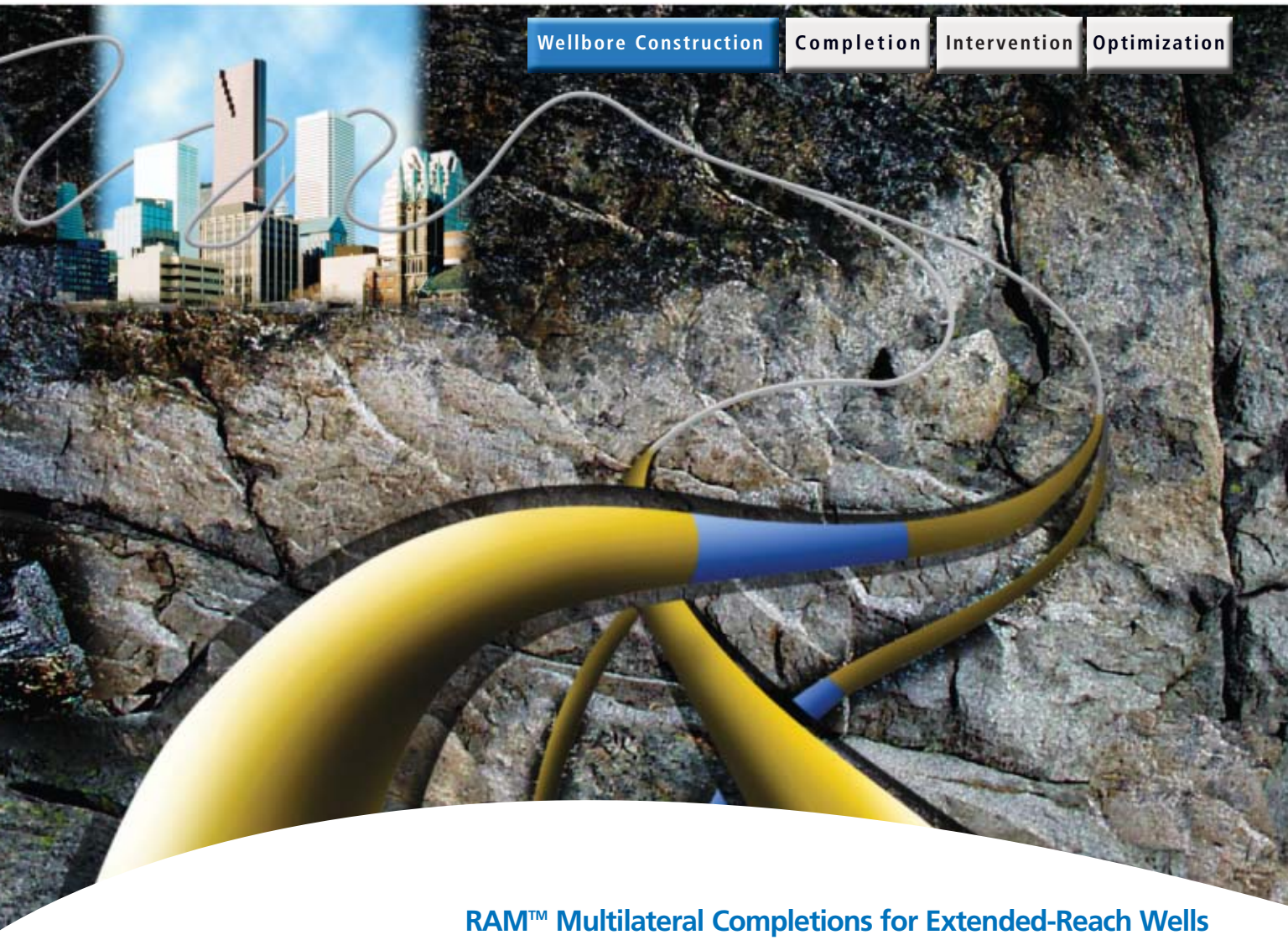
Extend Reservoir Productivity



