0091-22) 40504900, ext. 225, (0091-22) 26367676 (fax), e-mail: oilasia@vsnl.com, website: www.oilasia.com. 1-2.

China Power, Oil & Gas Conference & Exhibition, Guangzhou, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.chinasenergyfuture.com. 2-4.

ECMOR XI-European Mathematics of Oil Recovery Conference, Bergen, (972) 952-9393, (972)

Calendar

952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 8-11.

IADC Drilling HSE Europe Conference & Exhibition, Amsterdam, (713) 292-1945, (713) 292-1946 (fax); e-mail: conferences@iadc.org, website: www.iadc.org. 9-10.

Rocky Mountain GPA Annual Meeting, Denver, (918) 493-3872, (918) 493-3875 (fax), email: pmirkin@gasprocessors.com, website: www.gasprocessors.com. 10.

API Fall Refining & Equipment Standards Meeting, Los Angeles, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org/events. 15-17.

Rio Oil & Gas Conference & Expo, Rio de Janeiro, 55 21 2112 9078, 55 21 2220 1596 (fax), e-mail: riooil2008@ibp.org.br, website: www.riooilegas.com.br. 15-18.

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

GEO India South Asia's Geosciences Conference & Exhibition, New Delhi, +44 (0)20 7840 2100, +44 (0)20 7840 2111 (fax), e-mail: geo@oesallworld.com, website: www.geo-india.com. 17-19.

SPE Annual Technical Conference & Exhibition, Denver, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 21-24.

ERTC Petrochemical Conference, Cannes, +44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. Sept. 29-Oct. 1.

International Pipeline Exposition, Calgary, Alta., 403) 209-3555, (403) 245-8649 (fax), website: www.petroleumshow.com. Sept. 30-Oct. 2.

Unconventional Gas International Conference & Exhibition, Ft.Worth, Tex., (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.unconventionalgas.net. Sept. 30-Oct. 2.

OCTOBER

NPRA Q&A Forum, Orlando, Fla., (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npra.org. 5-8.

GPA Houston Annual Meeting, Kingwood, Tex., (918) 493-3872, (918) 493-3875 (fax), e-mail: pmirkin@gasprocessors.com, website: www.gasprocessor.com. 7.

KIOGE Kazakhstan International Oil & Gas Exhibition & Conference, Almaty, + (44) 020 7596 5000, + (44) 020 7596 5111 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.ite-exhibitions.com/og. 7-10.

IADC Drilling West Africa Conference & Exhibition, Lisbon, (713) 292-1945, (713) 292-1946 (fax); e-mail: conferences@iadc.org, website: www.iadc.org. 8-9.

International Gas Union Research Conference, Paris, +31 50 521 30 78, +31 50 521 19 46 (fax), e-mail: igrc2008@gasunie.nl, website: www.igrc2008.com. 8-10.

ERTC Lubes and Additives Conference, Berlin, +44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 13-15.

Middle East Plant Maintenance Conference, Abu Dhabi, +44 207 067 1800, +44 207 430 0552 (fax), e-mail: d.michalski@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 13-15.

API Fall Petroleum Measurement Standards Meeting, Long Beach, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org/events. 13-17.

Central and Eastern European Refining & Petrochemicals Roundtable, Warsaw, +44 207 067 1800, +44 207 430 0552 (fax), e-mail: c.taylor@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 14-16.

ISA EXPO, Houston, (919) 549-8411, (919) 549-8288 (fax) website: www.isa.org. 14-16.

Oil & Gas Transportation in the CIS & Caspian Region Conference, Moscow, +44 (0) 207 067 1800, +44 207 430 0552 (fax), e-mail: j.golodnikova@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk/cispipes10register.html. 14-16.

PIRA New York Annual Conference, New York, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 16-17.

Petchem Arabia Conference, Abu Dhabi, +44 207 067 1800, +44 207 430 0552 (fax), e-mail: c.verma@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 20-22.

SPE Asia Pacific Oil & Gas Conference & Exhibition, Perth, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 20-22.

SPE International Thermal Operations & Heavy Oil Symposium, Calgary, Alta., (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 20-23.

Permian Basin International Oil Show, Odessa, Tex., (432) 367-1112, (432) 367-1113 (fax), e-mail: pbioilshow@pbioilshow.org, website: www.pbioilshow.org. 21-23.

AAPG International Conference & Exhibition, Cape Town, (918) 560-2679, (918) 560-2684 (fax), e-mail: convene@aapg.org, website: www.aapg.org. 26-29.

Biofuels Conference, Berlin, +44 207 067 1800, +44 207 430 0552 (fax), e-mail: c.taylor@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 28-30.

SPE Russian Oil & Gas Technical Conference & Exhibition, Moscow, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 28-30.

Arab Oil & Gas Show, Dubai, +971 4 3355001, +971 4 3355141 (fax), e-mail: info@icedxb.com, website: www.ogsonline.com. 28-30.

IADC Contracts & Risk Management Conference, Houston, (713) 292-1945, (713) 292-1946 (fax); e-mail: conferences@iadc.org, website: www.iadc.org. 29-30.

NOVEMBER

ASME International Mechanical Congress & Exposition, Boston, (973) 882-1170, (973) 882-1717 (fax), e-mail: infocentral@asme.org, website: www.asme.org. 2-6.

Abu Dhabi International Petroleum Exhibition & Conference (ADIPEC), Abu Dhabi, website: www.adipec.com. 3-6.

Deepwater Operations Conference & Exhibition, Galveston, Tex., (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.deepwateroperations.com. 4-6.

North African Oil and Gas Summit, Vienna, +44 (0) 207 067 1800, +44 207 430 0552 (fax), e-mail: c.brown@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk/nas3register.html. 4-6.

Mangystau International Oil & Gas Exhibition, Aktau, + (44) 020 7596 5000, + (44) 020 7596 5111 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.ite-exhibitions.com/og. 5-7.

GPA North Texas Annual Meeting, Dallas, (918) 493-3872, (918) 493-3875 (fax), email: pmirkin@gasprocessors.com, website: www.gasprocessors.com. 6.

IADC Annual Meeting, Paradise Valley, Ariz., (713) 292-1945, (713) 292-1946 (fax); e-mail: conferences@iadc.org, website: www.iadc.org. 6-7.

SEG International Exposition and Annual Meeting, Las Vegas, (918) 497-5542, (918) 497-5558 (fax), e-mail: register@seg.org, website: www.seg.org. 9-14.

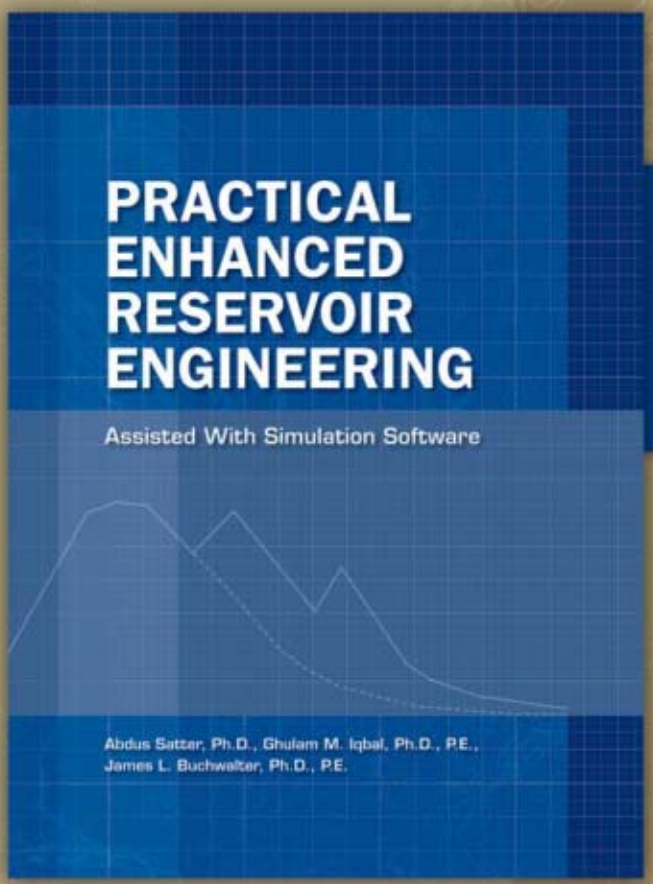
IPAA Annual Meeting, Houston, (202) 857-4722, (202) 857-4799 (fax), website: www.ipaa.org. 10-12.

Houston Energy Financial Forum, Houston, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.accessanalyst.net. 11-13.

American Institute of Chemical Engineers (AIChE) Annual Meeting, Philadelphia, (212) 591-8100, (212) 591-8888 (fax), website: www.aiche.org. 16-21.

ERTC Annual Meeting, Vienna, +44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 17-19.

IADC Well Control Middle East Conference & Exhibition, Muscat, (713) 292-1945, (713)



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292-1946 (fax); e-mail: conferences@iadc.org, website: www.iadc.org. 24-25.

Annual European Autumn Gas Conference (EAGC), Cernobbio, Italy, +44 (0) 1737 855281, +44 (0) 1737 855482 (fax), e-mail: vanessahurrell@dmgworldmedia.com, website: www.theeagc.com. 25-26.

DECEMBER

IADC Well Control Middle East Conference & Exhibition, Muscat, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 2-3.

Annual Refining & Petrochemicals in Russia and the CIS Countries Roundtable, Prague, +44 207 067 1800, +44 207 430 0552 (fax), e-mail: e.polovinkina@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 2-4.

Downstream Asia Refining & Petrochemicals Conference, Singapore, +44 (0) 207 067 1800, +44 207 430 0552 (fax), e-mail: a.ward@theenergyexchange.co.uk, website: www.wraconferences.com/FS1/dalregister.html. 3-4.

IADC Drilling Gulf of Mexico Conference & Exhibition, Galveston, Tex., (713) 292-1945, (713) 292-1946 (fax); e-mail: conferences@iadc.org, website: www.iadc.org. 3-4.

Deep Offshore Technology International Conference & Exhibition, Perth, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.deepoffshoretechnology.com. 3-5.

International Petroleum Technology Conference (IPTC), Kuala Lumpur, +971 (0)4 390 3540, +971 (0)4 366 4648 (fax), e-mail: iptc@iptcnet.org, website: www.iptcnet.org. 3-5.

PIRA Natural Gas Markets Conference, New York, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 8-9.

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

Seatrade Middle East Maritime Conference & Exhibition, Dubai, +44 1206 545121, +44 1206 545190 (fax), e-mail: events@seatrade-global.com, website: www.seatrade-middleeast.com. 14-16.

AAPG Annual Convention & Exhibition, San Antonio, 1 (888) 945 2274, ext. 617, (918) 560-2684 (fax), e-mail: convene@aapg.org, website: www.aapg.org/sanantonio. 20-23.

XSPE Improved Oil Recovery Symposium, Tulsa, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 20-23.

XSPE Progressing Cavity Pumps Conference, Houston, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 27-29.

2009

JANUARY

Oil & Gas Maintenance Technology Conference & Exhibition, Manama, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.oilandgasmaintenance.com. 19-21.

Pipeline Rehabilitation & Maintenance Conference & Exhibition, Manama, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.piipeline-rehab.com. 19-21.

SPE Hydraulic Fracturing Technology Conference, The Woodlands, Tex., (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 19-21.

FEBRUARY

SPE Reservoir Simulation Symposium, The Woodlands, Tex., (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website; www.spe.org. 2-4.

IADC Health, Safety, Environment & Training Conference & Exhibition, Houston, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 3-4.

Deep Offshore Technology International Conference & Exhibition (DOT), New Orleans, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.dotinternational.net. 3-5.

IADC/SPE Managed Pressure Drilling & Underbalanced Operations Conference & Exhibition, San Antonio, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 12-13.

ASEG International Conference & Exhibition, Adelaide, +61 8 8352 7099, +61 8 8352 7088 (fax), e-mail: ASEG2009@sapro.com.au. 22-26.

MARCH

GPA Annual Convention, San Antonio, (918) 493-3872, (918) 493-3875 (fax), e-mail: pmirkin@gasprocessors.com, website: www.gasprocessors.com. 8-11.

Middle East Oil & Gas Show & Conference (MEOS), Manama, +973 17 550033, +973 17 553288 (fax), e-mail: aeminfo@batelco.com.bh, website: www.allworldexhibitions.com/oil. 15-18.

SPE/IADC Drilling Conference & Exhibition, Amsterdam, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website; www.spe.org. 17-19.

SPE Americas E&P Environmental and Safety Conference, San Antonio, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website; www.spe.org. 23-25.

Asian Biofuels Roundtable, Kuala Lumpur, +44 (0) 207 067 1800, +44 207 430 0552 (fax), e-mail: a.ward@theenergyexchange.co.uk, website: www.wraconferences.com/FS1/AB1register.html. 24-25.

SPE Western Regional Meeting, San Jose, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website; www.spe.org. 24-26.

APRIL

IADC Drilling HSE Middle East Conference & Exhibition, Abu Dhabi, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 21-22.

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

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

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

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

JUNE

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

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

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

AUGUST

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

SEPTEMBER

IADC Drilling HSE Europe Conference & Exhibition, Amsterdam, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 23-24.

OCTOBER

International Oil & Gas Exploration, Production & Refining Exhibition, Jakarta, +44 (0)20 7840 2100, +44 (0)20 7840 2111 (fax), e-mail: ogti@oesallworld.com, website: www.allworldexhibitions.com. 14-17.

NOVEMBER

IADC Annual Meeting, Miami, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 9-10.

IADC Well Control Asia Pacific Conference & Exhibition, Bangkok, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 18-19.

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Reaching out to stakeholders

Nina M. Rach
Drilling Editor

Public scrutiny of the oil and gas industry is motivating companies to balance field development activities with environmental and community needs. It's prudent for operators to communicate with stakeholders and discover their concerns as early as possible; projects can be slowed or even stopped by perceived shortcomings.

While the life of a field may be short, local communities remain firmly rooted and expect operators to preserve and often improve the quality of land, air, and water. Local stakeholders benefit from a stable tax base and work force, but workers in the field gravitate toward companies perceived as good neighbors.

Pinedale

In western Wyoming, the hydrocarbon-rich Green River basin is adjacent to Grand Teton and Yellowstone National Parks. The 200,000-acre Pinedale anticline hosts the second-largest natural gas field in the US, characterized by Shell as a "world-class" resource play.

The town of Pinedale sits at 7,175 ft elevation amid rolling hills of sagebrush, grass, and grazing cattle. Most of the surrounding land (80% of the Pinedale anticline producing area, or PAPA) is managed by the US Bureau of Land Management and leased for drilling. The other 20% is private fee land or controlled by the government of Wyoming.

Shell acquired McMurry's Pinedale assets in November 2001 and then purchased acreage from EnCana Oil & Gas (USA) Inc., becoming the third-largest leaseholder after Ultra Petroleum Corp. and Questar (OGJ, Mar. 3, 2008, p. 37).

Shell's US onshore asset manager, David Todd, said the company has drilled more than 180 tight gas wells at Pinedale since 2002 and expects to drill hundreds more in the next decade. The field's 25 tcf of gas reserves could heat 10 million homes for 30 years.

Denver-based Deena McMullen manages Shell's stakeholder relations in PAPA. She said the Pinedale anticline working group has eight separate groups focused on protecting air and water resources, wildlife, and the viewshed of the historic Lander Trail.

Ecology, regulations

Shell's Aimee Davison, a biologist involved in permitting and environmental mitigation, showed OGJ the area's high, cold desert, which supports a surprising diversity of plants and animals. Nine varieties of sage dominate the plains, interspersed with grasses and forbs. Cottonwood trees colonize streams; patches of aspen and conifers nestle against hills. Pronghorn antelope, deer, prairie dogs, gophers, and rabbits are common, along with eagles, hawks, owls, and a variety of other birds.

Davison said that a major environmental impact survey, conducted in 1997-2000, led to a record of decision finalized in July 2000. This includes seasonal wildlife stipulations that limit drilling to protect "crucial winter range" for mule deer, antelope, and moose and that specify buffer zones for raptors, sage grouse, mountain plovers, and other species.

Shell says the restrictions prevent operators from optimizing development and lead to increased traffic, extra rig moves, and surplus road-building, all of which contribute to environmental degradation. The fluctuating level of field work also takes an economic toll on local businesses and the workforce that supports drilling and production.

As Shell developed Pinedale, it found nearly 2.5 times the reserves it calculated in 2001. Todd said the rules issued in 2000 did not anticipate the reserves or necessary intensity of development.

Long term

In September 2005, Shell and other operators submitted a long-term management plan for BLM lands, proposing sequential development with year-round access in specific areas. The operators expect a ruling in September.

In the field, a maze of unpaved roads leads to drillsites supporting individual wells or small clusters. Pads disturb several acres of land and are visible for miles. Under the proposed development plan, directional drilling from multiwell pads and a new liquids-gathering system (produced water and condensate) would disturb only 8% of the surface and result in 70% fewer roads and 165 fewer pad sites than the total authorized by the 2000 record of decision.

Shell is restoring older drilling pads and has reclaimed 22 Pinedale locations in 4 years using a reformulated seed mix that includes forbs and sage to provide critical winter forage and cover for wildlife. Earlier attempts to reconstruct original habitat involved reseeding with fast-growing grasses that supplied only summer forage.

New emission technology is being installed on drilling rigs to reduce NOx emissions 80% from 2005 levels. Shell is also tracking volatile organic compound emissions and recently installed an air quality monitoring station to supply real-time data to scientists. ✦

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Editorial

Flinch or feint?

Call it the flinch heard round the world. Or the feint heard down Pennsylvania Avenue. The Senate charged boldly to a floor vote on a complex climate-change bill, stared defiantly at cost estimates, glanced heedfully at news of economic distress, and on June 6 turned quickly to other business.

Democratic Senate leaders couldn't muster enough votes to limit debate on the Boxer-Warner-Lieberman Climate Security Act and withdrew it from consideration. They complained about Republican scare tactics. Republicans countered that the majority party wanted not serious consideration of a climate-change bill but rather legislative mud to sling at President George W. Bush.

Is it too much to hope that at least a few senators, whatever their party, studied the bill and concluded that it didn't merit their support, now or anytime?

Emission limits

The Boxer-Warner-Lieberman bill followed the cap-and-trade route to action on emissions of greenhouse gases. It would have assigned annually declining limits to emissions and authorized the government to sell tradable emission allowances to businesses. It also would have dispensed $3.3 trillion that cosponsor Barbara Boxer (D-Calif.) estimates the government would collect through 2050 from the allowance sales. The payments ostensibly would have eased the imposed adjustments in energy use.

For supporters of the legislation, timing was unfortunate. The price of gasoline in the US was approaching $4/gal when floor discussion began. It's an election year. Many lawmakers who might otherwise have supported the measure were not, under these circumstances, eager to vote for something sure to raise energy prices even more. Senate leaders thus could pull the bill at the first sign of trouble, call it a Bush failure, and know that more auspicious times await. The likely nominees of both major parties, Sens. John McCain (R-Ariz.) and Barack Obama (D-Ill.), both support cap-and-trade measures in some form. By the time the next president has settled into office, energy prices might have subsided.

Prospects thus look bright for cap-and-trade legislation after November. Or do they? Is it possible that the US now has taken its first hard look at cap-and-trade and decided it didn't like the view?

The oil and gas industry should hope so. The cap-and-trade strategy for the fight against climate change is expensive and devious. The allowance trading at its core adds market flavoring to a toxic mix of economic manipulations by the state. The costs are indistinct but inescapably large. The approach, mandating emission cuts big enough to approach environmental significance, has to assume the development of nonfossil-energy sources and technologies on implausible scales. And there's no assurance that the cost, economic rearrangement, governmental expansion, and technological overreach would have any effect on global average temperature.

A cap-and-trade scheme would turn into a contest for political favors. This already is evident in the lavish adjustment payments that the bill just withdrawn promised in an effort by its sponsors to buy support. And trading in allowances whose value depended on governmental decrees would invite mischief. Overall, cap-and-trade would punish energy use and reward exploitation of regulatory systems.

These are fundamental deficiencies. The problem with Boxer-Warner-Lieberman isn't that it's too complex or too aggressive. It's that it pursues an unworkable strategy. No matter who wins the presidency, the bill can't be fixed.