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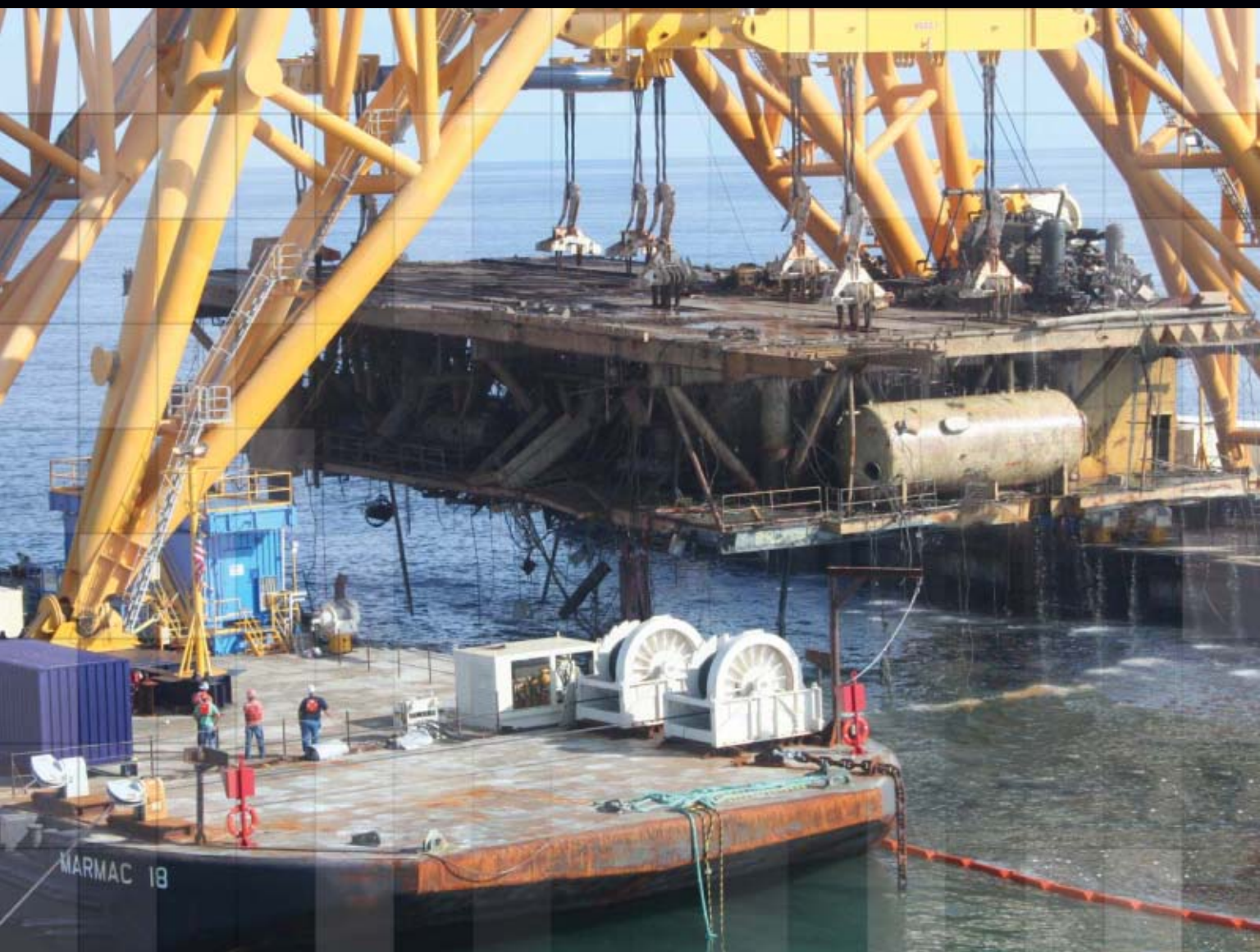