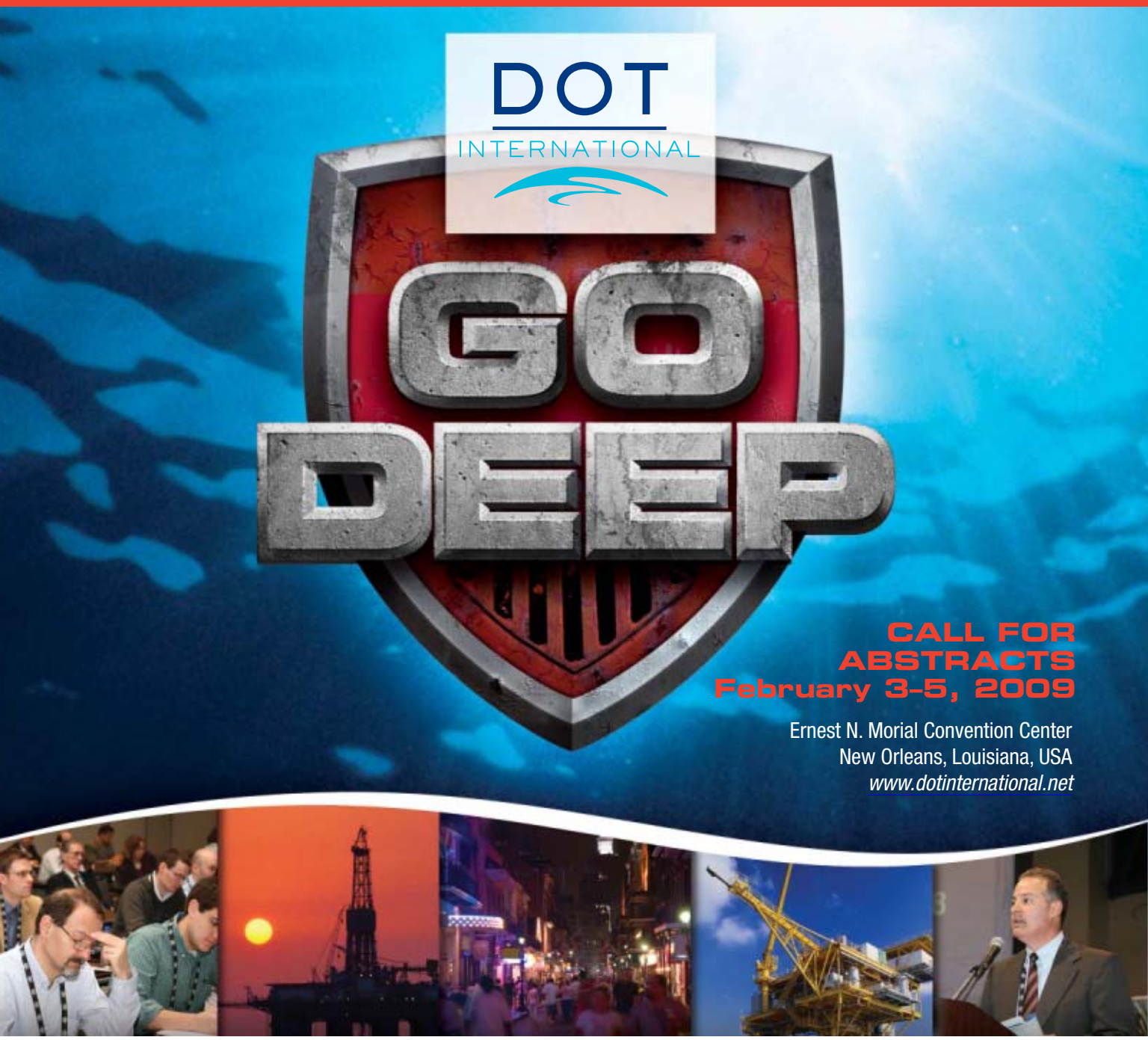
Industry divided

Climate change, like many issues, has divided the oil and gas industry. Some companies support involuntary precautions. Some companies doubt the need for precaution but want clarity of regulation. And some companies see climate-change response as big cost undertaken for little purpose.

What oil and gas companies should be able to agree on is the importance of honesty in a fateful debate and in whatever policies result from it. Cap-and-trade creates too many dark corners, beginning with the costs it would load onto energy users. The oil industry should avoid it.

The alternative to cap-and-trade is a carbon tax. Both schemes raise the cost of using fossil energy. A carbon tax just doesn't hide the pain. It's the only proposition conducive to honest debate over climate change remedies and therefore the only alternative worthy of consideration. ✦

Deep Offshore Technology International Returns to New Orleans



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DOT INTERNATIONAL CALL FOR ABSTRACTS

The Deep Offshore Technology International Conference & Exhibition (DOT) will return to New Orleans, Louisiana, February 3 – 5, 2009, with speaking opportunities for industry-leading solutions providers and operating companies.

For more than 20 years, DOT has provided a forum where industry leaders can address technical issues, introduce pioneering technology, and share lessons learned about finding, developing, and producing oil and gas in deepwater and ultra-deepwater regions around the world.

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DOT is recognized as the premier event where operators, equipment manufacturers, contractors, and service-providers introduce deepwater solutions. From drilling and production equipment to subsea trees and pipelines, and from seabed separation systems to arctic E&P challenges, the list of technology advancements that have debuted at DOT conferences is long and diverse.

Make plans now to share your company's solutions, innovations, and new technology with your industry colleagues by seeking a speaking role in the 2009 DOT International in New Orleans.

Please go online to www.dotinternational.net for submitting abstracts and send us your presentation ideas. The best and brightest of the industry will be gathering in New Orleans February 3 – 5, 2009, for this one-of-a-kind deepwater technology event. Plan now to be there with them. **Submit your abstracts by July 16, 2008.**

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Rotary Steerable System
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Mechanization, collaboration enhance drilling rig safety

Paula Dittrick
Senior Staff Writer

Industry has boosted its drilling safety emphasis, particularly in the last decade, through automated equipment innovations and intensified collaboration and commitment toward standard operating procedures among all stakeholders in a given project.

Safety is integral to daily business, agreed spokesmen from oil and gas operators, rig contractors, and service companies. Many of the majors have periodic meetings with representatives from their drilling contractors and service companies to discuss safety.

The national president of the American Association of Drilling Engineers (AADE) calls these meetings the best information-sharing sessions he has experienced across company lines. Joseph Leimkuhler is Shell Exploration & Production Co.'s offshore well delivery manager for tension leg platforms and platform operations in the Americas.

"The biggest thing that generates discussion is review of incidents, both near misses and actual incidents where somebody was injured," Leimkuhler said. "We look at those in detail. The meeting has matured to the point where if you were to attend, it's hard to tell who works for whom. Everybody shares information, ideas, and suggestions."

Jimmy Moore, Transocean's director of Quality, Health, Safety, and Environmental Services, said Transocean develops "partnerships" in the sense of preplanning and working side by side with oil companies vs. traditional contractor-client relationships.

"Clients support our safety processes," Moore said. "We share lessons learned, there is constant communication, and many clients are involved in our own internal safety audits."

Keith Morley, Weatherford senior vice-president and chief safety officer, emphasized equipment innovations and consistency of job execution, saying a job safety analysis is done for each individual activity to ensure that the standard operating procedure will work safely in a particular situation.

"If you don't take into account the time of day or the weather, or any other influencing factor, you may still miss a hazard," Morley said. "We are working to be aligned with our customers from a philosophical perspective as well as from a practical perspective."

Cooperation, sharing of expectations, and documentation requirements are key to implementing standard operating procedures when multiple parties work together, Morley said.

Mechanization boosts safety

Automated pipe-handling systems have provided technology that allows industry to remotely operate all activities for tubular goods—drill pipe, casing, tubing, or risers.

Leimkuhler said safety is improved whenever a worker can be taken away from putting their hands or bodies on high-energy sources, including top drives or hoisting and lifting equipment.

Weatherford's Morley said, "We remove people from hazardous situations using automated systems that can be controlled from a remote panel."

Since the late 1950s, tubular running services provider Weatherford has

experienced an evolution of rig mechanization starting with the use of casing tongs to spin the tubular goods.

"Historically, you would use a spinning chain and a manual tong that required brute force and physical presence to be able to make the connections," Morley said. "Power tongs removed hands literally from being in the line of fire on the tubular goods."

In 1994, Weatherford developed remotely operated mechanized power tongs. In 1995, it developed the Stabberless system, a remotely controlled pipe alignment system. This eliminates the need for a derrickman to stand on the stabbing board 20-40 ft above the rig floor in order to lean out, grab pipe, and guide it.

In 2005, Weatherford successfully had its first commercial run of its OverDrive system, which uses the power swivel on the rig coupled into the torque drive. It makes and breaks casing connections and provides casing running, reaming, and drilling capabilities.

From semisubmersibles to land rigs, a modular approach to rig mechanization provides operators with more options for safety and efficiency in tubular running operations, Morley said.

Weatherford currently is working to convert some of its systems traditionally used on large offshore rigs into smaller, cost-appropriate systems for use on land rigs.

This riser-handling mechanism on the Transocean Deepwater Discovery ultra-deepwater drillship off West Africa is an example of the automated equipment that is helping to make offshore drilling safer and more efficient. Photo from Transocean.

Dropped objects remain a concern

All lifting and hoisting operations have the potential for dropped objects although improved processes make continued progress toward zero-incident operations, industry spokesmen said.

Offshore, cranes hoist containerized loads from supply boats to rigs and platforms. Transocean assesses every lift and inspects related tools and equipment. It uses video, animation, and still photography to show crew members what lessons are learned from those inspections.

"Our Dropped Objects team, in the corporate office, is reviewing ways we can continue to reduce and eliminate dropped objects," Moore said. "Examples are engineering out hazards, performing operations in new ways, or by improving our existing tools."

Transocean is developing a new company standard for performing "Drops" inspections, increasing awareness with rig workers, instituting formal no-go zones, and developing picture books to improve inspections of equipment used at heights, he said.

Shell's Leimkuhler notes that improvements in lifting and hoisting operations have stemmed from procedural changes, such as standardized lifting points, more than any new technology.

"Various companies have different standards," Leimkuhler said. "At the end of the day, we are still lifting loads that range from a few hundred pounds to tens of thousands of pounds. You still have to have roustabouts to help position that load as it comes down from the crane hoist. Under ideal conditions, the roustabout never touches the load and uses tag lines to safely position the load on the deck."

Shell is instituting a hands-off policy in which only specific pre-approved loads can be handled by hand. All other loads must be managed with tag lines. While this is safer, there are still risks to be managed.

"A tag line can get wrapped around your hand or foot. It's pretty rare, but it happens," Leimkuhler said. "The bottom line is that unlike the drill pipe handling—which has gone to a fully automated handling system on 75% of Shell's rigs in the Gulf of Mexico—the crane and lifting system hasn't changed that much."

Efficiency means safety

Safety performance and cost effectiveness consistently go together. Shell's Leimkuhler said the rigs with the best project performance records also have the best safety records.

Oil, gas safety statistics mark progress

Paula Dittrick,
Senior Staff Writer

Safety statistics contradict the general public's stereotyped image of oil and gas drilling as being a hazardous business, report spokesmen from the American Association of Drilling Engineers and the International Association of Drilling Contractors.

Statistics demonstrate that industry has made great strides since the 1990s in managing risks. Industry continues working to change negative perceptions about itself, said John Lindsay, IADC chairman and Helmerich & Payne International Drilling Co. executive vice-president for US and international operations, at a safety conference (OGJ, Feb. 11, 2006, p. 33).

AADE national pres., Joe Leimkuhler said he shudders at the "Hollywood image" of the oil and gas industry. Leimkuhler is Shell Exploration & Production Co.'s offshore well delivery manager for TLP & platform operations in the Americas.

Both Lindsay and Leimkuhler acknowledge questions exist regarding the comprehensiveness and accuracy of exploration and production safety statistics, many of which are reported on a voluntary basis.

US Occupational Safety and Health Administration statistics from 2006 show exploration and production has a total recordable incidence rate (TRIR) of 2 compared with 5.1 for construction and 6 for manufacturing. TRIR reflects the number of incidents per a workforce of 100 people during 1 year.

Basically, OSHA defines an incident as recordable if there is a fracture, prescription medication is prescribed, or stitches are required or if the person is unable to return to work.

IADC administers an accident statistics program (ASP) in which members voluntarily submit monthly statistics.

Citing 2007 IADC statistics for rig operations, Leimkuhler said the US onshore TRIR is 5.1, US offshore TRIR is 1.4, and the worldwide rig TRIR average is 2.1.

"To really put safety in perspective, the average 2.1 TRIR for rig operations is lower than [OSHA's] 3.3 TRIR for real estate," Leimkuhler said. You are safer statistically on the rig floor than driving around with a real estate agent. That does not mean there are fewer risks on the rig floor, just that we as an industry manage them well."

Despite that record, there are areas for improvement. "One of the things we do not have for offshore operations is calibrated incident data for TRIR. We can't get that measure for offshore," Leimkuhler said.

While the US Minerals Management Service tracks the total offshore injury count and other incident rate information, it is submitted on a voluntary basis from operators. Those data show significant improvement during 1998-2004 as the TRIR went from 3.84 to 0.66 for those companies reporting data. During 2004 to 2007, the TRIR has been relatively stable at 0.66 to 0.86 for the same data set.

But Leimkuhler cautions industry against taking too much comfort in those numbers. The MMS data for number of incidents tell a different story for the total range of offshore operations (See figure).

Based upon MMS statistics, Leimkuhler plotted total number of recordable incidents vs. wells spudded per year in the Gulf of Mexico. The number of spudded wells is a relative measure of total drilling and completion activity (total wells spudded by the operators who report incident rate data represented 60% of the wells spudded each year).

"The high-water mark for the last 10 years is 2000 with 1,382 wells drilled. It has dropped every year since then," Leimkuhler said. "If you take the wells drilled so far in 2008 and project them out to year end, we're on pace to drill 576 new wells in the gulf. That's 42% of the wells drilled in 2000...but the actual number of injuries and fatalities seems to be going up, certainly not down."

Based on this analysis, Leimkuler questions whether there has been any

"The biggest risks we face in the drilling industry in terms of cost are operational miscues or something you were not anticipating," Leimkuhler said. "If you have an organization that is taking enough time to plan their operation from a safety perspective, it's almost a certainty that they are doing the same level of planning and thinking around the operational steps related to the job itself. Those who get the job done safely also tend to get it done right the first time."

Transocean's Moore emphasizes the need for "a well thought-out plan and following it—do what we say we're going to do." If the work does not go as envisioned, anyone on the rig is encouraged to stop the job so adjustments can be made to continue safe operations.

"Every incident (whether safety or operational) has a cost in time, manpower, and reputation," Moore said. "We investigate every loss whether business, equipment, or safety related, analyze the findings, and ensure any learning from those incidents are well communicated."

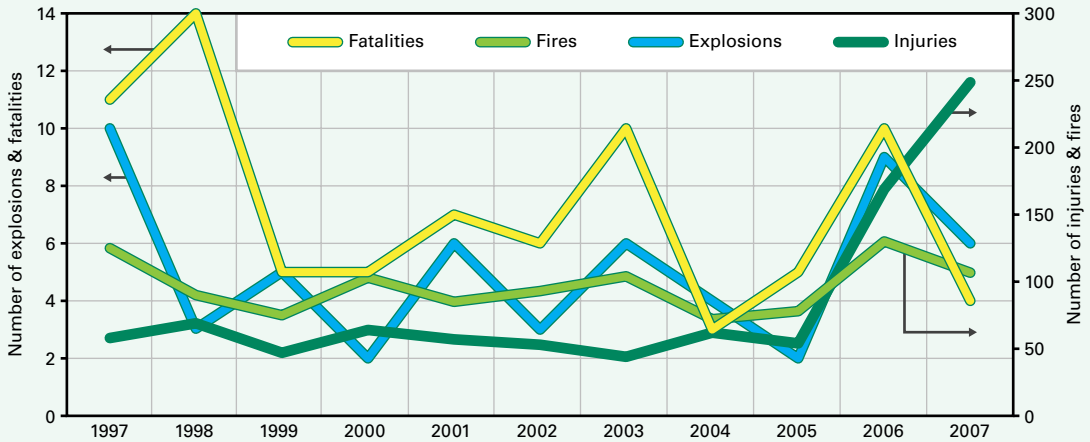
Moore is involved with the integration of two corporate safety management systems following the merger of GlobalSantaFe Corp. and Transocean (OGJ, Aug. 27, 2007, p. 30).

A gap analysis of the two management systems concluded that direction and culture was closely aligned. "A decision was made to use the legacy Transocean management system going forward, not because it was inherently better but for convenience," Moore said.

A team was assigned to integrate the management systems through a process named Next Steps. Transocean Pres. and

OCS INCIDENT DATA*

Fig. 1



*This program is voluntary and only represents the operators who participate, which can change from year to year.
Source: US Minerals Management Service Incident Statistics Summaries

IADC statistics

The IADC ASP's 5-year summary report for lost-time incidents (LTI) shows a rate of 0.28 for US water compared with 0.50 for 2002. US land LTI was 1.23 in 2007 compared with 1.73 in 2002. Incidents are calculated per 200,000 man-hr, which is the method used by OSHA.

IADC said worldwide industry totals showed a 2007 LTI of 0.53 compared with 0.65 for 2002.

Joe Hurt, IADC regional vice-president of North American Land, acknowledges that risks exist in drilling operations but says those risks are being managed and removed.

Hurt estimates that drilling contractors representing 95% of offshore drilling rigs report their incidents to IADC, and he believes they are doing their best to report accurately. He estimates land contractors representing 66% of the operating land rigs participate in the program.

progress in overall offshore drilling safety since 2002.

"If you look at MMS data for reported incident data from operators who willfully report, you might be inclined to believe that it's better," Leimkuhler said. "You can be lulled into sleep by looking at recordable incident rates from a limited data set."

He doubts that there has been much of a slippage in safety from the operators who voluntarily report their incident rates. In Leimkuhler's opinion, these organizations are likely to have mature, experienced health, safety, and environment organizations. This is reflected in their performance and reporting culture.

"For the [Gulf of Mexico], Shell actually had our best year of safety statistics in 2007," Leimkuhler said. "Our drilling activity level was pretty consistent, maybe even up a little from 2006, and it's certainly up in 2008. The challenge for us as an industry is to celebrate and acknowledge our success in HSE but at the same time maintain 'a healthy uneasiness.' The risks are always there; it is the nature of the forces and pressure we deal with in well operations. We do an excellent job of managing those risks, but we cannot afford to ever become complacent or satisfied."

Chief Operating Officer Steven Newman calls Next Steps "the most important activity" in 2008 in terms of company culture. More than $20 million was budgeted for Next Steps training for selected rig personnel worldwide.

Oil and gas companies examine the safety reputation of drilling contractors and service companies when deciding whether to award a job. In some cases, safety performance incentives are included in contracts.

Moore said incentives can raise the safety profile, but he believes that care has to be taken as to how the incentives are managed and how they are measured.

Leimkuhler said Shell's contract safety performance incentives are set up so the reward goes directly to the rig crews through the contractors payroll system. Shell monitors each rig's performance on a regional as well as global basis.

"If you have an incident of noncompliance related to operations—whether you have a reportable spill or you have a reportable incident with somebody getting hurt—any one of those incidents, you lose 50% of your bonus. You have two, you lose it all. We reset the clock each month on each rig," Leimkuhler said.

He estimates that crews achieve their safety bonus 80% of the time, adding that some rigs have received the monthly safety bonus for up to 2 years. The bonus helps with staff retention, Leimkuhler said. The negative side to safety incentives is the possibility that they could drive down incident and hazard reporting.

"If somebody is aware that if they report an injury that could cost them a safety bonus they could be less inclined to report," Leimkuhler asked. "That's a risk you've got to deal with, it's human

nature. So therefore, we don't include the Shell supervisors in the safety bonus program."

Shell has other programs to encouraging reporting. Workers are rewarded with nominal safety awards for reporting unsafe conditions.

"We really go out of our way to encourage and reward reporting," Leimkuhler said. "I think that counteracts any potential tendency to not report….You must make sure you have a strong reporting culture and constantly check it."

"Leimkuhler monitors reporting rates for both actual incidents and proactive safety efforts" He said the best indicator of a reporting problem is when recordable incidents increase while proactive safety efforts decrease.

"You have to have a process in place that lets you track the leading indicators and not rely on reacting to actual accidents and incidents," Leimkuhler said.

The banksman works with the crane operator to ensure that lifted items arrive safely. Photo from Transocean.

People and environment

Offshore drilling contractors and service companies integrate safety management and environmental management in order to safeguard the environment just as they safeguard people and property.

Ian R. Hudson, corporate environmental manager for Transocean, said he leverages the company's safety emphasis to demonstrate an equal corporate emphasis on environment.

"We have one consistent set of tools and systems," Hudson said. "For instance, the tools that we use on the rig for monitoring safety are the same tools we use for planning processes that may involve environmental risks."

Scott Robinson, Weatherford quality, health, safety, security and environment vice-president, said all QHSSE staff work to support both safety and environmental concerns with a goal of providing world-class performance for clients while providing a safe work environment for employees and contractors.

Exploration and production clients request less hazardous or nonhazardous alternatives to chemicals wherever possible, especially for offshore applications, he said.

"When chemical usage is involved at an E&P site (where we provide the chemical, i.e., diesel, foam, corrosion inhibitors, etc.,) Weatherford is required to manage the environmental risk through the use of spill plans, secondary containment, and emergency procedures," Robinson said.

As part of Transocean's drive for an incident-free workplace, Hudson wants everybody on all 138 Transocean rigs and onshore facilities to work in the same direction toward the same objectives.

Transocean has incorporated environmental management along with safety management in every job-planning process. Hudson called the process "a transformation toward thinking about how daily jobs might pose risks to the environment along with risks to personnel."

"Rig supervisors think about ways a person can get injured," Hudson said. "Planners also are asked to think about substance containment and ways such substances may be lost to the environment. We have prompts along the way that are basically trying to increase an individual's hazard awareness."

During 2007, Transocean implemented a new Environmental Management System (EMS) for its rigs and offices to set a company standard and ensure that all operations are managed in an environmentally responsible manner all the time, Hudson said.

Environmental performance is part of any drilling contract, he said, adding he believes it's implicit that future drilling contracts will continue to have specific items and criteria related to environmental protection.

"Historically, the industry has moved in a direction where many clients have dictated what the contractors do," Hudson said. "But I think we have recognized that environment is part of good business…whether your clients are asking you to do something or not. The majority of drilling contractors have now taken on the model that environmental management is our own responsibility." ✦

IHS: Past hurricane damage, disruptions less than expected

Despite massive damage from Hurricanes Katrina and Rita in 2005, the average impact on oil and gas production from hurricanes over a 45-year period was relatively modest, and the disruption of production was typically short-lived, said officials at Engelwood, Colo.-based information firm IHS Inc.

Based on IHS production data from 1960 through 2005, including Katrina, Rita, and four other major hurricanes in the last decade, an average Gulf of Mexico hurricane season would likely disrupt only 1.4% of annual oil production and 1.3% of annual gas production, the firm said. "While Hurricanes Katrina and Rita were an exception, historically, our data shows the overall impact to be much less than most people might expect," said Steve Trammel, an IHS senior product manager.

Focus on planning

Trammel attributes the historically low impact on production to industry planning. "The oil and gas companies are very focused on the safety of their personnel," he said. "Operators make the decision to pull crews off rigs well before a storm moves into the gulf. Therefore, most disruptions to production are caused by suspension of operations as a safety precaution in the event that an approaching hurricane does threaten offshore production. As a result, average hurricane disruptions are short-lived with full production reestablished within a month," he said.

Hurricane Katrina, a Category 5 storm, achieved 175 mph winds before it dropped to Category 3 and struck Louisiana Aug. 29, 2005, making it the most destructive storm in terms of economic impact ever to hit the US. Hurricane Rita struck the Texas coast Sept. 24, 2005, as a Category 3 storm having achieved sustained winds of 180 mph. Some 3,050 or 75% of offshore platforms, 22,000 miles or 67% of pipelines, and two thirds of the Gulf Coast refineries were in the overlapping paths. Their combined force inflicted record damage on Gulf Coast facilities and production, pushing oil and gas prices to record levels by January 2006 and increasing fears of energy supply shortages.

Yet all personnel were safely evacuated from a total of 748 manned platforms (93% of the manned platforms at that time) and 101 working rigs (75% of the rigs operating in the gulf at that time). There were no oil spills from production wells on federal leases in the gulf and only minimal leakage from platform equipment and damaged pipelines. There was no evidence any of that leakage reached shore or impacted birds or mammals.

By mid-December 2005, the cumulative oil shut in by the two storms totaled 101.7 million bbl, 18.5% of annual gulf oil production. Shut-in natural gas production totaled 526.2 bcf, 14.4% of yearly gulf gas output.

Of the other four major hurricanes in the Gulf of Mexico, most of the production shut in by Hurricanes Opal (1995), Georges (1998), and Lili (2002) was restored within a month, said Trammel, although Hurricane Ivan (2004) disrupted 471 million bbl of oil production and 140 bcf of gas production.

Expected 2008 activity

The US National Oceanic and Atmospheric Administration's Climate Prediction Center expects considerable hurricane activity in the Atlantic Basin in 2008 with a 90% chance of an above-normal season. The center's outlook is for a 60-70% chance of 12-16 named storms, including 6-9 hurricanes and 2-5 major hurricanes (in category 3, 4, or 5 on the Saffir-Simpson scale). The center defines an average season as yielding 11 named storms, including 6 hurricanes and 2 major storms.

In response to the increase in major hurricanes striking the gulf in recent years, Trammel said, the petroleum industry has improved evacuation plans as well as shut-in and restart procedures to ensure safety and to mitigate leaks and production loss.

"Within economic limits," he said, "offshore structures are being engineered to withstand Category 5 hurricanes. In addition, the US Minerals Management Service has mandated new design specs for offshore facilities and has issued a series of notices to lessees and operators for rig fitness requirements, platform tie-downs, and ocean current monitoring, which are all tied to hurricane season."

Current gulf production and infrastructure are more widespread than in the past. Consequently, there is greater risk that hurricanes entering the gulf will damage and curtail the critical exploration and production activities.

IHS production data show the US gulf produced 476 million bbl of oil, or 25% of total US production, and 2.8 tcf of gas, about 12% of the US total during 2007. Moreover, the deepwater gulf continues to yield world-class oil and gas discoveries. IHS data indicate gulf discoveries yielded 8.5 billion boe during 2000-07. As a result, the US gulf was the seventh leading world source for discoveries during this period. Currently, there are 3,639 producing oil wells in the US sector of the gulf, and 3,788 gas wells, according to IHS data.

Noted improvements

Improvements and upgrades instituted by MMS in cooperation with industry groups and the American Petroleum Institute after Katrina and Rita included:

- Installation of global positioning system locators and black box information storage systems on offshore rigs for monitoring site conditions after evacuation of personnel and to track the rig if it drifts from its position.
- Guidance for assessing existing structures for vulnerabilities and apply-

ing modifications to minimize damage.

• Site-assessment guidance for identifying the best seafloor and soil conditions for jack up rigs and determining where a particular jack up rig can be located during hurricane season.

MMS suggested drilling contractors increase the number of mooring lines on offshore structures and required installation of high-strength anchors. In most cases, the required number of mooring lines for mobile drilling units increased 50% from 8 to 12, and in some cases 100% from 8 to 16. MMS also issued guidance to improve tie-down procedures to minimize damage during hurricanes. ✦

Lieberman-Warner cloture vote falls short; bill pulled

Nick Snow
Washington Editor

The US Senate's long-awaited debate on global climate change ended June 6—not with a bang but with a whimper (see Editorial, p.21).

Environment and Public Works Committee Chairwoman Barbara Boxer (D-Calif.) brought the bill to the Senate floor on June 2, but Democrats withdrew it after a cloture vote fell 12 votes short of the 60 votes needed to limit debate. Sens. Joseph I. Lieberman (I-Conn.) and John W. Warner (R-Va.) originally introduced the measure, S. 3036, on Oct. 18, 2007.

Majority Leader Harry M. Reid (D-Nev.) filed an amendment tree, which limited the number of changes that could be made to the bill, and filed for cloture on June 4.

Following 3 days of debate in which Democrats accused Republicans of delays and Republicans charged Democrats with trying to keep additional amendments from being introduced, 48 senators voted to invoke cloture, while 36 opposed the motion.

"We saw this morning yet another example of Bush-McCain Republicans refusing to address one of the most important issues of our time," said Reid after the vote. He said Democrats will continue fighting to cut carbon emissions, create green jobs, and end US dependence on foreign oil.

Minority Leader Mitch McConnell (R-Ky.) countered, "The majority says climate change is the most important issue facing the planet. Yet they've rushed the debate on that topic and brought the bill to a premature end. They brought it down before we could vote on [gasoline] prices, on clean energy technology, or on protecting American jobs."

A 2009 return likely

Democrats produced letters from the two major parties' presumptive presidential nominees, John McCain (R-Ariz.) and Barack Obama (D-Ill.) saying they would have supported cloture had they been present. The support signals that global climate change will be addressed legislatively in 2009 and will get a more hospitable White House reception than President George W. Bush gave this bill, which he threatened to veto.

Boxer said June 6 that statements of support for the cloture motion were received from four other absent senators—Edward M. Kennedy (D-Mass.), Joseph R. Biden Jr. (D-RI), Hillary R. Clinton (D-NY), and Norm Coleman (R-Minn.).

But James M. Inhofe (R-Okla.), the Environment and Public Works Committee's ranking minority member, said S. 3036 was "one of the largest bills ever considered by this Congress and probably the largest nonappropriations bill the Senate has ever considered. It deserved a full and honest debate, with

Senate oil bill cloture vote fails to secure needed majority

Nick Snow
Washington Editor

The US Senate voted not to take up a bill that would have reimposed a windfall profits tax on major oil companies as Democrats failed to achieve the three-fifths majority necessary to limit debate for a second time in less than a week.

The Senate rejected, by 51 to 43 votes, a cloture motion on S. 3044, which also would have made it possible for the Department of Justice to prosecute foreign oil producing nations for violating US antitrust laws.

Mary L. Landrieu (La.) was the single Democrat to cast a nay vote on cloture. Voting aye were Republicans Norm Coleman (Minn.), Susan F. Collins (Me.), Charles E. Grassley (Iowa), Gordon H. Smith (Ore.), Olympia J. Snowe (Me.), John W. Warner (Va.), and Independents Joseph I. Lieberman (Conn.) and Bernard Sanders (Vt.).

Debate firmly followed party lines as Democrats called for stronger government efforts to make major oil companies and foreign oil suppliers bear more of the burden of higher oil prices. Republicans said that the bill's provisions were not realistic and would not lead to production of any more oil or gas.

The Senate also rejected a cloture motion to consider HR 6049, which was designed to extend financial incentives for alternative and renewable energy research and projects that are due to expire later this year, by 50 to 44 in a later vote.

amendments offered and voted upon," Inhofe said following the bill's withdrawal.

Debate began amicably on June 2 when the Senate agreed by 74 to 14 votes to take up the bill. Boxer said she had added a deficit reduction trust and almost $1 trillion in tax relief to offset the initial increases in energy costs that would have resulted. She said S. 3036 was not a tax bill but a measure modeled on earlier acid rain legislation where the polluter paid. "Let's start debating this bill," she urged.

Broader debate sought

Republicans requested at least 30 hr of general debate before taking up any amendments. The public didn't understand what the measure would do, which made a broader debate necessary, suggested Bob Corker (R-Tenn.). After Boxer and other Democrats called this a delaying tactic, Republicans responded by requesting that the more than 500-page bill be read aloud. They also said that they had several amendments to propose.

"These petty, partisan tactics waste the American people's time," Reid said on June 4. "Ignoring the crisis of global warming endangers all of us. The longer we wait to act, the more costly it will be and the greater the risk that we won't be able to undo the damage. Each day that Republicans delay costs American taxpayers billions of dollars and squanders an opportunity to create millions of good-paying jobs," he said.

Inhofe responded that it was disingenuous to say Reid filed the amendment tree because McConnell raised questions about federal judicial nominations. "The majority brought this climate tax bill to the floor, and if they are serious about the issue, they will allow an open debate on amendments." Inhofe said. "Let us offer, debate, and vote on amendments."

Republicans and Democrats disagreed on the bill's costs, and Boxer and other supporters accused opponents of resorting to scare tactics. Assistant majority Leader Richard J. Durbin (D-Ill.) on June 5 accused the minority of fearing change. "They are afraid of change.

WATCHING GOVERNMENT

Nick Snow, Washington Editor

CFTC feeling new pressure

As the US Senate prepared to debate its latest oil tax bill on June 10, many members of Congress opened fire on so-called Big Oil, their target whenever retail gasoline prices soar and voters start to complain.

But energy politics acquired a new dimension the past few months as House and Senate members started to blame market speculators as well. So Walter L. Lukken, the Commodity Futures Trading Commission's acting chairman, can be forgiven if he feels that he's also under the gun.

His nomination as CFTC chairman could be in trouble. Sen. Byron L. Dorgan (D-ND), who compares loosely regulated commodity exchanges to gambling casinos, announced that he would oppose. He said Lukken has not kept oil market speculators in line.

That same day, Sens. Olympia J. Snowe (R-Me.), Dianne Feinstein (D-Calif.), Ted Stevens (R-Alas.), Maria Cantwell (D-Wash.), and Ron Wyden (D-Ore.) jointly urged the CFTC to exercise emergency authority to require disclosures by institutional investors who use swaps dealers.

'Massively different'

Although effects of the recent price increases are similar to those of past crises, Snowe said, "Speculation is massively different, and we must ensure that these markets are properly working and not subject to manipulation."

The CFTC has moved carefully in the last year. It investigated allegations that traders were buying US crude oil commodities on London's Intercontinental Exchange. ICE agreed to institute requirements matching those on the New York Mercantile Exchange.

The commission also formed an energy-markets advisory committee in February to examine issues in those markets and the CFTC's role in regulating them. Members include representative from energy and commodities trade associations, institutional investors, oil and commodities traders, and energy consumers.

'Cooperation and coordination'

On June 10-11, the CFTC brought senior enforcement officials from other countries' commodity-market regulatory agencies to Washington for its second annual antimanipulation conference. "Since no global regulator exists, it is critical that the international sister agencies continue cooperation and coordination to ensure market integrity," CFTC Enforcement Director Gregory Mocek said.

But the agency's most significant move may have been on May 29 when it disclosed that its enforcement division has been investigating crude oil and derivatives markets since December. It also said overseas commodities regulators could require fuller disclosures.

Several congressional critics weren't satisfied. "The CFTC has not proposed how to close off the loopholes that allow commodity index funds and others to take such massive positions that possibly distort oil futures markets," House Energy and Commerce Committee Chairman John D. Dingell (D-Mich.) said.

Richard J. Durbin (D-Ill.), the Senate's majority whip, noted that by 2009 the CFTC will be required to oversee around 980 million futures transactions, which are becoming increasingly complex, yet its workforce has shrunk from 546 to 475 employees since 2000. Congress should give it money to increase its commodities market enforcement "and ensure that these extra resources are applied," he said. ✦

Anything that will change things scares them. They don't think America is resilient enough and powerful enough to accept change. They are wrong."

John Cornyn (R-Tex.) responded, "I don't know any person of goodwill alive who doesn't care about the quality of the air we breathe and the cleanliness of the water we drink." He said that asking questions and wanting to offer amendments to improve "this huge bill, this huge tax increase, this huge increase in the cost of energy" does not suggest one doesn't care about the environment. ✦

IEA again cuts 2008 oil product demand outlook

The International Energy Agency has cut its outlook for 2008 oil product demand to an average 86.8 million b/d, a reduction of 80,000 b/d from the agency's previous forecast. This puts worldwide product demand growth for this year at 800,000 b/d.

The new estimate follows the reduction of price subsidies in several countries, including India, Indonesia, Malaysia, Sri Lanka, and Taiwan.

In its latest monthly Oil Market Report, IEA says that speculators have been involved in crude's price jump to near $140/bbl, but this trading activity is probably better defined as being risk management rather than speculation. Also an Israeli minister's recent comments about Iran's nuclear enrichment program have put Middle East politics back into play as an oil-price driver.

"Although discussions will focus on whether or not a supply disruption is a likely outcome, from a market perspective, there is also another supply response to consider: an IEA strategic stock release," the report said. "Given that OPEC countries are running close to flat out, the market can take comfort that the IEA is watching developments very closely and is prepared to act quickly if necessary," EIA said.

"But $140/bbl is not just about geopolitical risks—the supply situation remains tight," IEA said, adding that these abnormally high prices are largely explained by fundamentals. Supply growth so far this year has been poor, and higher prices are needed to choke demand to balance the market.

Oil stocks in countries of the Organization for Economic Cooperation and Development slid 8.1 million bbl in April, a month in which inventories typically build.

The Paris-based agency's figures show that global oil supply rebounded 490,000 b/d in May to average 86.6 million b/d, lifted by higher OPEC crude supply. The rise comes after extensive downward revisions to first-quarter 2008 non-OPEC production and projected lower biofuels and NGL output for the rest of this year, though. Despite this, IEA forecasts a recovery in non-OPEC output for this year's second half.

OPEC's higher output and field commissioning delays have pushed effective spare capacity below 2 million b/d for the first time since third quarter 2006, according to IEA, as current installed OPEC crude production capacity is assessed at 34.97 million b/d. The call on OPEC crude and stock change in 2008 has been revised up 300,000 b/d to 31.6 million b/d in this report. ✦

Total: World oil output to reach 95 million b/d by 2020

Doris Leblond
OGJ Correspondent

Worldwide oil production will stabilize at about 95 million b/d before 2020, including extra heavy crude from Venezuela and Canada, said Total SA Chief Executive Officer Christophe de Margerie based on a long-term, internal company oil study, just released.

Energy savings and efficiency are therefore "absolutely necessary" to limit an ever-increasing demand pulled along by emerging countries and transport with an ever stronger focus on light products, the study said.

A further 5 million b/d might be added with products processed from biofuels, gas-to-liquids and coal-to-liquids, condensates, LPG, and the addition of refining gains, raising to 100 million b/d the overall oil supply to which the world will have to adapt within the time frame, the study said.

"A very ambitious plateau, which will be difficult to uphold," De Margerie said.

Jean-Jacques Mosconi, Total's head of strategy and economic intelligence, said the 116 million b/d supply assumption by 2030 given out by the International Energy Agency is "too optimistic."

Total's scenario was revealed at a seminar for the press held to deliver the message Total was anxious to impart that energy development and the environment are inextricably linked.

De Margerie said it was production and not reserves that are failing, production limited by both geological and geopolitical uncertainties that are slowing down the development of new capacities.

Mosconi said the world's remaining known oil reserves amount to 1,000 billion bbl, as much as has already been produced, with 60% of conventional reserves concentrated in the Middle East. He added that there are 200 billion bbl still to be discovered and potentially 300 billion bbl more reserves if recovery rates are increased to 37% from

the current 32%. To gradually bring these oil resources into production, more cutting-edge technology will be required as well as higher investments, he insisted.

Total's "energy vision" is that by 2030 the share of fossil energies in the energy mix would still be about 75%. While in 2005 energy fossils accounted for 81% of the mix—of which 35% was for oil and 21% for gas—by 2030 oil will account for 30% and gas for 22%. Coal, nuclear, hydro, biofuels, biomass outside biofuels, and renewables will account for the rest.

In a short reference to natural gas, Mosconi indicated that resources "are very abundant" and concentrated in Russia and the Middle East. The growth of gas production, however, will rely on the development of LNG projects. ✦

Survey shows perceived pros, cons of Alberta oil sands

Both Canadians and Americans consider Alberta oil sands to be a secure oil supply, said results of a Canadian-US survey by Fleishman-Hilliard Inc.

Executives of the public relations firm released the survey results June 11 during a Canadian American Business Council meeting in Washington, DC.

Cross-border differences were most evident when survey respondents ranked the importance of environmental concerns about oil sands compared with the importance of oil sands potential as a secure North American oil supply.

Canadian respondents split almost equally regarding economic and environmental concerns. The survey showed 46% ranked environmental concerns as the most important while 43% ranked secure supply as most important.

Of American respondents, 55% listed a secure supply as being their most important concern while 33% listed environmental concerns.

For both countries, the remaining respondents said neither was the most important or that they didn't know.

Survey findings

Fleishman-Hillard Canada Research surveyed 500 Canadians and 500 Americans in an online poll during May and June. The margin of error was 3.1%.

Survey respondents were representative of the US and Canadian populations in terms of region, age, language, and gender.

The survey showed 67% of Canadians and 47% of Americans were somewhat to very aware of oil sands in Alberta. Other findings were:

- When asked if future oil sands development was a "good or bad thing," 75% of Canadians and 68% of Americans said "a good thing."
- When asked how important the Alberta oil sands are to the overall security of the North American energy supply, 83% of Americans and 73% of Canadians said it was important.
- When asked if Alberta oil sands are critical for dealing with North American dependence on foreign oil, 40% of Americans agreed compared with 26% of Canadians. ✦

CO_2 emissions policy to affect LNG imports, report says

Uchenna Izundu
International Editor

Potential regulation to tighten carbon dioxide emissions in the US could increase demand for natural gas and pit the US against Europe in a bid to secure future supplies, according to a newly released report.

Global management firm Booz & Co. warned in its report that investments in European LNG import infrastructure may not pay off if LNG from the Middle East and North Africa is redirected towards the US. "Replacing these volumes in Europe might require additional pipeline gas from Russia and cause further dependency on Russia."

The report, "A Journey from a Regional Gas Market to a Global Market," analyzed how regional markets of Europe, the Americas, the Middle East, and Asia are becoming interconnected via LNG.

By 2015, gas demand will increase by up to 84 billion cu m, according to Booz, and most of this will be met by LNG imports. Booz said the US may turn to using more gas for power in the mid-term because it has been unable to develop on time other sources of energy such as nuclear or clean coal to meet the looming power gap across several states. Because US domestic gas production will likely not be able to meet a rise in demand, its market will have to compete more strongly for international gas supplies.

Europe has invested in as many as 30 European regasification expansion and newbuild projects that will have a total capacity of about 130 billion cu m by 2015. However companies may divert LNG destined for Europe from the Caribbean, North Africa, and the Middle East to the US instead.

"Carbon dioxide regulation is becoming more global, and therefore, creating a more global gas market with implications on volume flows and price levels," said Jake Leslie Melville, Booz vice-president.

Melville urged companies to have alternative plans to source energy, including increasing imports through existing pipelines or developing new supply

WATCHING THE WORLD

Eric Watkins, Senior Correspondent

Little relief for tankers

Oil tankers plying the high seas are unlikely to benefit much from the recently passed UN Security Council resolution 1816 (200). Why not? As we suggested several weeks ago, other countries around the globe saw the resolution—sponsored by the US, France, Britain, and Panama—as opening the way to interventionist policies (OGJ, May 12, 2008, p. 36).

Under terms of the resolution, which was unanimously adopted on June 2, the Security Council decided that the states cooperating with Somalia's transitional government would be allowed, for a period of 6 months, to enter the country's territorial waters and use "all necessary means" to repress acts of piracy and armed robbery at sea in a manner consistent with relevant provisions of international law.