Offshore Petroleum Operations

Iranian oil industry, 100, showing wear
Caribbean's overlooked potential on N. America's doorstep
Improved US propane output blunts cold weather effects

OIL&GAS JOURNAL®

May 5, 2008
Volume 106.17

OFFSHORE PETROLEUM OPERATIONS

REGULAR FEATURES

COVER

The heavy lift "Bottom Feeder" continues to retrieve topsides sunk during hurricanes in the Gulf of Mexico. The cover shows a 1,050-ton topsides pulled out on June 30, 2007, from 247 ft of water, about 45 miles south of Louisiana (photo from Versabar Inc.). The special section on offshore petroleum operations starts on p. 53 and includes articles on the BC-10 development off Brazil, increased use of floating production systems, retrieval of sunk topsides, and the Medgaz pipelay. The photo above, taken in March, is of the Mauá shipyard (Estaleiro Mauá) on Baía de Guanabara, Niteroi, Brazil (photo by Nina M. Rach).

TWO MINUTE WARNING!

Polyguard announces RD6 - OS coating for offshore girth welds.

WARNING TO OUR COMPETITORS:

- **Your girth weld coating takes 4 + minutes to install.**
- **RD6 - OS takes about 2 minutes.**
- **Effective immediately, your system may be obsolete.**

ANNOUNCEMENT TO USERS OF OFFSHORE GIRTH WELD COATINGS:

YOUR COATING QUALITY JUST WENT UP — FOR TWO REASONS

1. In offshore pipeline construction, the rule of thumb for a 'quick lay' of pipe is four minutes. That's about the time of a welding cycle. When the welding cycle is finished, the superintendent wants to pull the next joint. If girth weld coating installation isn't complete, it slows the whole job down. There is a lot of pressure to hurry, and that can affect coating quality.

2. RD6 has demonstrated, in twenty years of use on Big Oil pipelines, that it is a non-shielding coating. CP current could reach the pipe surface if the coating were ever to disbond from the pipe surface.

YOUR PROJECT COST JUST WENT DOWN — FOR FIVE REASONS

The five reasons are — five less installation steps. RD6 - OS requires no torch. This means no preheating the steel, no heating the underlap, no heating the overlap, no heating the closure, no heating circumferentially around the pipe, no heating until recovery is complete. Far less application steps… far less possibility for human error.

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General Interest

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Drilling & Production

Processing

Transportation

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General Interest — Quick Takes

MMS approves Cascade-Chinook FPSO plans

The US Minerals Management Service has approved development plans for the Cascade-Chinook oil and natural gas project in the Walker Ridge area of the Gulf of Mexico. Cascade-Chinook lies 165 miles off Louisiana in 8,200 ft of water.

The project, operated by Brazil's Petroleo Brasileiro SA (Petrobras), will involve the first use of a floating production, storage, and offloading vessel in the gulf. "The Cascade-Chinook project will be the first production from deep discoveries in the Lower Tertiary trend of the Walker Ridge and Keathley Canyon areas of the gulf," said Lars Herbst, regional director for the MMS gulf region.

"This is an important step for Petrobras and all oil and gas operators exploring in deepwater Gulf of Mexico," Herbst said, adding, "The FPSO and many associated first-use technologies lead the way in providing the infrastructure necessary to produce safely in the gulf's ultradeep water."

The next step in the development process is the MMS review of Petrobras's deepwater operations plan, which outlines the specific details and capabilities of the FPSO facility and associated new technologies and must be approved before production can begin.

New MMS committee to revise Indian oil valuation

The US Minerals Management Service published a notice on Apr. 28 that it is forming a committee to consider recommendations for revising the rule governing valuation of oil produced from American Indian leases.