Somalia only...

The text was adopted with consent of Somalia, which lacks the capacity to interdict pirates or patrol and secure its territorial waters, following a surge in attacks on ships off the country's coast. Keeping the intervention restricted to Somalia's waters was key to passage of the resolution—a point underscored by several other nations whose waters might have become prey to unwelcome interventionist policies.

Speaking prior to action on the draft, Indonesia's representative emphasized the need for the draft to be consistent with international law, particularly the 1982 United Nations Convention on the Law of the Sea, and to avoid creating a basis for customary international law for the repression of piracy and armed robbery at sea. Actions envisaged in the resolution should only apply to the territorial waters of Somalia, based upon that country's prior consent.

Other nations had similar views. Speaking after the vote, Vietnam's representative said the resolution should not be interpreted as allowing any actions in the maritime areas other than Somalia's or under conditions contrary to international law and the Law of the Sea Convention.

Not Yemen or...

So there is no provision in this new resolution for countries to do anything about attacks elsewhere. So last week's killing of one Nigerian naval officer and the wounding of four other people off Nigeria will just have to go unpunished—at least as far as this resolution is concerned. The same goes for attacks off Yemen, outside the Straits of Hormuz, and along the Straits of Malacca.

As for Somalia, which sees very few oil tankers anyway, the coast is still not clear.

Mohamud Sheikh Ibrahim Suley, spokesman for the Islamic Courts, said the UN resolution targeting Somali pirates had taken "the wrong" route. "This decision is backed by western nations whose agenda is to steal Somalia's land and sea resources," Suley said.

Sheikh Muqtar Robow, spokesman for Al-shabaab, a military rebel group, threatened to attack any foreign ships that transgress Somali territorial waters. "The UN, the United States, and Ethiopian troops are all one and the same to us, and we will fight them all," Robow said. ✦

routes such as the proposed Nabucco pipeline.

But gas prices in the Atlantic Basin are likely to soar and become more volatile because of increased gas demand and larger connectivity between the Americas and the European gas markets.

"European gas importers and governments should more explicitly consider the globalizing nature and interdependency of their regional gas markets," the Booz report said. ✦

France supporting nuclear power in Italy, France

Eric Watkins
Senior Correspondent

French President Nicolas Sarkozy said his country is willing to work with Italy on nuclear power as part of a common energy strategy in response to high oil prices.

Sarkozy's comments, which came after a meeting with Italian Prime Minister Silvio Berlusconi, coincided with ongoing public protests in France and Spain over the high cost of fuel for homes and transportation.

The French president's remarks followed reports last week that the Italian government, seeking to reverse the results of a 20-year-old referendum, wants to begin construction of nuclear power stations to reduce the country's dependence on imported oil and gas.

"During the term of this parliament we will lay the first stone for the construction in our country of a group of new-generation nuclear power stations," said Economic Development Minister Claudia Scajola.

"We can no longer avoid an action plan for a return to nuclear power," Scajola told the Italian employers' federation Confindustria.

The announcement by Scajola appears to reverse the results of a 1987 referendum that renounced nuclear power generation and closed the

country's four nuclear plants. The referendum followed the Apr. 26, 1986, nuclear disaster in Chernobyl, Ukraine.

Confindustria head Emma Marcegaglia agreed with the government decision, saying the time has come "to invest in nuclear energy," as Italy has become too dependent on foreign energy sources.

Fulvio Conti, head of Italy's principal power group Enel, also agreed, saying his company was "technically ready" to take part in the initiative.

"It's a good start on the part of the government, which confirms the need to diversify (energy) sources and to invest in infrastructure," he told state news agency Ansa. The Italian government, either directly or indirectly, has a 30% stake in Enel.

Speaking in April at an International Energy Forum in Rome, Conti said Italy, which generates around 60% of its energy from gas, was "too dependent" on foreign imports.

At the forum, Conti said it would likely take 7-10 years for a new nuclear generator to come online: 7 years on an already licensed site or 10 years on a site where construction was not yet licensed.

If the government proceeds with its plans, Enel is thought likely to begin construction at Montalto di Castro, where it initiated construction on two pressure water reactors in the 1980s.

Although the Montalto facility was partially dismantled after the 1987 referendum, Enel still owns the site.

Environmental groups in Italy immediately attacked any plan to bring back nuclear power. Giuseppe Onufrio, a director of Greenpeace Italy, called the announcement "a declaration of war." ✦

COMPANY NEWS

XTO to acquire Hunt Petroleum, Bakken shale acreage

Fort Worth independent XTO Energy Inc. plans to acquire privately held Hunt Petroleum Corp. of Dallas and other associated entities for $4.186 billion in a cash-stock deal.

XTO's acquisition follows close on the heels of another large acquisition. XTO last month agreed to acquire producing properties and undeveloped acreage in the Williston basin Bakken shale from privately held Headington Oil Co. LP, Dallas, for $1.85 billion in a cash-stock deal.

In other recent company news:

- The boards of Grey Wolf Inc. and Basic Energy Services Inc. have approved a definitive agreement to combine the two companies in a merger of equals. The estimated enterprise value of the combined company would be about $2.9 billion. The combined company name will be Grey Wolf Inc. and its corporate offices will be in Houston.
- Eni SPA plans to buy from Suez a 57.243% stake in natural gas distributor Distrigaz Sud AS for €2.7 billion.
- Ivanhoe Energy Inc. signed a preliminary agreement with an affiliate of Talisman Energy Inc. to acquire all of Talisman's interests in three Athabasca oil sands leases. Talisman Energy Canada is selling its holdings in the leases for $105 million (Can.).
- Norwegian Energy Co. (Noreco) will acquire shares in Talisman Oil Denmark Ltd. from a wholly owned subsidiary of Talisman Energy Inc. for $83 million.

XTO acquisitions

Terms of XTO's deal with Hunt Petroleum call for XTO to pay $2.6 billion in cash and 23.5 million shares of XTO common stock valued at $1.6 billion, or $67.50/share. Closing is expected by Sept. 3.

Engineers estimate Hunt's proved reserves at 1.052 tcf of gas equivalent, with 62% being proved developed. Hunt's production is 197 MMcfd of gas, 8,500 b/d of oil, and 2,300 b/d of natural gas liquids.

Of the reserves, 70% is in East Texas as well as central and northern Louisiana. Another 28% of the reserves, both onshore and offshore, are along the Gulf Coast in Texas, Louisiana, Mississippi, and Alabama.

XTO also is acquiring more than 300,000 net acres of potential in the North Sea and 15,000 net acres of leasehold in the Bakken shale region of North Dakota.

Total acreage for producing properties and undeveloped leasehold is 919,409 net acres.

Separately, XTO's acquisition of the Bakken shale assets includes 352,000 net acres of Bakken shale leasehold in Montana and North Dakota. Headington is slated to receive $1.06 billion cash and 11.7 million shares of XTO stock valued at $67.35/share. The acquisition is scheduled to close on or before July 15.

Properties being acquired are in the Bar Trend and Nesson Anticline of the Bakken shale. Currently, the primary producing field is Elm Coulee in Montana. Out of the 352,000 net acres that XTO plans to acquire, 215,000 acres are undeveloped.

Estimated proved reserves on the properties are 68 million boe, of which 60% is proved developed reserves, said XTO Chairman and Chief Executive Officer Bob R. Simpson. XTO has "aggressively pursued" shale basins since 2004, Simpson said. Upon closing, the acquisition will add about 10,000 boe/d to XTO's production base.

Production volumes are 88% oil, but the associated natural gas is btu-rich in

PERSONNEL MOVES AND PROMOTIONS

Odum succeeds Hofmeister as Shell Oil president

Marvin E. Odum, executive vice-president, the Americas, for Shell Exploration & Production, has been named to succeed **John D. Hofmeister** as president of Shell Oil Co. Odum will also retain his current operational role.

Odum joined Shell as an engineer in 1982 and has held a range of management positions in technical and commercial operations. He assumed his present position in May 2005. Previously, Odum was chief executive officer of InterGen, a global electric power generation company. He also served as Shell Gas & Power director, the Americas.

Hofmeister joined Shell in 1997 as director of human resources for the Shell Group. He was named Shell Oil president in 2005.

Upstream moves

Marathon Oil Corp. announced organizational appointments among its senior management team.

Steven B. Hinchman, former senior vice-president, worldwide production, was named executive vice-president, technology and services.

David E. Roberts Jr., former senior vice-president, business development, was named executive vice-president, upstream.

R. Douglas Rogers, former organizational vice-president, health, safety, and environment, has been named vice-president, HSE.

Daniel J. Sullenbarger, former vice-president, corporate responsibility, was named vice-president, corporate compliance and ethics.

Saudi Aramco has appointed **Amin H. Nasser** senior vice-president, exploration and production.

Nasser joined the company in 1982 and has held various positions in the engineering and production departments. He most recently served as business line head of E&P.

ATP Oil & Gas Corp. promoted **Leland E. Tate** to president of the company. **George R. Morris** will assume the role of chief operating officer.

Downstream moves

ExxonMobil Corp. has appointed a number of senior executives.

Michael Dolan was named senior vice-president. Dolan, formerly president of ExxonMobil Chemical Co. (EMCC) since 2004, is now a member of the corpora-

composition, realizing a 30% premium to New York Mercantile Exchange pricing, XTO said.

XTO of Fort Worth plans horizontal drilling on what it describes as "the multizoned, overpressured, and complex basin."

The US Geological Survey recently estimated 4.3 billion bbl of undiscovered, technically recoverable oil in the Bakken shale. The USGS estimate was similar to estimates from Continental Resources Inc., Enid, Okla., (see map, OGJ, Apr. 24, 2008, p. 37).

Continental Resources has 490,000 acres in the Bakken, of which 125,000 acres is in Montana and the rest is in North Dakota.

EOG Resources currently has 12,000 b/d of production from its 320,000 acres in the Bakken.

Grey Wolf-Basic Energy

The new Grey Wolf will be led by management teams from both companies. Thomas P. Richards, current Grey Wolf chairman, president, and chief executive, will serve as Grey Wolf's chairman after the merger. Basic Energy's Ken Huseman will be chief executive officer. David Crowley from Grey Wolf will serve as president and chief operating officer. Alan Krenek from Basic Energy will be executive vice-president and chief financial officer.

The merger creates a more diverse energy services company with expanded growth opportunities through enhanced scale, broader geographic reach, balanced commodity exposure, and expansion of service offerings, the companies said.

The transaction is expected to close in the third quarter.

Eni-Distrigaz Sud deal

Suez also will acquire from Eni a number of assets as required by the European Commission to obtain acceptance of the forthcoming Suez-Gaz de France merger. The deal is the result of a 6-month auction between different European gas players, including Germany's E.On AG and France's nuclear power giant Electricite de France (EDF).

Eni said its share in Distrigas would provide access to a strategic geographic position because of its interconnections with the Centre-North European transit gas networks. Once the acquisition has closed, Eni will tender the remaining shares of Distrigas at the same conditions.

Paolo Scaroni, Eni's chief executive, said his company would become "by far the largest" gas supplier in Europe with just over a 22% share of the market.

The final price Eni would pay for Distrigas would depend on the sale price of Distrigas's natural gas transit subsidiary to Fluxys, a Suez subsidiary, as demanded by the European Commission.

Suez signed agreements with Eni to strengthen their gas and electricity relationship in Italy and the UK as part of its interest sale in Distrigas. Suez will gain Rome's gas distribution network for €1.1 billion and 1,100 Mw of virtual power production capacity in Italy for €1.2 billion.

Suez will also purchase exploration

tion's management committee.

The board appointed ExxonMobil Refining & Supply Co. (EMRS) Pres. **Stephen Pryor** to succeed Dolan as president of EMCC. Pryor was appointed EMRS president in 2004.

Sherman Glass, former EMCC senior vice-president since 2005, succeeded Pryor as EMRS president.

R.M. Kruger was appointed president of ExxonMobil Production Co. (EMPC) and a vice-president of ExxonMobil Corp. Kruger will succeed **M.E. Foster**, who has retired. Foster had been president of EMPC since October 2004.

Western Refining Inc. has named **Jeff Stevens** chief operating officer. Stevens has served as executive vice-president of Western since 2000.

Westlake Chemical Corp. has announced the promotion of **Jeffrey L. Taylor** to senior vice-president, polyethylene. Most recently, he served as vice-president, polyethylene.

Other moves

Cavaney

American Petroleum Institute Pres. **Red Cavaney** has announced his intention to retire effective Nov. 1. Cavaney will be succeeded by **Jack Gerard**, currently president of the American Chemistry Council (ACC).

Cavaney became API president in 1997 following 3 years as president of the American Plastics Council and nearly 10 years as the American Forest & Paper Association's president. During his career in Washington, he served on the staffs of US Presidents Richard M. Nixon, Gerald R. Ford, and Ronald W. Reagan.

Before taking ACC's helm, Gerard served as president of the National Mining Association and was cofounder, with former US Sen. James A. McClure (R-Ida.), of Washington-based lobbying firm McClure, Gerard & Neuenschwander Inc. He has 10 years' experience as a US Senate and House staff member.

It is anticipated that API's board will formally elect Gerard president at its October meeting, according to API's current chairman **Rex W. Tillerson**, who is ExxonMobil chairman.

Smith

The Interstate Oil & Gas Compact Commission has named former US Department of Energy official **Carl Michael Smith** executive director. Smith formerly served as DOE assistant secretary for fossil energy in 2002-04 where he cochaired the US-China Oil and Gas Forum, chaired the Carbon Sequestration Leadership Forum, and managed the US Strategic Petroleum Reserve and the Northeast Home Heating Oil Reserve.

and production assets in the UK, the Gulf of Mexico, Egypt, and Indonesia, for €273 million.

It will buy 4 billion cu m/year of natural gas in Italy for 20 years from Eni, about half the needs of the future GDF Suez group in Italy. Eni has the option to deliver 2.5 billion cu m/year for 11 years and a 20-year LNG contract to supply 900 million cu m/year in natural gas equivalent in the Gulf of Mexico.

Ivanhoe buys Athabasca leases

Ivanhoe envisions the first commercial application of its proprietary heavy oil upgrading technology, HTL, in an integrated heavy-oil project on the leases being acquired.

Sproule Associates Ltd. estimates that two of the three leases contain 294 million bbl of contingent bitumen resources (with low and high estimates of 216 million and 394 million bbl, respectively) out of 752 million bbl of discovered original oil in place.

Ivanhoe's HTL heavy-oil project is planned for Lease 10 near Fort McMurray, Alta. Lease 10 is the principal block being acquired, Ivanhoe said. Sproule estimates contingent bitumen resources on Lease 10 could produce 30,000-50,000 b/d of oil.

Talisman will retain back-in rights of up to 20% in all of the acquired leases for 3 years, and it also has first-offer rights to acquire any participation interests in heavy oil projects in Alberta that Ivanhoe wishes to sell in that period, excluding the acquired leases.

In addition, Ivanhoe and Talisman plan to sign an HTL data monitoring agreement allowing Talisman to monitor the effectiveness of Ivanhoe's HTL technology.

Last year, Ivanhoe completed an Athabasca bitumen test run at its commercial demonstration plant in Bakersfield, Calif., using HTL (OGJ, June 29, 2007, Newsletter).

The test was carried out as outlined in a 2000 technology agreement with ConocoPhillips Canada, which provided Ivanhoe with the Athabasca bitumen. Ivanhoe is using information derived from the test to design and develop commercial projects in Western Canada (OGJ, Mar. 27, 2006, Newsletter).

Noreco-Talisman Oil Denmark

Talisman's interests in the North Sea off Denmark include 30% of License 6/95, which contains Siri field. Talisman's production from Siri field for 2007 averaged 2,600 boe/d.

The sale, subject to approval by the Denmark government, is expected to be completed later in the year.

Talisman Pres. and Chief Executive Officer John Manzoni said the company will "resize" its North Sea assets. ✦

Santos oil discoveries added in ultradeep, shallow water

Groups led by Brazil's Petroleo Brasilerio SA in recent weeks have added another heavy oil discovery in ultradeep water and a light oil in shallow water in the Santos basin in the Atlantic Ocean off Brazil.

A consortium comprised of Petrobras 66%, Royal Dutch Shell PLC 20%, and Galp Energia SGPS SA 14% made the oil discovery on ultradeepwater Block BM-S-8 south of Rio de Janeiro.

And Petrobras as sole concessionaire made the light oil discovery on a group of blocks designated BM-S-40 in the far southern part of the basin.

Ultradeepwater find

Operator Petrobras said it proved the presence of oil in presalt reservoirs on the ultradeepwater block after drilling well 1-BRSA-532A-SPS (1-SPS-52A).

Preliminary analyses indicate an oil gravity of 25-28°, comparable to that of other presalt crudes found in the basin, the company said in a release. The wildcat is 250 km off the state of Sao Paulo in 2,139 m of water.

Drilling was completed May 18 to TD 6,773 m, and the discovery proved via oil sampling in reservoirs nearly 6,000 m deep. Press reports said a shortage of rigs and the press of block expiration deadlines has led Petrobras to forgo testing some of its subsalt discoveries in order to release the rigs to drill other blocks.

The consortium is preparing a discovery assessment plan to be sent to Brazil's National Petroleum Agency.

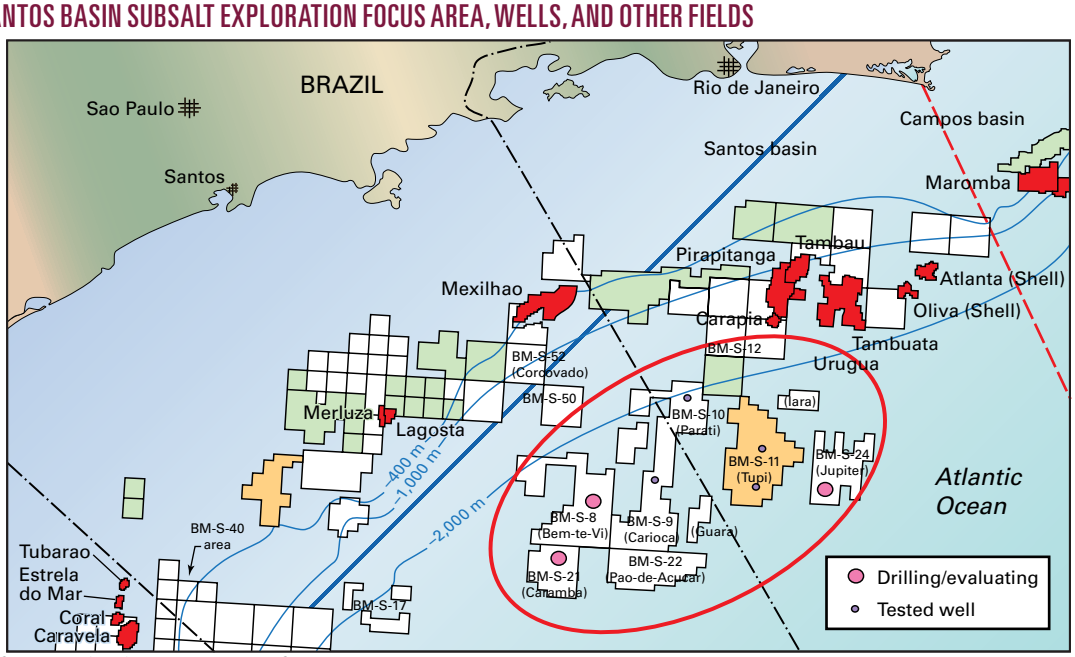
Petrobras deferred tests at the discovery on BM-S-8, also known as the Bem-te-Vi block, to move the rig to the small Iara block to the northeast in the company's Santos basin subsalt focus area. Kicking off optimism for the potential of the Santos subsalt area was the Tupi discovery, where Petrobras plans to begin extended production tests in March 2009.

Light oil discovery

Meanwhile, Petrobras said it found 36° gravity oil above the salt at the 1-BRSA-607-SPS (1-SPS-56) well.

The company estimated that the well, with a reservoir at 2,080 m in 235 m of water, is capable of a production rate of

SANTOS BASIN SUBSALT EXPLORATION FOCUS AREA, WELLS, AND OTHER FIELDS



Source: Modified after Petroleos Brasileiro SA

more than 12,000 b/d of oil. Petrobras said it confirmed the discovery with a "lined well formation test."

The company plans to spud BM-S-40's next exploration well in June 2008. ✦

More operators probe Haynesville gas shale

More operators are wading into the Jurassic Haynesville shale gas play in Northwest Louisiana and East Texas since Chesapeake Energy Corp., Oklahoma City, called the formation's potential extraordinary earlier this year.

Penn Virginia Corp., Radnor, Pa., expects its first horizontal well to exclusively target the Haynesville (Lower Bossier) shale to deliver 10-15 MMcfd in July after more pipeline capacity is added. Producing to sales at 5 MMcfd, the Fogle 5-H well in Harrison County has already flowed at rates as high as 8 MMcfd with 5,000 psi flowing casing pressure.

Penn Virginia, with 100% interest in Fogle 5-H, has drilled and completed 17 vertical wells on its 53,000-acre East Texas leasehold and tested four different reservoirs below the Jurassic Cotton Valley including the Upper Bossier shale and Lower Bossier shale. It expects to drill at least five more horizontal Bossier shale wells this year.

Goodrich Petroleum Corp., Houston, is testing early wells, acquiring acreage, and forming up a drilling program in Bethany-Longstreet and Longwood fields in Northwest Louisiana.

Goodrich Petroleum plans to spud its first horizontal Haynesville well in about 90 days. At Bethany-Longstreet it tested just over 1 MMcfd of gas from Haynesville at the vertical James Cook-1 and is completing its Clarence Brown-1, which cut 230 ft of net Haynesville shale with gas shows throughout.

Meanwhile, Goodrich will hike its Haynesville exposure to 30,000 net acres with an acquisition. It plans to acquire from a private party 3,250 net acres in the Haynesville shale trend and 12.3 bcfe of proved reserves associated with the shallower Cotton Valley and Cretaceous Hosston formations in Longwood field, Caddo Parish. Consideration is $32 million in stock.

The acquisition includes interests in 25 wells producing 1.2 MMcfed net. Goodrich will drill two new vertical wells and reenter one to test Haynesville shale at Longwood by the end of 2008.

Chesapeake Energy said Haynesville could have "a larger impact on the company than any other play in which it has participated to date" including the North Texas Barnett shale (OGJ, Apr. 28, 2008, p. 40). ✦

Paradox basin explorer targets two gas shales

Bill Barrett Corp., Denver, was spudding in late May its next well in an emerging two-formation shale gas play in the Paradox basin of Colorado and Utah.

Targets are the Pennsylvanian Hovenweep shale and Gothic shale, at 5,500-7,500 ft respectively atop and below the Lower Ismay formation. Hovenweep covers 1,300 sq miles in the basin and Gothic 1,850 sq miles.

Barrett holds 55-100% operated working interest in 183,000 net undeveloped acres in its Yellow Jacket shale gas project. Thicknesses are 20-140 ft of Hovenweep and 80-150 ft of Gothic.

Three "science wells" drilled in 2007 produced at rates of a few hundred thousand cubic feet of gas per day and confirmed encouraging gas content and shale composition, the company said last week.

An underlying salt isolated by a hard layer of anhydrite was believed to be an effective frac barrier, but a frac job penetrated the salt which plugged surface equipment, said Joe Jaggers, Bill Barrett president and chief operating officer.

The company has a 3D seismic shoot under way to highgrade a location for a horizontal Gothic shale well later in 2008. It is to have a 3,000-ft lateral and will be stimulated with smaller jobs to avoid the salt layer.

In San Juan County, Utah, Barrett and partners plan to drill one well this year in its Green Jacket and Pine Ridge projects.

Green Jacket targets the Hovenweep shale, and Pine Ridge objectives are structural salt flank plays similar to those at Andy's Mesa and Double Eagle gas fields in San Miguel County, Colo. The Pine Ridge net holding is 30,000 undeveloped acres. ✦

New Brunswick gas shale under evaluation

Corridor Resources Inc., Halifax, NS, plans a $32 million program this year and next to step up economic assessment of the Mississippian Frederick Brook shale near Elgin, NB.

Corridor will drill three widely spaced vertical wells on 2D seismic to obtain log and core data for full analysis followed by a horizontal well with a lateral as long as 1,000 m in the most prospective part of the shale and multiple fracs in all wells. It plans a 65 sq km 3D seismic program over the most promising area.

Corridor's Elgin licenses, excluding McCully field area holdings, cover 118,000 acres.

Meanwhile, the company has a $14.4 million plan to drill a horizontal development well to the overlying Hiram Brook sands in northeastern McCully field and horizontal wells in the Hiram Brook A sand in the most productive part of the field to hike production in its central part. ✦

EXPLORATION & DEVELOPMENT

Guyana

CGX Energy Inc., Toronto, let a contract to Fugro-GeoTeam to shoot 500 sq km of 3D seismic in the Guyana-Suriname basin in the Atlantic off Guyana.

The 4-week program is to take place later this summer using a dual airgun 8 by 6,000 m solid state streamer spread.

The survey is to fulfill the minimum work commitment on the Corentyne license through its first renewal second phase, CGX said (see map, OGJ, Mar. 8, 2004, p. 41).

The program is designed to cover the four prospects for which Gustavson Associates LLC, Boulder, Colo., calculated a combined best estimate (P50) prospective resource to be 2.7 billion bbl of oil. The best leads are a series of structural traps in Upper Cretaceous.

New Zealand

Australian Worldwide Exploration Ltd. took a farmout from Austral Pacific Energy Ltd., Wellington, NZ, to earn an 80% interest in PEP 38524 in Tasman Bay off New Zealand.

AWE will fund a 350 line-km 2D seismic survey on the block. The farmout is subject to ministerial approval of a revised work program.

AWE will operate the seismic and any drilling undertaken on the 2,187 sq km permit west of D'Urville Island. The area is interpreted to form an extension of the South Taranaki basin, which includes Kupe South and Maari oil and gas fields.

Russia

Lundin Petroleum AB, Stockholm, has spud the Morskaya-1 exploration well in the Lagansky block in the northwestern Caspian Sea off Russia.

The well, first in a four-well program planned for 2008-09, is projected to 2,000 m in 7 ft of water. Objectives are Triassic and Jurassic sandstone reservoirs.

Lundin's interest in the block is 70%.

Tanzania

Key Petroleum of Australia and Aminex PLC were awarded a production-sharing agreement on the 504-sq-km Songo Songo West area off Tanzania west of Songo Songo gas field.

The PSA is held 50% by Aminex's Ndovu Resources Ltd. subsidiary and 50% by Key Petroleum subsidiary Funguo Petroleum Pty. Ltd. Key is operator.

Key is a 20% partner with Aminex in the nearby Nyuni PSA, which includes the Kiliwani North gas discovery now under test.

The full PSA term is for 11 years, and one well is required in the first 3 years. Songo Songo West has extensive seismic.

Thailand

Salamander Energy PLC is estimating gross proved reserves of 11 million bbl, up 52%, at Bualuang field in the Gulf of Thailand after development wells found better quality reservoir than prognosed.

Probable and possible reserves are elevated 34% to 20 million bbl.

Porosities averaged more than 30% and more than 92% net to gross, and the development wells found much greater oil saturation than the appraisal wells. Fieldwide oil-water contact is at 1,130 m subsea, and crude assayed at 27° gravity. The field has nine wells.

Salamander operates the field in Block B8/38 with 60% interest, and Soco International PLC has 40%.

The wells are equipped with electric submersible pumps and ready to connect to the Rubicon Vantage floating production, storage, and offloading vessel under precommissioning at Rayong. Production is to start early in the second half.

Trinidad and Tobago

Jasmin Oil & Gas Ltd., private Trinidad operator, and Maxim Resources Inc., Vancouver, BC, will drill four wells to 3,500 ft to develop their 2006 oil discovery on the South Erin Property 40 miles southwest of Port of Spain, Trinidad.

The development also involves a crude oil sales line, electrification, and storage tanks.

The discovery well is on test since July 2007 and has been flowing 85 b/d of oil at 500 psig. It initially flowed a combined 722 b/d of oil from Miocene Lower Forest A and B sands and Middle Cruse sand. Middle Cruse is at 5,000 ft (OGJ, Feb. 5, 2007, p. 39).

It is Trinidad's largest onshore oil discovery in several decades, Maxim Resources said.

Montana

Brigham Exploration Co., Austin, is completing a third apparent Ordovician Red River discovery in Sheridan County, Mont.

The Richardson 30-1, under completion, follows Richardson 25-1 completed at 254 boe/d in late December 2007. The 25-1 well has produced 25,500 boe and is making 135 b/d of oil.

Operator Brigham controls 100,000 net acres in eastern Montana prospective for Red River, Bakken, and other formations. Northern Oil & Gas has 9.9% and 12.5% working interest, respectively, in the 25-1 and 30-1 wells.

Brigham's first Red River discovery, drilled in 1997, has produced more than 276,000 boe, and its estimated ultimate recovery is more than 330,000 boe. The company has 215 sq miles of 3D data in the area.

Utah

An undisclosed large public company will pay $8.4 million to buy from Pioneer Oil & Gas, South Jordan, Utah, a 15% working interest in 199,000 acres in Pioneer's Central Utah Overthrust acreage position.

Pioneer will retain a 3.75% working interest and various overriding royalty interests and is participating in a large geophysical survey covering much of the acreage.

Safe drilling practices include thoroughly planning an appropriate casing program to reach TD without mishap. Planning for intermediate casing strings can reduce consequences when overpressured formations are suspected.

Operators can plan surface casing for safer well control

Fermin Munoz Jr.
Railroad Commission of Texas
Oil and Gas Division, District 4
Corpus Christi, Tex.

Gary Judd
Ambar Lone Star Fluid Services
Corpus Christi, Tex.

Santa Barbara

On Jan. 28, 1969, an event on Union Oil's Alpha platform in the Santa Barbara Channel permanently changed the oil and gas industry. While tripping pipe out of the hole from a depth of 3,500 ft, Well A-21 blew out.[1] The subsequent oil spill and ecological disaster sent tremors through the industry that are still being felt today. Few events prior to this date have had such far-reaching consequences for the industry.

Following the Santa Barbara Channel blowout, the Railroad Commission of Texas held hearings in Austin to determine what measures, if any, should be adopted to prevent a similar occurrence in Texas.

There were several points of failure that contributed to the Santa Barbara Channel blowout. One of the factors discussed at the hearings concerned the amount of casing that was set. Union Oil had been granted an exemption by the US Geological Survey that allowed the company to set less casing than was required by federal standards.

10% case exemption

Exemptions to casing standards are not uncommon and there was some testimony at the hearings on this issue. The consensus opinion was that allowing an amount of surface casing equal to 10% of the proposed total vertical depth of a well is reasonable.

Although there are many wells in which 10% surface casing will provide an ample safety factor insofar as well control is concerned, it is certainly not adequate in all situations. Each well must be considered to determine whether minimal casing is appropriate. Therefore, one must examine the wellbore dynamics that occur when a kick takes place.

Potential problems

Killing the well after taking a kick is contingent upon being able to circulate heavier mud into the wellbore under controlled conditions. If the fracture gradient of the casing seat is exceeded, several negative consequences could occur:

1. Loss of circulation that would make placing heavier mud in the wellbore more difficult.
2. A drop in the mud level in the annulus that would cause formations

CALCULATING CASING SEAT KICK TOLERANCE

Formula
Maximum kick (ppg) =
(EMW shoe test – Mud weight) * (TVD shoe ÷ TVD well)

Example
Proposed TVD of the well = 8,000 ft
Surface casing to be set at 800 ft (TVD shoe)
EMW shoe test at 12 ppg
Anticipated mud weight at TVD = 10 ppg
Assuming that the kick occurs at TVD (8,000 ft):
Max. kick (ppg) = (12 ppg – 10 ppg) * (800 ÷ 8,000)
Max. kick (ppg) = 0.2 ppg

Checking the calculations
Shut-in casing pressure = 0.2 ppg * 0.052 (constant) * 8,000 ft = 83 psi
Hydrostatic pressure at the shoe = 10 ppg * 0.052 * 800 ft = 416 psi
Total pressure on the shoe = 83 psi + 416 psi = 499 psi
Pressure gradient at shoe = 499 psi ÷ 800 ft = 0.624 psi/ft
EMW on shoe = 0.624 psi/ft ÷ 0.052 = 12 ppg

Patterson-UTI used Rig 201 to drill Well No. 2X on EOG Resources Inc.'s State Tract 750A, near Corpus Christi, Tex., February 2008 (photo by Henry Hartman).

just below the surface casing to collapse into the wellbore and enable other formations to feed into the wellbore.

3. Sands containing usable quality water and productive formations not covered by surface casing could be damaged.

4. Possible extension of the fracture to the surface, compromising the safety of drilling operations and causing ecological damage, as in the Santa Barbara Channel event.

Analysis

Our analysis is confined to kicks from a penetrated formation that has greater pore pressure than hydrostatic mud pressure in the wellbore.

The formula for casing seat kick tolerance is:

Maximum kick (ppg) = (EMW shoe test – mud weight) x (TVD shoe ÷ TVD well)

A practical example appears in the accompanying box.

Obviously, serious well control problems can occur if it is believed that the 8,000-ft well in this example is capable of withstanding a 2-ppg kick (EMW shoe test – mud weight). That assumption is incorrect by a factor of 10.

Simply stated, the casing seat kick tolerance on a well having 10% surface casing is 10% of the difference between the EMW shoe test and the mud weight at total vertical depth, if the kick occurs at total vertical depth. It is worth noting that if the casing seat in this example had been tested to 13 ppg, the kick tolerance would increase from 0.2 ppg to 0.3 ppg.

The accompanying table shows various combinations of criteria and the kick tolerance associated with each situation if the kick occurs at total vertical depth. Increasing the amount of surface casing clearly increases the casing seat

Various calculated kick tolerances

Table 1

TVD-well, ft	TVD-shoe, ft	EMW shoe test, ppg	Mud weight at TVD, ppg	Kick tolerance, ppg*
12,000	1,200	13.0	11.0	0.2
12,000	2,400	13.0	11.0	0.4
12,000	3,600	13.0	11.0	0.6
12,000	1,200	13.5	10.5	0.3
12,000	2,400	13.5	10.5	0.6
12,000	3,600	13.5	10.5	0.9

*Based on formula in calculation box on p. 41.

kick tolerance.

Setting additional surface casing, however, may offer a false sense of security if one does not examine the limitations of the particular situation. In the examples shown, setting 30% surface casing instead of 10% increased the kick tolerance threefold. And yet, none of the situations resulted in a kick tolerance greater than 0.9 ppg.

Intermediate strings

Wells that are planned to include an intermediate string of casing to be set once an abnormal pressure zone has been encountered are often less dangerous than those for which such casing has been considered unnecessary. During drilling, the depth at which intermediate casing is to be set is often changed, based on indicators signaling the severity of the transition zone (mud properties, penetration rate, gas, cuttings analysis, borehole stability, etc.).

If a pressure transition zone is encountered on a well that incorporates only surface casing, however, the operator may face some difficult choices:

1. Conclude drilling at a shallower depth than was originally planned.
2. Set small-diameter intermediate casing. Under this scenario, the well costs will greatly exceed the original AFE estimate and the operator will be forced to work with an intermediate situation with potentially undesirable well dimensions.
3. Ignore the indicators and try to force the well deeper into the transition zone to reach the planned total depth without setting intermediate casing. If unsuccessful, the consequences could be disastrous.

The best way to handle this kind of well control situation is to plan the well so as to avoid taking such a kick. There is no substitute for accurate information and careful planning. This is especially true when setting a minimal amount of surface casing on a well that may encounter an abnormally pressured formation before reaching total depth. ✦

Reference

1. Clarke, K.C., and Hemphill, Jeffrey J., "The Santa Barbara Oil Spill, A Retrospective," Yearbook of the Association of Pacific Coast Geographers, Vol. 64, pp. 157-162, University of Hawaii Press, 2002.

The authors

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Decontactors allow safer electric circuit disconnects during rig moves

Rig moves have become safer for Saber Industries LP since it started using combination receptacles that allow workers safely to make and break electrical connections, even under full load.

Saber also says that the receptacles, when used as switches, conform to the National Electric Code (NEC) required line-of-sight disconnect requirement.

Saber, headquartered in Seminole, Okla., operates eight drilling and service rigs capable of working up to 7,700-12,000 ft.

The Meltric Corp. decontactors connect 440-v AC electric motors, pumps, and other equipment on its rigs (photo).

Rig moves

Saber says its rigs are moved frequently from one site to another, typically every 2 weeks to 1 month. Every time a rig moves, workers must disconnect and then reconnect motors, lights, heaters, washers, and other equipment. They may also have to break connections during rig operations to maintain or repair equipment.

The company previously used metal pin-and-sleeve connectors for 480-v and 110-220 v single-phase circuits. Saber says because of frequent washdowns, the pin-and-sleeve connectors posed some safety problems, such as when the plugs were washed down. If water got into them, they would blow apart, and if someone touched the plug while standing on wet ground, he could be killed, according to the company.

The connectors were also expensive to replace, the company added.

New decontactors

The company started installing the Meltric decontactors about 1 year ago and currently has installed them on three of its largest rigs.

The decontactors incorporate spring-loaded, silver-nickel butt-style contacts that provide consistent electrical performance during thousands of operations and resist wear, corrosion, oxidation, and other forces that contribute to premature failure of the pin-and-sleeve-type devices, according to Saber.

To disconnect a motor, one must initially press a pawl on the decontactor that breaks the circuit and ejects the plug to its rest position. Then, a quarter-turn of the plug allows it to be withdrawn totally and safely from the receptacle because the circuit is already dead. When the plug and receptacle are separated, a safety shutter prevents access to live parts.

Saber says that in some cases, it uses the plugs as a line-of-sight disconnect switch, particularly for such low-voltage applications as fuel pumps.

In this mode, if work is needed on a fuel pump, one can disconnect the plug and then keep the decontactor in sight so that someone else does not turn it back on. With decontactors, provisions for locking out the plug are standard, so that one only needs a lock and tag to comply with lockout-tagout requirements.

Saber has installed decontactors on motors ranging from 7½ to 60 hp, as well as on all other electrical equipment. A rig may have 18 low-voltage and 30 high-voltage circuits with multiple places to break the circuit, so that there are many decontactors on a rig.

The decontactors also have color-coded terminals and modular construction to simplify connections. Other features include watertight rubber gaskets that fit different cable sizes.

To prevent misconnections, the manufacturer can configure the contact arrangement so that it will only connect with a designated receptacle. ✦

Multiple decontactors located throughout a drilling rig allow for safer and easier control of electrical power during rig moves (photo from Saber).

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StatoilHydro assays Snohvit condensate

StatoilHydro recently conducted an assay of the Snohvit condensate, which is associated with the Snohvit gas field in the Norwegian Barents Sea (Fig. 1) that started production in August 2007.

The gas processing plant at the Hammerfest LNG plant in northern Norway received gas from Snohvit field on Aug. 21, 2007 (OGJ, Aug. 27, 2007, p. 10). Production, however, was delayed due to unexpected repairs to leaks in the cooling system (OGJ, Feb. 4, 2008, p. 10).

StatoilHydro estimates that there is 113 million bbl of recoverable condensate. StatoilHydro will market a total of 4 billion cu m/year of gas at the field's full capacity (OGJ, Mar. 3, 2008, p. 11).

Interests in the project are operator Statoil with 33.53%, Petoro SA 30%, Total E&P Norge 18.4%, Gaz de France 12%, Amerada Hess Norge 3.26%, and RWE Dea Norge 2.81%.

Fig. 2 shows a simulated distillation by gas chromatograph curve for the whole crude. These data are from StatoilHydro.