The negotiated rulemaking committee will include representatives from the federal government, Indian tribes, individual Indian owners, and the oil and gas industry, the US Department of Interior agency said. It particularly will make recommendations regarding the oil major portion provision contained in most tribal and allotted leases. Those leases define major portion as the highest price paid or offered at the time of production for the major portion of oil produced from the same field, MMS said. It has begun to take nominations for members.

The agency originally announced its intention to establish a negotiated rulemaking committee in December 2007 when it published technical corrections to the March 1988 oil valuation rule, according to MMS Director Randall B. Luthi. "Those technical corrections and the pending recommendations of the negotiated rulemaking committee will bring added certainty to the valuation of oil produced from American Indian lands and help ensure that American Indians receive the proper royalties," he said.

MMS published a proposed rule for public comment in February 2006 after a series of public meetings with tribes and individual Indian mineral holders, the agency said. It decided to make technical corrections to the current rule and convene the negotiated rulemaking committee after receiving diverse comments from tribes and the oil and gas industry.

Once the committee reaches consensus on the rule's major portion provision as well as other provisions the committee might want to address, MMS said it will use that recommendation as the basis for an amendment to the rule, which it also will publish in the Federal Register.

Global warming risks underestimated, report says

The risks of global warming were underestimated in the Stern report on climate change, its author said, and urgent action is needed to address the problem.

"However, I'm optimistic about an international agreement," said Nicholas Stern at the IHS Energy Symposium in London. He called for global leaders to agree by next year on an action plan to reduce carbon emissions and stem world temperatures.

Stern is hopeful that participants at the next environmental summit in Copenhagen will agree to such action. The 700-page report he wrote examines the economic impact of climate change and says 1.5% of the world's gross domestic product needs to be invested in stabilizing emissions at 500 ppm by 2050. "We need to move quickly," he said.

However, deforestation and agriculture are also major causes of emissions, Stern warned, and he called for urgent policies to tackle the problems. Carbon capture and storage for hydrocarbons would be important in reducing carbon emissions as would other energy sources such as nuclear and renewables, he said.

Stern recommends carbon trading and taxation, quotas, and auctions of greenhouse gas emissions, which he says are all necessary to change behaviors.

"Poor countries want flows of finance and the transfer of technology to deal with this. We need a clean development mechanism that is better than this one, which is too small and too micro."

After publishing the report 18 months ago, Stern, a former World Bank chief economist, was severely criticized for "scaremongering." He has since met with the Chinese and Indian government to discuss how they can address climate change. ✦

Exploration & Development — Quick Takes

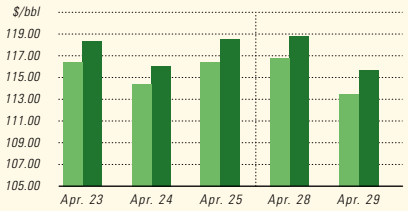
ATP, Newfield make deepwater gulf discoveries

ATP Oil & Gas Corp. recently participated in drilling two successful exploration wells in the deepwater Gulf of Mexico. One is an oil discovery, and the other is a gas-condensate discovery.

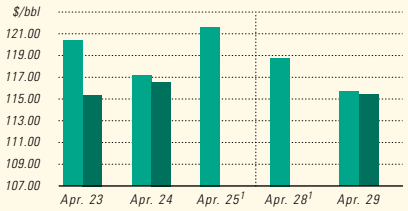
Newfield Exploration Co. operates both discoveries. The Gladden prospect on Mississippi Canyon Block 800 found 80 ft of net