Whole crude

Density at 15° C., kg/l: 0.7384
Specific gravity at 60/60° F.: 0.7386
Gravity at 60/60° F., °API: 60.1
Sulfur, wt %: 0.019
Total acid number, mg KOH/g: <0.01
rvp, kPa: 50.9
Pour point, °C.: <-48
Kinematic viscosity at 20° C., cst: 0.75
Kinematic viscosity at 40° C., cst: 0.61
Nitrogen, mg/kg: 4
Vanadium, mg/kg: <0.1
Nickel, mg/kg: <0.1
Sodium, mg/kg: 0.2
Mercury, µg/kg: 1
Salt as NaCl, mg/l: <5
Wax content, wt %: <5.0
Flash point, °C.: <10
Water content, wt %: <0.01
n-Paraffins, wt %: 21.0
Butane, wt %: 1.48
Pentane, wt %: 7.09
Hexane, wt %: 4.46
Heptane, wt %: 3.37
Octane, wt %: 2.69
Nonane, wt %: 1.92
i-Butane, wt %: 0.09
i-Pentane, wt %: 6.04
Cyclopentane, wt %: 0.60
C_6 isoparaffins, wt %: 5.41
C_6 naphthenes, wt %: 5.09
Benzene, wt %: 2.10
C_7 isoparaffins, wt %: 3.35
C_7 naphthenes, wt %: 6.71
Toluene, wt %: 3.20
C_8 isoparaffins, wt %: 3.94
C_8 naphthenes, wt %: 3.31
C_8 aromatics, wt %: 3.11
C_9 isoparaffins, wt %: 1.55
C_9 naphthenes, wt %: 1.16
C_{10+} components, wt %: 32.94

C_5-65° C. fraction

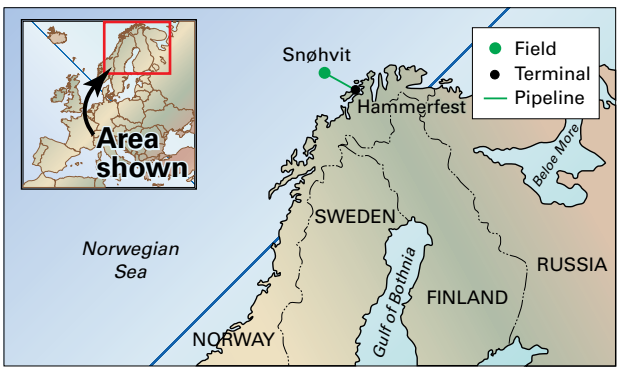
Yield on crude, wt %: 20.02
Yield on crude, vol %: 22.84
Density at 15° C., kg/l: 0.6446
Specific gravity at 60/60° F.: 0.645
Gravity at 60/60° F., °API: 88.01
Mercaptan sulfur, mg/kg: 4
n-Paraffins, wt %: 44.71
i-Paraffins, wt %: 48.39
Naphthenes, wt %: 5.07
Aromatics including benzene, wt %: 1.84
n-Paraffins, vol %: 45.24
i-Paraffins, vol %: 49.16
Naphthenes, vol %: 4.27
Aromatics including benzene, vol %: 1.33
Vapor pressure, kPa: 105.1
RON: 74.6
MON: 73.6

65-90° C. fraction

Yield on crude, wt %: 14.74
Yield on crude, vol %: 15.06
Density at 15° C., kg/l: 0.7199
Specific gravity at 60/60° F.: 0.72
Gravity at 60/60° F., °API: 65.01
Sulfur, wt %: <0.001
Mercaptan sulfur, mg/kg: 4
n-Paraffins, wt %: 26.56
i-Paraffins, wt %: 27.71

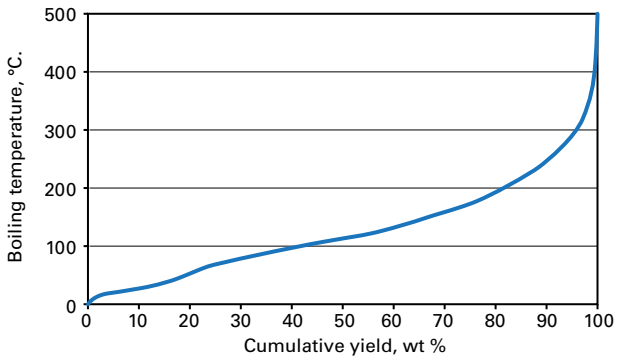
SNØHVIT FIELD

Fig. 1



SIMULATED DISTILLATION

Fig. 2



Naphthenes, wt %: 34.37
Aromatics including benzene, wt %: 11.36
Benzene, wt %: 10.16
n-Paraffins, vol %: 28.75
i-Paraffins, vol %: 29.71
Naphthenes, vol %: 32.27
Aromatics including benzene, vol %: 9.28
Benzene, vol %: 8.28
Vapor pressure, kPa: 34.2
RON: 67
MON: 65.7
Nitrogen, mg/kg: <1

90-150° C. fraction

Yield on crude, wt %: 31.62
Yield on crude, vol %: 30.77
Density at 15° C., kg/l: 0.756
Specific gravity at 60/60° F.: 0.76
Gravity at 60/60° F., °API: 55.62
Sulfur, wt %: <0.001
Mercaptan sulfur, mg/kg: <3
n-Paraffins, wt %: 19.59
i-Paraffins, wt %: 23.77
Naphthenes, wt %: 37.46
Aromatics including benzene, wt %: 19.19
Benzene, wt %: 0.59
n-Paraffins, vol %: 21.3
i-Paraffins, vol %: 25.32
Naphthenes, vol %: 36.69
Aromatics including benzene, vol %: 16.69
Benzene, vol %: 0.5
Flash point, °C.: <10
Nitrogen, mg/kg: <1

150-180° C. fraction

Yield on crude, wt %: 9.6
Yield on crude, vol %: 9.1
Density at 15° C., kg/l: 0.7794
Specific gravity at 60/60° F.: 0.78
Gravity at 60/60° F., °API: 49.99
Sulfur , wt %: 0.0038
Mercaptan sulfur, mg/kg: 4
Total acid number, mg KOH/g: <0.01
n-Paraffins, wt %: 21.84
i-Paraffins, wt %: 28.66
Naphthenes, wt %: 27.96
Aromatics, wt %: 21.545
n-Paraffins, vol %: 23.56
i-Paraffins, vol %: 29.96
Naphthenes, vol %: 27.17
Aromatics, vol %: 19.31
Total aromatics, wt %: 20.4
Monoaromatics, wt %: 20.4
Diaromatics, wt %: <0.1
Polycyclic aromatics, wt %: <0.1
Naphthalenes, vol %: 0.02
Aniline point, °C.: 51.9
Smoke point, mm: 25
Flash point, °C.: 40
Freezing point, °C.: <-60
Cetane index, ASTM D-976: 32.18
Calculated cetane index, ASTM D-4737: 37.18
Kinematic viscosity at 20°C, cst: 1.076
Kinematic viscosity at 50°C, cst: 0.759
Nitrogen, mg/kg: <1

180-240° C. fraction

Yield on crude, wt %: 11.67
Yield on crude, vol %: 10.76
Density at 15° C., kg/l: 0.8009
Specific gravity at 60/60° F.: 0.801
Gravity at 60/60° F., °API: 45.11
Sulfur, wt %: 0.014
Mercaptan sulfur, mg/kg: 4
Total acid number, mg KOH/g: <0.01
Total aromatics, wt %: 18.2
Monoaromatics, wt %: 15.7
Diaromatics, wt %: 2.5
Polycyclic aromatics, wt %: <0.1
Naphthalenes, vol %: 1.67
Aniline point, °C.: 62
Smoke point, mm: 23.5
Freezing point, °C.: -50.5
Cloud point, °C.: <-50
Cold filter plugging point, °C.: <-51
Pour point, °C.: <-49
Cetane number: 49.6
Cetane index, ASTM D-976: 44.75
Calculated cetane index, ASTM D-4737: 46.41
Kinematic viscosity at 20° C., cst: 1.795
Kinematic viscosity at 50° C., cst: 1.15
Nitrogen, mg/kg: <1

240-320° C. fraction

Yield on crude, wt %: 7.95
Yield on crude, vol %: 7.05
Density at 15° C., kg/l: 0.8325
Specific gravity at 60/60° F.: 0.83
Gravity at 60/60° F., °API: 38.4
Sulfur, wt %: 0.115
Total acid number, mg KOH/g: <0.01
Total aromatics, wt %: 21.1
Monoaromatics, wt %: 12.7

Diaromatics, wt %: 8.2
Polycyclic aromatics, wt %: 0.2
Aniline point, °C.: 73.1
Cloud point, °C.: -21
Cold filter plugging point, °C.: -22
Pour point, °C.: -21
Cetane number: 56.2
Cetane index, ASTM D-976: 52.72
Calculated cetane index, ASTM D-4737: 56.83
Kinematic viscosity at 20° C., cst: 4.432
Kinematic viscosity at 50° C., cst: 2.328
Nitrogen, mg/kg: 5.8
Basic nitrogen, wt %: <0.001

320+° C. fraction

Yield on crude, wt %: 2.60
Yield on crude, vol %: 2.22
Density at 15° C., kg/l: 0.8646
Specific gravity at 60/60° F.: 0.865
Gravity at 60/60° F., °API: 32.08
Sulfur, wt %: 0.304
Total acid number, mg KOH/g: 0.03
Total aromatics, wt %: 21.7
Monoaromatics, wt %: 13.4
Diaromatics, wt %: 6.3
Polycyclic aromatics, wt %: 2
Aniline point, °C.: 89.1
Watson K-factor: 12.1
Cloud point, °C.: 21
Cold filter plugging point, °C.: 20
Pour point, °C.: 21
Cetane index, ASTM D-976: 53.59
Calculated cetane index, ASTM D-4737: 68.38
Conradson carbon residue, wt %: <0.1
Kinematic viscosity at 50° C., cst: 8.177
Kinematic viscosity at 100° C., cst: 2.792
Nitrogen, mg/kg: 175
Basic nitrogen, wt %: 0.006
Refractive index at 67° C.: 1.461
Vanadium, mg/kg: <0.1
Nickel, mg/kg: 2.4
Asphaltenes, wt %: <0.5
n-Pentane insolubles, wt %: <0.1 ✦

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INTEGRITY MANAGEMENT—Conclusion

Procedure, FEA apply to NGL fitness-for-service assessment

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Eduardo Risso
ABB Full Service
Neuquen, Argentina

A simple economic procedure applied to NGL pipelines can help operators determine—based on the type, shape, and position of any abnormalities detected during periodic magnetic-flux leakage pigging— whether to shut the pipeline for repair or continue operations.

The first part of two articles (OGJ, June 9, 2008, p. 80) described the three steps of this procedure:

- *Identification*. A magnetic-flux leakage intelligent pig report and ultrasonic Scan B testing located the defect.
- *Quantification*. Ultrasonic thickness measurement and Scan B results use gammagraphic inspection to determine the defect's size and location on the pipe wall.
- *Assessment*. A simple finite-element analysis model simulates the real defect and then corroborates results against API Recommended Practice 579 Fitness for Service, January 2000.

This concluding article applies the procedure and FEA directly to a fitness-for-service assessment.

FEA

The procedure next performed a simple linear elastic FEA on the pipeline defect zone based on different load scenarios (OGJ, June 9, 2008, p. 81, Table 1). The FEA consists of various steps:

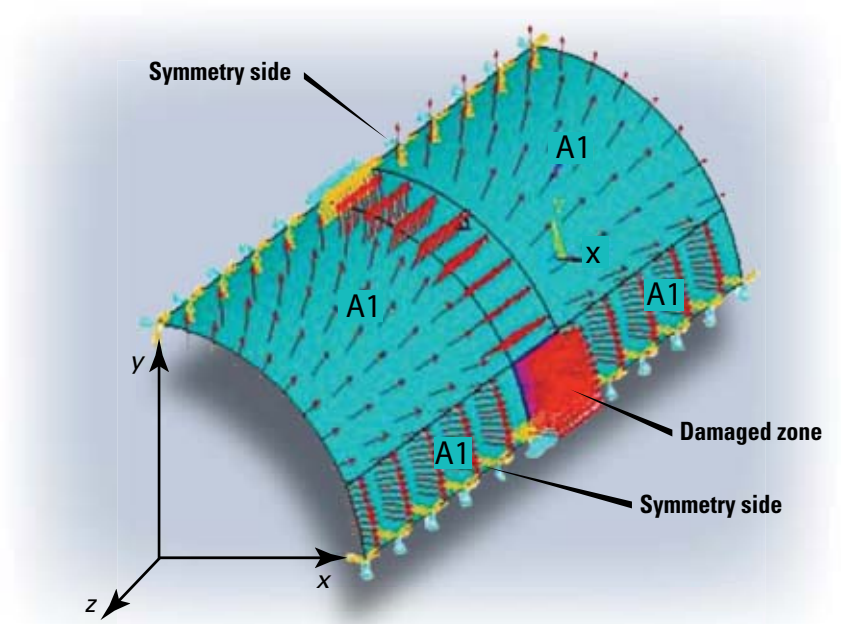
- Model creation.
- Definition of material properties.
- Model FE discretization.
- Definition of input boundary conditions.
- Graphical results display.

A pipeline quarter model used the symmetry of the section and elastic shell element because it is suitable for analyzing characteristics of thin material. A rectangular area with dimensions quantified during non destructive inspection modeled the damaged zone.

The next step introduced material properties, FE discretization, load, and input boundary conditions. Material properties used in linear elastic analysis included: the Young Modulus, 2.1 × 10^6 kg/sq cm for carbon steel; Poisson coefficient, 0.29; specified minimum

LOAD BOUNDARY CONDITIONS

Fig. 1



yield strength, 448 MPa; and specified ultimate tensile strength, 531 MPa. Testing applied different values of internal pressure to the pipeline model (Fig. 1).

The hoop stress on the defect zone increased to 2,849 kg/sq cm from 2,129 kg/sq cm when the pipeline was under normal operating conditions. Linear elastic analysis yielded similar graphical results for different internal pressures. Table 1 summarizes FEA results.

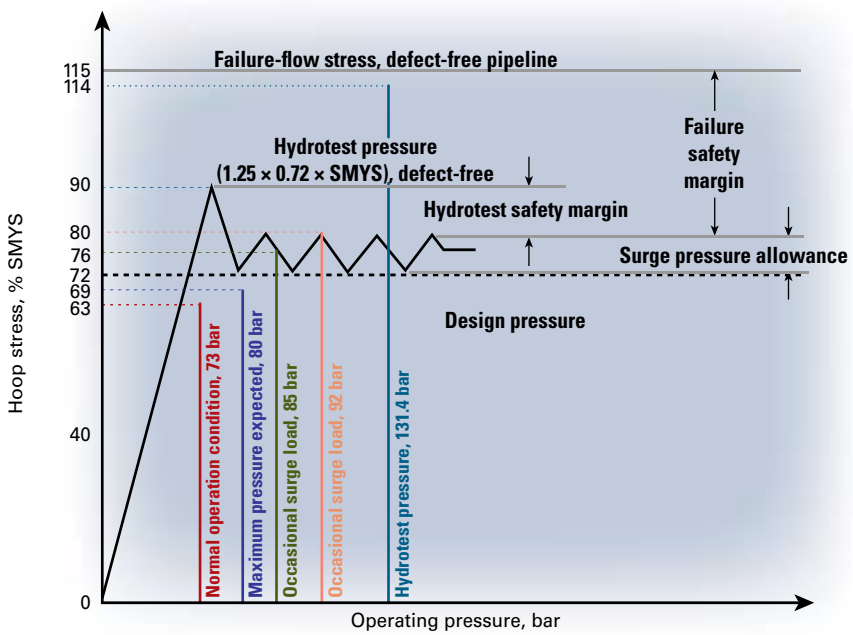
Internal pressure creates pipeline wall stresses in both longitudinal and circumferential (hoop stress, Sx and Sy) directions. Circumferential stress generally measures twice the longitudinal stress. Hoop stress formulas indicated in ASME Code B31.4, Para. 404.1.2 (Barlow's equation modified for pipelines) guide pipeline design and wall thickness.[1]

Equation 1 calculates the internal design pressure known as maximum steady-state operating pressure of the NGL pipeline according to B31.4 ASME Code. Hydrostatic pressure tests performed at 131.4 MPa (1.25 × MSSOP) assumed a pipeline wall free of defects, consistent with code requirements. This variance required revision of all cases in Table 1, comparing the hoop stress from FEA on the damaged zone with allowable stress according to B31.4 and flow stress in an effort to determine if the pipeline could still be safely operated at various pressure levels.

Graphic comparison of the hoop stress on the damaged pipeline segment and design-code criteria helped understanding of the real state of the pipeline wall at various working pressures (Fig. 2).

CODE DESIGN CRITERIA VS. WALL HOOP STRESS

Fig. 2



Design-code criteria established elastic limit design allowable stress as 72% SYMS, hydrotest pressure as 90% SYMS, and flow stress as 115% SMYS.

Hoop stress on the damage zone below the code stress limit (284.9 MPa < 323 MPa; Sy < 72% SYMS) allows the NGL pipeline to keep operating under normal conditions (73 bar). If normal pressure increased to 80 bar, hoop stress on the damaged zone would remain within allowable stress limits (311.2 MPa < 323 MPa).

Surge pressure could develop if main valve LVS 5 was closed during normal pipeline operation. Hoop stress in both cases (85 and 92 bar) would exceed the allowable stress, but code permits this kind of occasional effect whenever created hoop stress remains below 0.8 × SMYS.

Assuming the defect occurred during manufacturing, the damaged pipeline zone underwent hydrotest pressure reaching 114% SYMS—almost failure

FEA RESULTS, DIFFERENT INTERNAL PRESSURE

Table 1

Internal pressure applied, bar	Hoop stress at zone without defect, MPa	Hoop stress at damaged zone, MPa
73, normal operation	212.9	284.9
80, maximum expected under normal operation	233.3	311.2
85, occasional surge load	253.6	340.0
92, occasional surge load	275.0	361.0
131.4, hydrostatic test	383.3	511.0

EQUATIONS

$$P_{design} = \frac{20 * S * t}{D} \quad (1)$$

$$MSSOP = \frac{20 * 323\,MPa * 4.0\,mm}{323.8} = 80\ bar\ (kgf/cm^2) \quad (2)$$

Hydrotest pressure = 1.25 × 80 = 100 bat (kgf/cm²)

$$t_{min} = \frac{MSSOP * D}{20 * S} = \frac{104\ bar * 323.8\ mm}{20 * 323} = 5.2\ mm \quad (3)$$

t_{mm} = 4.0 mm

$$Rt = \left[\frac{t_{mm} - FCA}{t_{min}}\right] = \left[\frac{4.0 - 0.0}{5.2}\right] \quad (4)$$

s = 40.0 mm

c = 60.00 mm

$$\lambda = \frac{1.285 * s}{\sqrt{D_i * t_{min}}} = \frac{1.285 * 40\ mm}{\sqrt{305\ mm * 5.2\ mm}} = 1.29 \quad (5)$$

Where:

s = longitudinal defect extension

c = circumferential defect extension

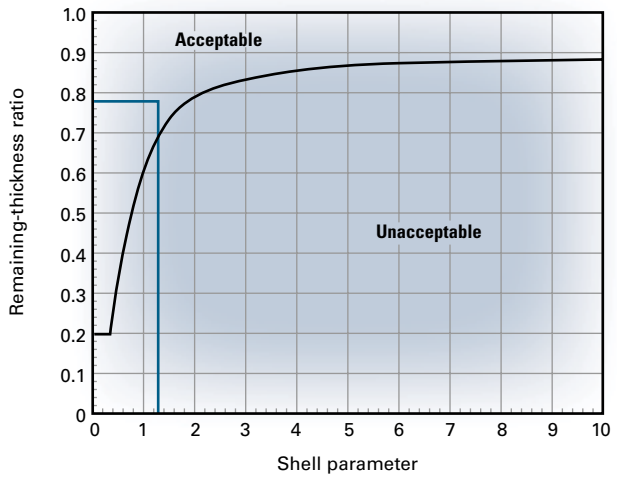
(Rt) ≥ 0.2); 0.769 > 0.2 "True" (6)

(t_{mm} = FCA ≥ 2.5 mm); 4.0 - 0.0 > 2.5 "True" (7)

(Lmsd ≥ 0.8 * √(D_i * t_{min})); 4.773 > 71.68 "True" (8)

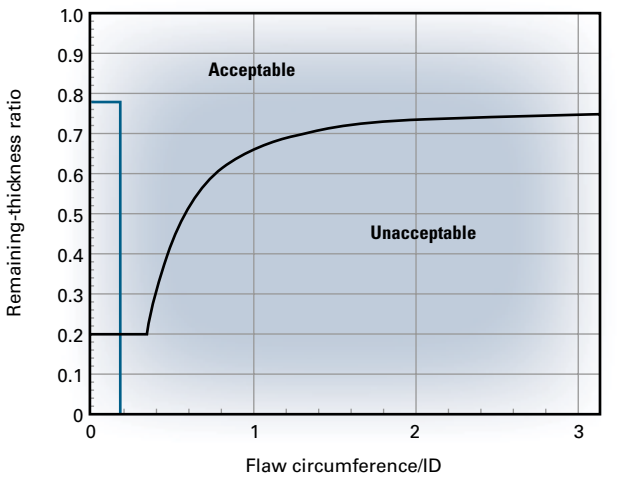
METAL-LOSS SCREENING CRITERIA, LONGITUDINAL

Fig. 3



METAL-LOSS SCREENING CRITERIA, CIRCUMFERENTIAL

Fig. 4



stress—but no plastic deformation or cracks appeared.

Equation 1 provided the basis for calculating a new MSSOP and hydrotest pressure, establishing the new operation condition for the pipeline damaged zone (Equation 2).

A fitness-for-service assessment consists of the quantitative analysis of the adequacy of a component to perform its function in the presence of a defect. The first three types of defects (pipe mill, transportation, and construction defects) should be detected during construction, preoperational testing, and commissioning, before the system is turned over to the operator. Missing these defects during construction and later discovering them, however, requires a fitness-for-service analysis.

A fitness-for-service assessment based on 2000 API 57, Section 5, "Assessment of Local Metal Loss," corroborated the results obtained through the FEA. Level 1 assessment evaluated a component subject to internal pressure and determined the acceptability of any component with a flaw.

The procedure has six steps:

• *Step* 1. Determine the critical thickness profile. UT Scan B inspection found the following parameters:

Di = 305 mm, ID.

D = 323.8 mm, OD.

FCA = 0.0 mm, future corrosion allowance.

Lmsd = 4,773 mm, distance from the edge of the defect to the nearest structural discontinuity (e.g., weld).

MSSOP = 104 bar, maximum steady-state operation pressure.

RSFa = 0.9, remaining strength factor allowable.

• *Step* 2. Calculate minimum required thickness, t_{min}, based on current design pressure according to code B31.4 (Equation 3).

• *Step* 3. Determine minimum measured thickness, t_{mm}, remaining thickness ratio, R_t, flaw dimensions, s and c, and shell parameter, λ (Equations 4 and 5).

• *Step* 4. Check limiting flaw size criteria for a Level 1 assessment (Equations 6-8).

• *Step* 5. Evaluate the flaw's longitudinal extent. If the point the intersection of these values defines lies on or above the line describing acceptable values of R_t and λ in Fig. 3, the longitudinal extent of the flaw is acceptable.

Fig. 3 shows λ = 1.29 and R_t = 0.769, placing the longitudinal flaw on the acceptable side of the line.

• *Step* 6. For a cylindrical shell, evaluate the circumferential extent of the flaw with Fig. 4, using the calculated values c/Di and R_t. If the point the intersection of these values defines lies on or above the line describing their acceptable levels, the circumferential extent of the flaw is acceptable. ✦

RESULTS FROM FEA COMPARED WITH KEY STRESSES

Table 2

Internal pressure, bar	FEA results, MPa	Allowable stress per ASME Code B31.4, 0.72 × SMYS, MPa	Flow stress, 1.15 × SMYS, MPa*
73	284.9		
80	311.2		
85	340.0	323	515.2
92	361.0		
131.4	511.0		

*Flow stress = hoop stress on the pipeline wall at ductile fracture location and is stress required to produce plastic deformation.

Reference

1. American Society of Mechanical Engineers, B31.4, "Pipeline transportation systems for liquid and hydrocarbons and other liquids," 1998 Ed., New York, April 1999.

ECLIPSE INTERNATIONAL
OILFIELD MANUFACTURING

PennEnergy
New & Used Equipment
WWW.PENNENERGY.COM

Drillmaster EZ Mover™ Drilling Rig

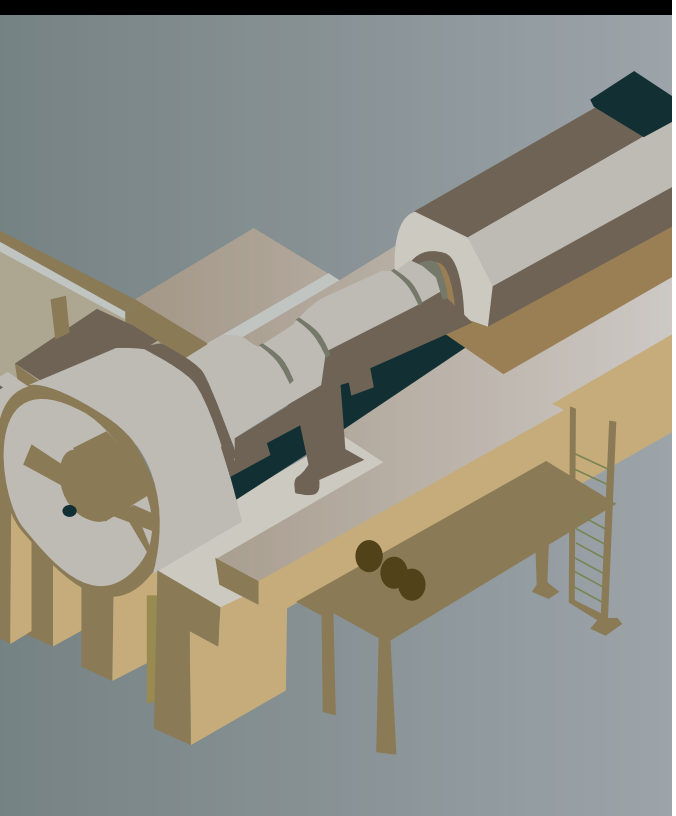
- Move entire rig in < 20 truck loads – not 40
- Innovative rig technology: EZ Flow oilfield skid; EZ Pac solids control elevator skid
- 100% US content
- 1000- and 1500-hp, and T-600 trailer-mounted versions available
- 1500-hp version can drill to 18,000 ft
- Top drive capable
- API standards and certifications
- Five to six month delivery
- Priced at $13 million

Newly remanufactured drilling rigs complete and ready to drill

- Four (4) Eclipse Drillmaster™ 2000-hp National model 1320-UE drawworks drilling rigs with two Branham and two Pyramid manufactured masts and substructures
- One (1) Eclipse Drillmaster 1500-hp National model 110-UE drawworks drilling rig with Branham manufactured mast and substructure

All components will be remanufactured to original manufacturers' specs and factory settings. All rigs are 100% US content and include new Ellis Williams triplex mud pumps, Eclipse EZ-Flo™ mud tank systems, EZ-Flo oilfield skid system and OEM SCR house designed to your specs.

Two New Alstom 50-Hz Reheat Condensing STGs Now Available



Offered by Thomassen Amcot International and available exclusively through PennEnergy

Two 50-Hz Combined Cycle 140-MW Steam Turbine Generators available for Q4-2008 delivery. These steam turbine generators (STGs) are new, 140-MW Alstom two-cylinder (HP and IP/LP) reheat condensing steam turbine generators sets suitable for combined cycle outdoor operation with axial exhaust and air-cooled (TEWAC) generator. Initial steam conditions 1900 psia/1050°F/1050°F reheat. Units include manufacturer's performance guarantees and warranties. Units may be shipped directly to your site from Alstom's European manufacturing facility.

- Units comes complete with all normally supplied auxiliaries and includes factory warranties covering manufacturing defects and performance guarantees.
- Configured as a two-cylinder machine with an HP turbine and a combined IP/LP turbine with an axial exhaust.
- Steam inlet conditions are 1900 psia (nominal)/ 1050°F/1050°F.
- Air-cooled TEWAC generator rated 165 MVA, 15.75 kV, 3 phase, 50 Hz, 3000 rpm.

THOMASSEN AMCOT INTERNATIONAL LLC

Contact

FOR INFO OR PRICING

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Paul Westervelt Email: pwestervelt@pennenergy.com P: 713-499-6305

Equipment/Software/Literature

New version of structural modeling software

GeoSec 2D Version 5.2 is a new edition of geologic interpretation software for advanced structural analysis, cross-section construction, and forward modeling.

The firm says this new version improves accuracy and efficiency and minimizes risk in exploration and production projects through advanced interoperability, new structural tools, and enhanced usability.

Version 5.2 builds on the ability of the GeoSec 2D software suite, a multifaceted structural analysis solution that provides critical information about the geometry and structural history of the subsurface. The software incorporates capabilities such as geologic section construction, balancing, restoration, animation tools, and embedded gridding and contouring. These functions work together to create models that incorporate structural features resulting from deformation of the subsurface.

Source: **Paradigm Geotechnology BV,** Telestone 8-Teleport, Naritaweg 165, 1043 BW Amsterdam, Holland.

New mobile solar power generator

A new mobile solar power generator travels to any location and provides temporary power where grid power isn't available.

The maker says its system is suited for use where solar alone is insufficient.

Because the unit is portable and can travel to any location, it provides maximum reliability at an optimum cost with minimal maintenance, the firm says.

This new solar generator will provide from 100 to 1,000 w of continuous power at 12, 24, or 48 v DC or 120 v AC.

Uses for this system include communications, radio, repeaters, instrumentation, remote monitoring, security and access control, and emergency disaster relieve or any other application where power is unavailable.

Source: **Solarcraft Inc.,** 4007C Greenbriar Drive, Stafford, TX 77477.

New software helps improve seismic interpretation

Insight Earth, a new suite of interpretation software, leverages this firm's integrated technologies—automated fault extraction, surface wrapping, and domain transformation—to help improve geoscientists' seismic interpretation results.

Insight Earth provides differentiating tools that help improve 3D visualization and interpretation, enabling geoscientists to do true volume interpretation of structure and stratigraphy. Each component of the software supports, informs, and enhances the others throughout the interpretation work flow, which speeds up the entire process and increases the overall quality of the analysis and interpretation results, the firm notes

Insight Earth simultaneously renders more than four volumes with various attributes, automatically picking horizons and faults—all in true 3D space.

Source: **TerraSpark Geosciences LP,** PMB #544, Suite E4, 2525 Arapahoe Ave., Boulder, CO 80302.

Services/Suppliers

Knight Oil Tools,

Lafayette, La., has promoted Pat McLaughlin to executive vice-president. He will be responsible for overseeing Knight Oil Tools, Knight Fishing Services, Knight Well Services, Knight Manufacturing, Hub City Iron Works, Tri Drill, and Robinson. McLaughlin began working for Knight in 1978 and has held various positions throughout the company, including store manager, operations manager, corporate operations manager, and vice-president. He was involved in expanding Knight facilities throughout the Gulf Coast, Midwest, and Rocky Mountain regions. McLaughlin studied economics and accounting at Southwest Texas State University. He is a member of the American Association of Drilling Engineers and the International Association of Drilling Contractors.

McLaughlin

Knight is the largest privately held rental tool business in the oil and gas industry. The company has 25 locations across nine oil-producing states that serve all phases of an oil well's life.

CGGVeritas

manufacturing subsidiary Sercel has acquired privately held Metrolog. Founded in 1987, Toulouse, France-based Metrolog is a leading provider of high-pressure, high-temperature gauges and other downhole instruments to the oil and gas industry. The acquisition is expected to be accretive to Sercel and to CGGVeritas earnings per share in 2008. Metrolog's 2007 revenue for the company was $11 million. Financial terms of the acquisition weren't disclosed.

CGGVeritas, Paris, is a leading international pure-play geophysical company that also delivers a wide range of technologies, services, and equipment through Sercel to its broad base of customers mainly throughout the global oil and gas industry.

Moffatt & Nichol,

Long Beach, Calif., has consolidated its San Diego-based operations with Blaylock Engineering Group, a marine structural engineering firm. This combined operation, known as Moffatt & Nichol Blaylock, enhances Moffatt & Nichol's capabilities in the areas of marine engineering, as well as facility inspection and rehabilitation, while offering Blaylock a presence in the global marine engineering arena. A core strength of Blaylock is design and repair of marine structures and developing repair schemes to extend the useful service life of facilities. The expanded services position both firms to better serve their port, military, and transportation clients and boost Moffatt & Nichol's worldwide waterfront inspection and rehabilitation practice.

Moffatt & Nichol operates from 25 offices throughout North America, Europe, Latin America, and the Pacific Rim.

Imports of crude and products

	Districts 1-4		District 5		Total US		
	5-30 2008	5-23 2008	5-30 2008	5-23 2008	5-30 2008	5-23 2008	[1]6-1 2007
	1,000 b/d						
Total motor gasoline	1,257	930	53	93	1,310	1,023	1,506
Mo. gas. blending comp.	873	565	43	50	916	615	862
Distillate	162	191	49	59	211	250	229
Residual	216	289	—	12	216	301	229
Jet fuel-kerosine	52	96	110	20	162	116	237
Propane-propylene[2]	111	283	15	13	126	296	192
Other	278	309	56	6	334	315	725
Total products	**2,949**	**2,663**	**326**	**253**	**3,275**	**2,916**	**3,980**
Total crude	**8,377**	**7,768**	**1,409**	**1,191**	**9,786**	**8,959**	**10,240**
Total imports	**11,326**	**10,431**	**1,735**	**1,444**	**13,061**	**11,875**	**14,220**

[1]Revised. [2]Data available only for PADDs 1-3.
Source: US Energy Information Administration
Data available in OGJ Online Research Center.

Purvin & Gertz LNG netbacks—June 6, 2008

Receiving terminal	Liquefaction plant					
	Algeria	Malaysia	Nigeria	Austr. NW Shelf	Qatar	Trinidad
	$/MMbtu					
Barcelona	8.77	6.79	8.28	6.66	7.53	8.18
Everett	10.55	7.87	10.06	7.90	8.61	10.96
Isle of Grain	10.90	8.21	10.08	8.10	8.96	10.11
Lake Charles	8.57	6.25	8.27	6.43	6.75	9.45
Sodegaura	7.10	9.65	7.34	9.40	8.54	6.23
Zeebrugge	9.23	6.77	8.48	6.67	7.38	8.49

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

Crude and product stocks

District	Crude oil	Motor gasoline		Jet fuel, kerosine	Fuel oils		Propane-propylene
		Total	Blending comp.[1]		Distillate	Residual	
	1,000 bbl						
PADD 1	15,443	55,310	29,190	10,504	35,008	15,121	3,976
PADD 2	66,267	49,288	17,459	7,819	29,112	1,419	15,077
PADD 3	153,095	70,932	34,477	11,697	31,148	16,031	17,799
PADD 4	13,366	5,937	1,649	589	3,211	280	[1]976
PADD 5	58,586	27,623	20,699	9,142	13,225	5,315	—
May 30, 2008	**306,757**	**209,090**	**103,474**	**39,751**	**111,704**	**38,166**	**37,828**
May 23, 2008	**311,559**	**206,155**	**102,316**	**39,581**	**109,431**	**39,185**	**35,655**
June 1, 2007[2]	**342,345**	**201,537**	**91,275**	**41,078**	**122,279**	**35,866**	**36,720**

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

Refinery report—May 30, 2008

District	REFINERY OPERATIONS		REFINERY OUTPUT				
	Gross inputs	Crude oil inputs	Total motor gasoline	Jet fuel, kerosine	Fuel oils		Propane-propylene
					Distillate	Residual	
	1,000 b/d						
PADD 1	1,396	1,392	1,987	106	409	122	56
PADD 2	3,461	3,434	2,253	228	1,056	66	237
PADD 3	7,711	7,513	3,202	734	2,299	338	672
PADD 4	560	560	301	29	179	15	[1]161
PADD 5	2,657	2,581	1,370	469	563	169	—
May 30, 2008	**15,785**	**15,480**	**9,113**	**1,566**	**4,506**	**710**	**1,126**
May 23, 2008	**15,460**	**15,297**	**9,098**	**1,470**	**4,315**	**660**	**1,073**
June 1, 2007[2]	**15,652**	**15,380**	**9,222**	**1,514**	**4,258**	**687**	**1,112**
	17,594 operable capacity		**89.7% utilization rate**				

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

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

OIL&GAS JOURNAL online research center

OGJ crack spread

	*6-6-08	*6-8-07	Change	Change, %
	$/bbl			
SPOT PRICES				
Product value	143.51	87.18	56.34	64.6
Brent crude	127.77	71.12	56.65	79.6
Crack spread	15.75	16.06	–0.31	–1.9
FUTURES MARKET PRICES				
One month				
Product value	147.15	88.07	59.08	67.1
Light sweet crude	128.14	65.89	62.25	94.5
Crack spread	19.01	22.18	–3.17	–14.3
Six month				
Product value	142.29	82.26	60.03	73.0
Light sweet crude	128.33	69.33	59.00	85.1
Crack spread	13.96	12.93	1.04	8.0

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

Statistics

OGJ GASOLINE PRICES

	Price ex tax 6-4-08	Pump price* 6-4-08	Pump price 6-6-07
	¢/gal		
(Approx. prices for self-service unleaded gasoline)			
Atlanta	369.0	408.7	309.0
Baltimore	354.2	396.1	307.1
Boston	355.2	397.1	301.5
Buffalo	354.0	414.1	309.2
Miami	367.4	417.7	321.4
Newark	360.4	393.3	291.0
New York	345.0	405.1	313.9
Norfolk	353.0	390.6	297.9
Philadelphia	355.6	406.3	313.0
Pittsburgh	347.0	397.7	300.0
Wash., DC	370.3	408.7	315.0
PAD I avg.	357.4	403.2	307.2
Chicago	384.2	435.1	369.6
Cleveland	343.8	390.2	316.4
Des Moines	349.1	389.5	314.4
Detroit	352.3	401.5	326.3
Indianapolis	348.3	393.3	327.3
Kansas City	350.4	386.4	314.3
Louisville	362.8	399.7	317.5
Memphis	342.9	382.7	303.0
Milwaukee	356.1	407.4	325.9
Minn.-St. Paul	352.6	393.0	321.2
Oklahoma City	344.2	379.6	305.5
Omaha	342.8	389.2	312.4
St. Louis	353.0	389.0	310.9
Tulsa	341.4	376.8	303.5
Wichita	329.6	373.0	310.3
PAD II avg.	350.2	392.4	318.6
Albuquerque	346.5	382.9	335.2
Birmingham	350.8	389.5	300.5
Dallas-Fort Worth	355.1	393.5	295.9
Houston	348.1	386.5	296.9
Little Rock	347.6	387.8	299.4
New Orleans	352.2	390.6	304.2
San Antonio	346.5	384.9	302.4
PAD III avg.	349.6	388.0	304.9
Cheyenne	346.6	379.0	304.4
Denver	351.5	391.9	329.3
Salt Lake City	346.0	388.9	322.8
PAD IV avg.	348.0	386.6	318.9
Los Angeles	378.2	436.7	339.5
Phoenix	363.6	401.0	308.8
Portland	369.7	413.0	322.3
San Diego	387.0	445.5	342.4
San Francisco	385.4	443.9	363.2
Seattle	369.4	421.8	336.5
PAD V avg.	375.5	427.0	335.5
Week's avg.	**355.4**	**399.0**	**315.7**
May avg.	**329.3**	**372.9**	**307.6**
Apr. avg.	**296.4**	**339.3**	**278.3**
2008 to date	**287.0**	**330.6**	—
2007 to date	**218.2**	**261.8**	—

*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

	5-30-08 ¢/gal		5-30-08 ¢/gal
Spot market product prices			
Motor gasoline		Heating oil	
(Conventional-regular)		No. 2	
New York Harbor	325.00	New York Harbor	364.70
Gulf Coast	323.00	Gulf Coast	363.85
Los Angeles	363.35	Gas oil	
Amsterdam-Rotterdam-Antwerp (ARA)	314.44	ARA	378.50
Singapore	323.12	Singapore	375.50
Motor gasoline		Residual fuel oil	
(Reformulated-regular)		New York Harbor	221.74
New York Harbor	343.50	Gulf Coast	224.71
Gulf Coast	347.60	Los Angeles	241.22
Los Angeles	365.75	ARA	228.53
		Singapore	225.85

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

BAKER HUGHES RIG COUNT

	6-6-08	6-8-07
Alabama	3	6
Alaska	8	9
Arkansas	48	43
California	43	32
Land	42	31
Offshore	1	1
Colorado	106	102
Florida	0	1
Illinois	0	0
Indiana	2	1
Kansas	9	13
Kentucky	11	8
Louisiana	160	171
N. Land	58	52
S. Inland waters	24	21
S. Land	25	30
Offshore	53	68
Maryland	1	0
Michigan	1	0
Mississippi	11	16
Montana	14	19
Nebraska	0	0
New Mexico	74	77
New York	7	5
North Dakota	70	37
Ohio	11	13
Oklahoma	207	188
Pennsylvania	20	13
South Dakota	2	4
Texas	931	840
Offshore	11	9
Inland waters	3	0
Dist. 1	27	18
Dist. 2	32	29
Dist. 3	66	60
Dist. 4	101	91
Dist. 5	183	174
Dist. 6	121	123
Dist. 7B	31	36
Dist. 7C	73	55
Dist. 8	131	114
Dist. 8A	26	27
Dist. 9	43	39
Dist. 10	83	65
Utah	38	38
West Virginia	26	35
Wyoming	68	79
Others—AZ-1; NV-2; OR-1; TN-5; VA-5; WA-1	15	10
Total US	**1,886**	**1,760**
Total Canada	**218**	**226**
Grand total	**2,104**	**1,986**
Oil rigs	385	291
Gas rigs	1,493	1,465
Total offshore	66	79
Total cum. avg. YTD	**1,805**	**1,742**

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	6-6-08 Rig count	6-6-08 Percent footage*	6-8-07 Rig count	6-8-07 Percent footage*
0-2,500	71	4.2	71	7.0
2,501-5,000	128	51.5	112	55.3
5,001-7,500	242	11.5	252	23.8
7,501-10,000	427	3.9	391	3.0
10,001-12,500	470	2.7	449	2.0
12,501-15,000	302	0.3	280	—
15,001-17,500	124	—	113	0.8
17,501-20,000	76	—	70	—
20,001-over	37	—	41	—
Total	**1,877**	**6.8**	**1,779**	**8.3**
INLAND	27		47	
LAND	1,791		1,664	
OFFSHORE	59		68	

*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]6-6-08	[2]6-8-07
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	15	19
Alaska	720	745
California	652	669
Colorado	44	38
Florida	5	5
Illinois	25	27
Kansas	93	102
Louisiana	1,354	1,322
Michigan	14	16
Mississippi	51	54
Montana	93	96
New Mexico	164	163
North Dakota	115	117
Oklahoma	173	171
Texas	1,343	1,360
Utah	46	51
Wyoming	145	146
All others	61	76
Total	**5,113**	**5,177**

[1]OGJ estimate. [2]Revised.