Industry Scoreboard

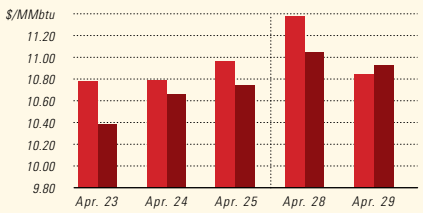
IPE BRENT / NYMEX LIGHT SWEET CRUDE



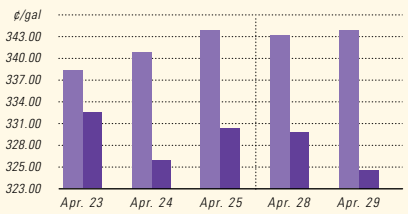
WTI CUSHING / BRENT SPOT



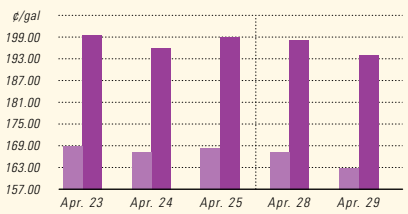
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



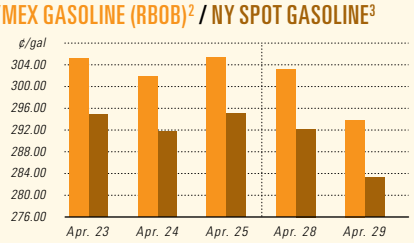
IPE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



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



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

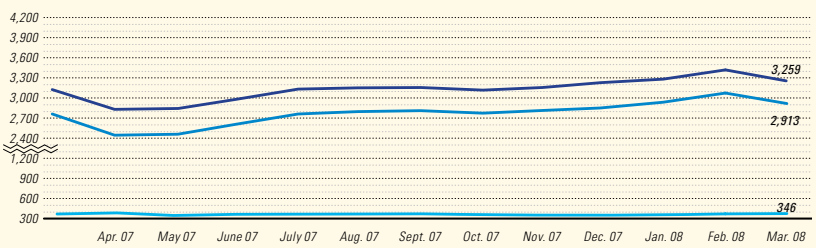
US INDUSTRY SCOREBOARD — 5/5

Latest week 4/18	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	9,292	9,207	0.9	9,060	9,061	—
Distillate	4,281	4,258	0.5	4,274	4,363	–2.0
Jet fuel	1,592	1,613	–1.3	1,577	1,609	–2.0
Residual	749	735	1.9	669	800	–16.4
Other products	4,806	4,746	1.3	4,919	4,896	0.5
TOTAL DEMAND	20,720	20,559	0.8	20,410	20,740	–1.6
Supply, 1,000 b/d						
Crude production	5,095	5,202	–2.1	5,082	5,181	–1.9
NGL production[2]	2,435	2,410	1.0	2,410	2,318	4.0
Crude imports	9,529	10,240	–6.9	9,758	9,931	–1.7
Product imports	3,299	3,649	–9.6	3,367	3,428	–1.8
Other supply[3]	1,241	672	84.7	1,164	854	36.3
TOTAL SUPPLY	21,599	22,173	–2.6	21,781	21,712	0.3
Refining, 1,000 b/d						
Crude runs to stills	14,633	14,971	–2.3	14,633	14,828	–1.3
Input to crude stills	14,809	15,315	–3.3	14,809	15,188	–2.5
% utilization	84.8	87.8	—	84.8	87.0	—

Latest week 4/18	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	316,081	313,660	2,421	334,479	–18,398	–5.5
Motor gasoline	212,572	215,751	–3,179	194,214	18,358	9.5
Distillate	104,702	106,079	–1,377	117,332	–12,630	–10.8
Jet fuel-kerosine	38,283	39.709	–1,426	40,449	–2,166	–5.4
Residual	39,415	38,339	1,076	41,266	–1,851	–4.5
Stock cover (days)[4]			Change, %		Change, %	
Crude	21.9	22.0	–0.5	22.1	–0.9	
Motor gasoline	22.9	23.3	–1.7	20.8	10.1	
Distillate	24.5	25.0	–2.0	27.2	–9.9	
Propane	24.6	20.6	19.4	23.0	7.0	
Futures prices[5] **4/25**			**Change**		**Change**	**%**
Light sweet crude, $/bbl	117.95	114.41	3.54	62.86	55.09	87.6
Natural gas, $/MMbtu	10.78	10.33	0.44	7.46	3.31	44.4