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

US CRUDE PRICES

$/bbl*	6-6-08
Alaska-North Slope 27°	96.05
South Louisiana Sweet	141.50
California-Kern River 13°	124.35
Lost Hills 30°	132.45
Wyoming Sweet	130.04
East Texas Sweet	134.50
West Texas Sour 34°	127.50
West Texas Intermediate	135.00
Oklahoma Sweet	135.00
Texas Upper Gulf Coast	131.50
Michigan Sour	128.00
Kansas Common	134.00
North Dakota Sweet	128.25

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

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

WORLD CRUDE PRICES

$/bbl[1]	5-30-08
United Kingdom-Brent 38°	130.13
Russia-Urals 32°	125.44
Saudi Light 34°	126.63
Dubai Fateh 32°	124.76
Algeria Saharan 44°	130.77
Nigeria-Bonny Light 37°	133.71
Indonesia-Minas 34°	133.61
Venezuela-Tia Juana Light 31°	125.27
Mexico-Isthmus 33°	125.16
OPEC basket	128.56
Total OPEC[2]	126.43
Total non-OPEC[2]	125.60
Total world[2]	126.06
US imports[3]	121.92

[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]

	5-30-08	6-1-08	5-30-07	Change, %
	bcf			
Producing region	650	622	788	–17.5
Consuming region east	905	845	1,017	–11.0
Consuming region west	251	234	326	–23.0
Total US	**1,806**	**1,701**	**2,131**	**–15.3**
	Mar. 08	**Mar. 07**	**Change, %**	
Total US[2]	**1,247**	**1,603**	**–22.2**	

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

International rig count

Region	May 2008 Land	May 2008 Off.	May 2008 Total	May 07 Total
WESTERN HEMISPHERE				
Argentina	69	0	69	87
Bolivia	3	0	3	3
Brazil	20	26	46	42
Canada	135	1	135	107
Chile	2	0	2	0
Colombia	39	0	39	33
Ecuador	9	0	9	9
Mexico	66	38	104	88
Peru	6	2	8	4
Trinidad	2	5	7	5
United States	1,794	68	1,863	1,748
Venezuela	64	14	78	78
Other	2	0	2	1
Subtotal	**2,211**	**154**	**2,365**	**2,205**
ASIA-PACIFIC				
Australia	16	12	28	22
Brunei	1	2	3	4
China-offshore	0	21	21	18
India	57	24	81	81
Indonesia	43	25	68	58
Japan	4	1	5	2
Malaysia	0	13	13	18
Myanmar	7	0	7	8
New Zealand	4	0	4	5
Papua New Guinea	4	0	4	3
Philippines	2	0	2	0
Taiwan	0	0	0	0
Thailand	3	11	14	8
Vietnam	0	10	10	9
Other	1	2	3	5
Subtotal	**142**	**121**	**263**	**241**
AFRICA				
Algeria	26	0	26	25
Angola	0	3	3	4
Congo	2	1	3	2
Gabon	2	1	3	2
Kenya	0	0	0	0
Libya	15	0	15	12
Nigeria	3	6	9	7
South Africa	0	1	1	0
Tunisia	3	1	4	2
Other	1	1	2	6
Subtotal	**52**	**14**	**66**	**60**
MIDDLE EAST				
Abu Dhabi	9	3	12	14
Dubai	1	0	1	1
Egypt	47	7	54	45
Iran	0	0	0	0
Iraq	0	0	0	0
Jordan	0	0	0	1
Kuwait	10	0	10	12
Oman	54	1	55	48
Pakistan	21	0	21	19
Qatar	3	9	12	13
Saudi Arabia	66	11	77	78
Sudan	0	0	0	0
Syria	21	0	21	21
Yemen	14	0	14	15
Other	1	0	1	1
Subtotal	**247**	**31**	**278**	**268**
EUROPE				
Croatia	0	0	0	1
Denmark	0	3	3	3
France	0	0	0	1
Germany	8	0	8	4
Hungary	5	0	5	2
Italy	4	2	6	5
Netherlands	0	3	3	5
Norway	0	22	22	22
Poland	1	0	1	2
Romania	15	3	18	2
Turkey	5	0	5	5
UK	2	21	23	31
Other	7	0	7	5
Subtotal	**47**	**54**	**101**	**88**
Total	**2,699**	**374**	**3,073**	**2,862**

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

Muse, Stancil & Co. gasoline marketing margins

April 2008	Chicago* ¢/gal	Houston ¢/gal	Los Angeles ¢/gal	New York ¢/gal
Retail price	360.27	338.50	380.16	349.13
Taxes	60.91	38.40	65.39	53.55
Wholesale price	295.11	294.87	304.57	291.49
Spot price	285.18	285.84	302.45	276.79
Retail margin	4.39	5.23	10.20	4.09
Wholesale margin	9.93	9.03	2.12	14.70
Gross marketing margin	**14.32**	**14.26**	**12.32**	**18.79**
March 2008	13.73	15.14	16.92	28.59
YTD avg.	22.70	19.15	13.27	29.03
2007 avg.	26.96	23.12	19.05	31.10
2006 avg.	19.74	20.34	18.03	27.90
2005 avg.	19.77	16.26	20.39	27.13

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

Oil import freight costs*

Source	Discharge	Cargo	Cargo size, 1,000 bbl	Freight (Spot rate) worldscale	$/bbl
Caribbean	New York	Dist.	200	374	3.17
Caribbean	Houston	Resid.	380	246	2.34
Caribbean	Houston	Resid.	500	269	2.56
N. Europe	New York	Dist.	200	373	5.10
N. Europe	Houston	Crude	400	258	5.22
W. Africa	Houston	Crude	910	259	5.74
Persian Gulf	Houston	Crude	1,900	142	5.85
W. Africa	N. Europe	Crude	910	246	4.05
Persian Gulf	N. Europe	Crude	1,900	172	5.16
Persian Gulf	Japan	Crude	1,750	234	5.67

*May 2008 average.
Source: Drewry Shipping Consultants Ltd. Data available in OGJ Online Research Center.

Waterborne Energy Inc. US LNG imports

Country	June 2008 MMcf	May 2008 MMcf	June 2007 MMcf	Change from a year ago, %
Algeria	—	—	11,300	—
Egypt	6,130	—	14,830	–58.7
Equatorial Guinea	—	—	2,880	—
Nigeria	3,170	—	20,150	–84.3
Norway	—	3,200	—	—
Qatar	2,930	—	5,760	–49.1
Trinidad and Tobago	27,220	29,450	33,310	–18.3
Total	**39,450**	**32,650**	**88,230**	**–55.3**

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

Propane prices

	Apr. 2008 ¢/gal	May 2008 ¢/gal	Apr. 2007 ¢/gal	May 2007 ¢/gal
Mont Belvieu	159.03	170.01	110.83	114.91
Conway	157.08	169.06	107.93	112.52
Northwest Europe	168.13	177.58	103.47	105.29

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

Muse, Stancil & Co. refining margins

	US Gulf Coast $/bbl	US East Coast $/bbl	US Mid-west $/bbl	US West Coast $/bbl	North-west Europe $/bbl	South-east Asia $/bbl
May 2008						
Product revenues	147.00	137.11	142.88	143.37	140.50	136.46
Feedstock costs	132.23	–128.51	–123.57	–119.45	–124.65	–130.33
Gross margin	14.77	8.60	19.31	23.92	15.85	6.13
Fixed costs	–2.09	–2.41	–2.35	–2.74	–2.35	–1.83
Variable costs	–2.86	–1.85	–2.51	–4.75	–4.11	–1.21
Cash operating margin	**9.82**	**4.34**	**14.45**	**16.43**	**9.39**	**3.09**
April 2008	12.10	3.59	11.64	16.68	8.34	4.92
YTD avg.	9.46	2.16	10.06	14.99	6.26	3.37
2007 avg.	12.36	6.36	18.60	20.89	5.75	2.26
2006 avg.	12.39	6.13	14.91	23.69	5.88	1.06
2005 avg.	12.53	6.98	12.31	20.55	5.51	1.52

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

Muse, Stancil & Co. ethylene margins

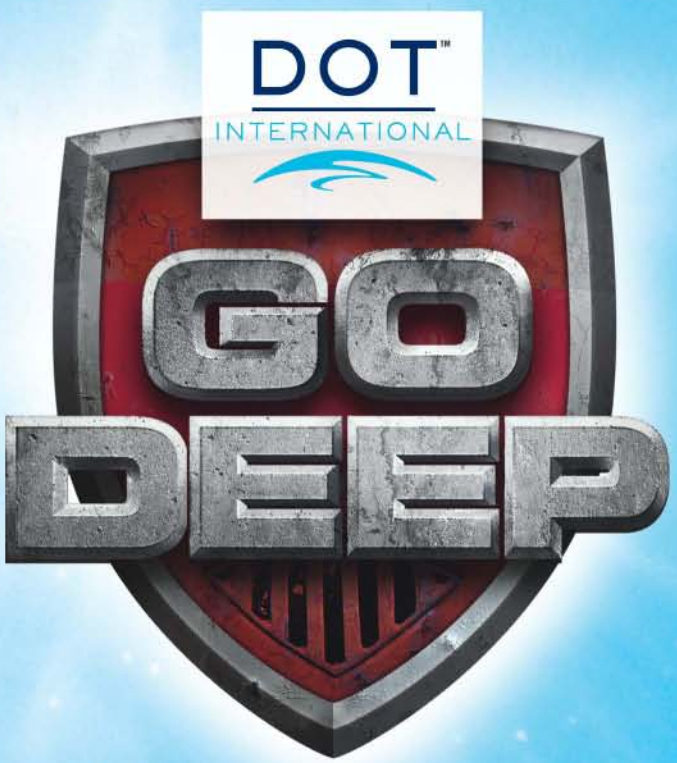
	Ethane ¢/lb ethylene	Propane ¢/lb ethylene	Naphtha ¢/lb ethylene
May 2008			
Product revenues	73.78	129.78	159.07
Feedstock costs	–40.03	–96.82	–160.24
Gross margin	33.75	32.96	–10.17
Fixed costs	–5.38	–6.36	–7.19
Variable costs	-7.79	–9.27	–12.63
Cash operating margin	**20.58**	**17.33**	**–29.99**
April 2008	22.20	19.15	–16.26
YTD avg.	18.85	17.86	–14.62
2007 avg.	14.41	14.14	–7.42
2006 avg.	19.53	22.44	1.34
2005 avg.	14.43	20.68	1.28

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

Muse, Stancil & Co. US gas processing margins

May 2008	Gulf Coast $/Mcf	Mid-continent $/Mcf
Gross revenue		
Gas	10.79	8.39
Liquids	1.77	4.88
Gas purchase cost	12.02	11.26
Operating costs	0.07	0.15
Cash operating margin	**0.47**	**1.86**
April 2008	0.47	1.60
YTD avg.	0.54	1.76
2007 avg.	0.44	1.47
2006 avg.	0.26	0.97
2005 avg.	–0.06	0.25
Breakeven producer payment, % of liquids	72%	61%

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



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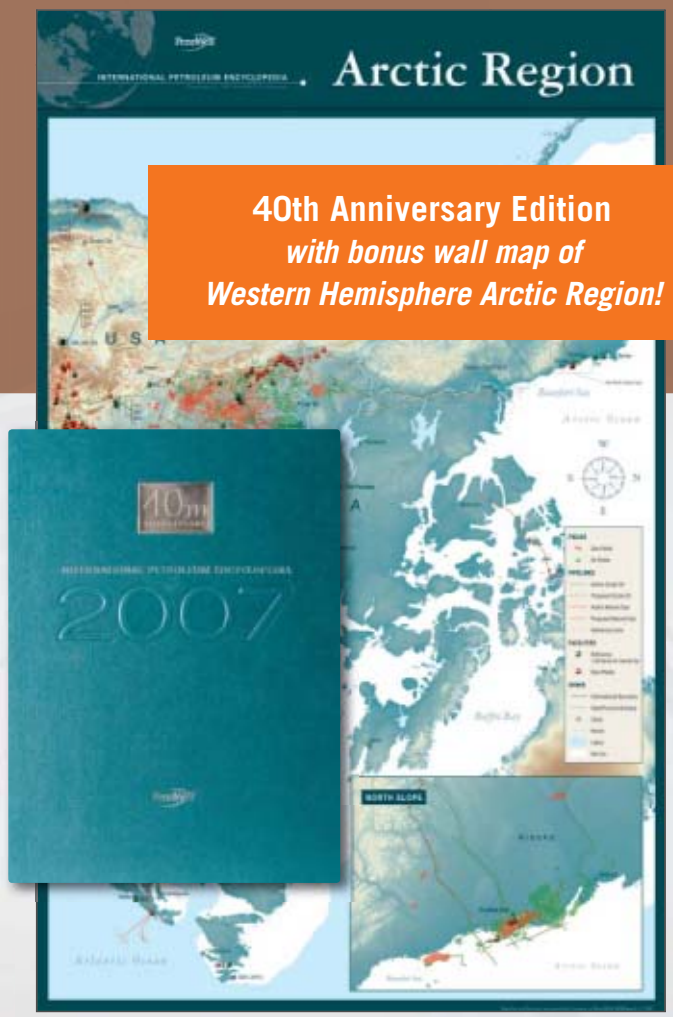

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Elements of oil price relief are falling into place*

Except for that pesky asterisk, elements of relief from painfully high oil prices are falling into place.

*The asterisk points to a footnote that must accompany all market forecasts—the one repeated so often it begins to lose attention. So here it is: **

Relief from stressful oil prices requires changes not only in basic forces of the market but also in extraordinary factors

The Editor's Perspective

by Bob Tippee, Editor

pushing up the price of crude.

In the former category, relaxation of worldwide oil demand seems finally at hand.

Consumption has quit rising in the industrialized world. But it continues to grow elsewhere, especially in rapidly growing countries where government subsidies shield oil consumers from price hikes.

Governments, though, are yielding to the strain. Indonesia, Malaysia, and India are among countries that have announced politically difficult increases in the prices of oil products. China is so far retaining price controls but reimbursing state-owned oil companies in an apparent attempt to prevent shortage during this summer's Olympic Games in Beijing.

As those moves slow demand growth, new supply should emerge from oil fields due on stream this year in major producing countries, although a pattern of delays in large projects has become as relentless as depletion.

One of the extraordinary forces lifting oil prices seems to have changed course. The US dollar already was strengthening when Federal Reserve Chairman Ben Bernanke on Jan. 3 hinted at a conference in Barcelona that monetary policy would be more attentive than it has been lately to the greenback's value.

Many analysts think a weak dollar, partly the result of the Federal Reserve's antirecessionary lowering of interest rates, has boosted the price of oil.

And at some point the recently strong investment tilt toward commodities will ease as allure returns to other types of assets. That tilt, too, has raised oil to some degree.

These developments are ingredients for oil prices lower than they have been. But don't overlook the footnote.

**Forecasts for lower oil prices assume the absence of major disruption, political or natural, to oil supply. In the Gulf of Mexico, lest anyone forget, hurricane season has begun.*

(Online June 6, 2008; author's e-mail: bobt@ogjonline.com)

Market Journal

by Sam Fletcher, Senior Writer

Crude prices make record leap

In the biggest one-day gain ever, the July contract for benchmark US light, sweet crudes shot to a record high of $139.12/bbl in intraday trading June 6 on the New York Mercantile Exchange before closing at a record $134.54/bbl, up a whopping $10.75 for the day.

Nervous traders attributed that jump to a statement by Israel's Transport Minister Shaul Mofaz that Israel will attack if Iran continues a program for developing nuclear weapons. But the crude contract had escalated more than $5/bbl June 5 when Jean-Claude Trichet, president of the European Central Bank, said the bank might raise its interest rates.

Olivier Jakob at Petromatrix, Zug, Switzerland, blamed Trichet for triggering "a $16/bbl rally in slightly more than 24 hr." By setting in motion the biggest 2-day gain ever on NYMEX, Jakob said, "Trichet has managed what no war, no hurricanes, no OPEC [member] has ever managed to do." He said, "Oil fundamentals had recently started to reassert themselves with worries about demand destruction, but Trichet chased them away and re-invited financials to the party. The underlying oil fundamentals are, however, unchanged."

The June 2-6 trading week had started with crude futures in a downward corrective phase "but reversed course violently when Trichet shocked the financial system by pointing to an interest rate hike in July," Jakob said. When the dust cleared, benchmark US crude gained a total of $11.19/bbl for the week. North Sea Brent was up $9.91/bbl overall. Heating oil escalated by $12.90/bbl, and reformulated blend stock for oxygenate blending (RBOB) increased by $8.40/bbl.

When the benchmark crude price was below $125/bbl, Jakob said, "Demand destruction was not evidenced at $80/bbl [or] $100/bbl, but it is now." In May, the front-month crude "traded only a few days above $130/bbl, which means that the breaking point for the subsidized oil economies was before that level" he said.

Malaysia and India joined the list of emerging countries cutting fuel subsidies for their national markets. Subsidy cuts in 2008 represent 9.8 million b/d of oil demand or a third of the world oil demand growth estimated by the International Energy Agency, Jakob said. IEA's forecast of global demand growth in 2008 was "already half what it was at the start of the year, and the trend is to head into one of the lowest [levels of] yearly demand growth of the decade," he said.

Political pressure

High oil prices have triggered a policy shift in the US with lawmakers pressing for a change in futures market regulation. Potential changes by the Commodity Futures Trading Commission can have as much effect on oil prices as any decisions by the Organization of Petroleum Exporting Countries, Jakob said.

US Rep. Bart Stupak (D.-Mich.) claimed some US trading houses have been manipulating energy futures markets, although a government investigation has not uncovered any illegal activity. Investment banks denied those charges. Stupak chairs the subcommittee on oversight and investigations under the House energy committee.

Jakob said Stupak's charge "was purely a public relation exercise to sponsor his antispeculation bill, but the risk from all this agitation from lawmakers is still to push for a CFTC reclassification of 'speculators' as well as a change of policy on limit waivers. Perversely, this might push some pension funds to buy before they are potentially not allowed to do it anymore, and we continue to witness an increase in the California Public Employees' Retirement System's [one of the largest US institutional investors] allocation to inflation assets since the pressure on the CFTC started to develop. Meantime banks buying commodities will state that they are not speculating but simply hedging Trichet."

Earlier, George Soros, a financial speculator, testified before the US Senate Committee on Commerce, Science and Transportation, about the impact of financial "bubbles" on oil markets after first warning senators, "I am not an expert in oil markets." Soros is best known for "breaking the Bank of England" on "Black Wednesday" in 1992 when he sold short some $10 billion in English pounds after the bank failed to raise its interest rates to the level of other European Exchange Rate Mechanism countries or to float its currency. The bank was forced to devalue the pound sterling, and Soros made an estimated $1.1 billion on his transactions.

Paul Horsnell, Barclays Capital Inc., London, said, "Congress must now be close to running out of room to conduct commodity bubble hearings. At the current rate of growth, a quick calculation reveals that by the end of the year, 2 out of 3 Americans will have given congressional testimony about commodities bubbles."

(Online June 9, 2008; author's e-mail: samf@ogjonline.com)

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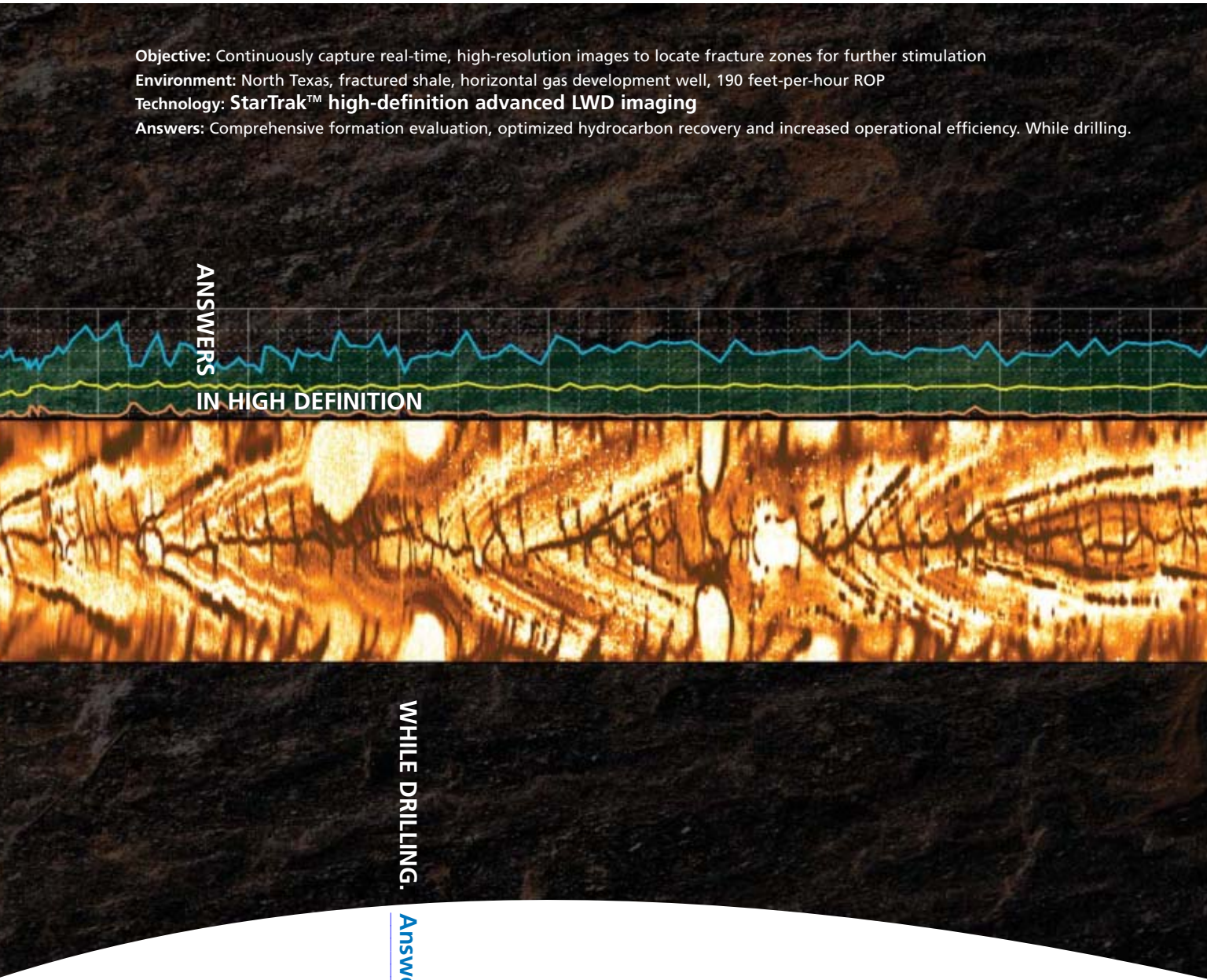

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