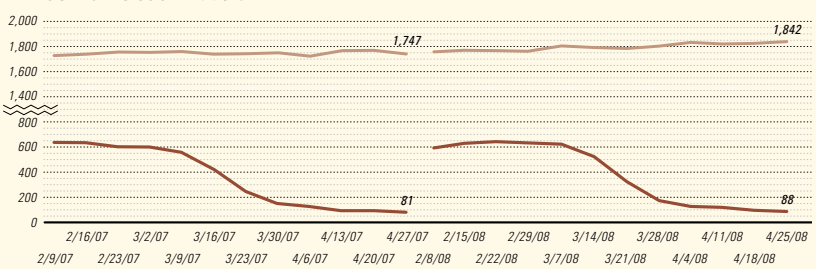
[1]Based on revised figures. [2]Includes adjustments for fuel ethanol and motor gasoline blending components. [3]Includes other hydrocarbons and alcohol, refinery processing gain, and unaccounted for crude oil. [4]Stocks divided by average daily product supplied for the prior 4 weeks. [5]Weekly average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

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



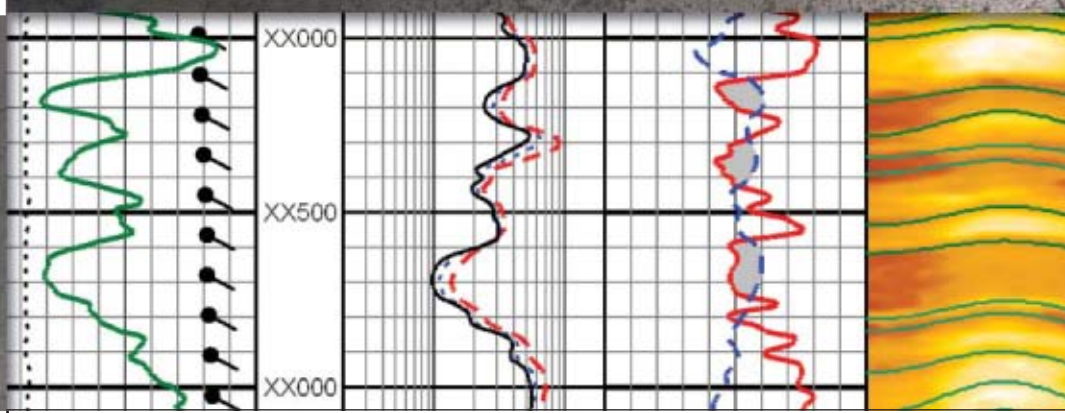
Note: Monthly average count

BAKER HUGHES RIG COUNT: US / CANADA



Note: End of week average count

Build better real-time knowledge.



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LWD world record
Gulf of Mexico, 2006

Highest dogleg:
61° per 100 ft (33 m)
LWD world record
Middle East, 2007

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oil pay. The discovery well was drilled in 3,116 ft of water, and an updip well is being drilled.

The Anduin West prospect on Mississippi Canyon Block 754 found 30 ft of net gas-condensate pay. The well was drilled in 2,696 ft of water.

The Anduin West well is being completed, and a production test is planned. ATP has a 10% working interest in Gladden and a 25% working interest in Anduin West.

Production from the discoveries is expected to begin in late 2009.

ATP's Innovator floating production platform will handle the oil and gas from both discoveries. Innovator is moored in 3,000 ft of water on Mississippi Canyon Block 711.

Innovator—a semisubmersible drilling rig previously named Midland and owned by Rowan Cos. Inc.—was acquired by ATP and converted into a floating production platform.

ATP has 100% ownership of Innovator, which handles production from Gomez oil and gas field.

Ecopetrol to evaluate Tempranillo find in Huila

Columbia's state-owned Ecopetrol will soon begin evaluating an oil and gas discovery in Colombia's southern province of Huila.

The find, the Tempranillo-1 well, was drilled in the Upper Magdalena Valley basin and is part of Ecopetrol's wholly owned 10,184-hectare Brisas-Lomalarga-Dina-Potrerillo block.

"During these tests, crude and gas flowed...without artificial assistance. The crude is light and flowed at rates that varied between 1,600-2,400 b/d," Ecopetrol said, adding that gas output averaged 2-2.75 MMcfd.

"With the results obtained in the initial tests, Ecopetrol will draft a plan to evaluate the discovery's potential, including an extensive test period that will begin in the next few weeks," the company said.

Tempranillo-1 is one of 20 wells that Ecopetrol plans to drill this year. Currently, the company produces about 19,000 b/d in Huila.

North Chilean gas flows tease March Resources

March Resources Corp., Calgary, said it is encouraged by admittedly noncommercial gas flows at its first well in northern Chile's Tamarugal basin.

The company perforated 16 intervals in four zones to evaluate gas shows and drilling breaks in the Cerro Empexa and Cretaceous Guatacondo formations at the Pica-1 well. Gas is thought to be sourced from underlying Late Jurassic Majala formation black shales. Due to limited equipment, all zones are commingled.

The well's main targets were at 2,800 m to TD 3,110 m, but two perforated intervals between 2,000 m and TD yielded no pressure increase or gas to surface.

Nine intervals were perforated at 1,500-1,800 m. Gas surfaced from each of the first four intervals perforated, but wellhead pressure was too small to measure. Gas continued to surface from the next three intervals perforated, and a small increase in surface pressure was measured, increasing as each interval was perforated and ending at 210 KPa. Shut-in pressure was 760 KPa 12 hr later.

Two intervals were perforated from the top of the Guatacondo formation at 1,350 m to a depth of 1,475 m. Gas continued to surface, but wellhead pressures started to decrease.

Three intervals were perforated at 1,040-1,150 m. Gas continued to surface, but pressure fell to 450 KPa by the end of perforating.

The last perforating tools contained fluid, but it is not known which zones may be wet or whether the fluid is from drilling or the reservoir. March plans to seek the source of the fluids and will try to establish gas flow from the intervals where it observed definitive pressure increases.

Pica-2 is drilling at 1,450 m in Cerro Empexa, and a third location is being cleared.

The Pica North and South Blocks cover a combined 2.5 million acres.

Uganda's Kingfisher appraisal well spuds

Heritage Oil Ltd., Calgary, has spud the Kingfisher-2 appraisal and exploration well in Block 3A in southern Uganda's Albert graben.

Projected TD is 4,100 m. Heritage will deviate the well from shore beneath Lake Albert to appraise reservoirs discovered at Kingfisher-1 and evaluate the deeper primary target it did not reach due to rig limits.

High case estimate for the deeper target is six times that of the most likely 118 million bbl gross volume estimated for the four secondary zones.

Kingfisher-1 tested a combined 13,900 b/d of 30-32° gravity oil with some associated wax from four intervals in 2007.

The Kingfisher structure's areal extent is put at 45 sq km based on a 325-sq-km 3D seismic survey shot in mid-2007.

Heritage's 2008 program calls for two wells at Kingfisher in Block 3A and two to three wells on Block 1 targeting relatively shallow seismic amplitude anomalies.

Heritage and Tullow Oil PLC hold both blocks 50-50. ✦

Drilling & Production — *Quick Takes*

Addax sees FPSO at Ofrima North off Nigeria

A combination of discoveries at Ofrima North 50 km south of Brass, Nigeria, justifies standalone development with a floating production, storage, and offloading vessel and subsea tiebacks, said Addax Petroleum Corp., Calgary.

Addax said its most recent discoveries "give us the critical mass required to develop a successful new standalone oil production hub" and the potential for future gas exports from OML 137. Production may be possible as early as late 2009.

The Ofrima North discovery well, Ofrima-2, cut 170 ft of gross oil-bearing interval in the H42 reservoir and gas-bearing intervals with a gross 29, 43, and 158-ft columns at shallower and deeper depths in 2007.

Ofrima-3, in 75 m of water in the field's west fault block 1.5

km west of Ofrima-2, found water in H42 and cut a gross 72 ft comprising 30 ft of light oil overlain by 42 ft of rich gas, a 50-ft gross liquids-rich gas column, and a 32-ft gross light oil column. No flow tests were run.

In the main fault block, Ofrima-3A confirmed the western continuity of the H42 oil reservoir and a common oil-water contact with Ofrima-2 about 1 km east.

The Saipem Scarabeo-3 semisubmersible has moved to drill development wells in Okwori and Nda fields 80 km east, and Addax plans to further explore and appraise the area around Ofrima North.

Petrobras orders three newbuild semis

Petroleo Brazileiro SA (Petrobras) signed three lease contracts with Seadrill Ltd. for three newbuild semisubmersible drilling rigs and a separate contract with MPF Corp. Ltd., Bermuda, for a multipurpose floater. The contracts all involve deepwater projects off Brazil, Seadrill said.

Seadrill said its lease contracts are valued at $4.1 billion total:

• One 6-year contract is for the $542 million West Eminence deepwater semi under construction at Samsung shipyard in South Korea (OGJ, Sept. 24, 2007, p. 41).

• Petrobras also signed a 6-year contract for the West Taurus, a $457 million deepwater semi under construction at the Jurong shipyard in Singapore.

Fourth-quarter delivery is scheduled for both West Eminence and West Taurus. Both contracts call for start-up of operation off Brazil in 2,400 m of water in early 2009.

• Petrobras, in addition, signed a 6-year contract for West Orion, a $532 million semi under construction at the Jurong shipyard in Singapore. West Orion is scheduled to be delivered during second-quarter 2010. The start-up of operations off Brazil in 2,400 m of water is scheduled for third-quarter 2010.

In a separate deal, Petrobras signed a $630 million contract with MPF for the 3-year lease of its new multipurpose floater MPF-01 under construction at Dragados Offshore SA's Cadiz, Spain, shipyard. The MPF production-drillship is scheduled for delivery in late 2009.

Petrobras secured an option to extend this contract for another 2 years, making the total value of a 5-year deal $965 million.

In addition, Petrobras recently signed a memorandum of understanding with Noble Corp. to extend the leases of five deepwater rigs currently drilling off Brazil—two semis and three drillships—for a period of 29 rig years at a potential cost of $4 billion (OGJ Online, Apr. 4, 2008). ✦

Processing — *Quick Takes*

QP lets work contract for refinery in Qatar

Qatar Petroleum has let an engineering contract to Axens to design processing units for a new 250,000 b/d refinery in the Messaieed Industial City in Qatar that is scheduled to start up by first-quarter 2012.

The Al Shaheen refinery will use Axens' process technologies to establish a 51,000 b/d Hyvahl vacuum residue desulfurization unit; a R2R 60,000 b/d residue fluidized catalytic cracker (RFCC); and a 30,000 b/d Prime-G+ RFCC gasoline desulfurization unit.

The refinery units, combined with advanced technologies, will make this "one of the most modern refinery complexes in the world," Axens said.

The Hyvahl unit will improve the feed quality to the R2R unit and will coproduce an upgraded diesel cut, Axens reported. Hyvahl has long cycle lengths on the 11% asphalt containing Al Shaheen VR feed because of the permutable reactor system (PRS) system. The PRS system increases hydroprocessing operations by removing particulate matter and metals in the feed, eliminating pressure drop build-up in the hydroprocessing section, it added.

The R2R RFCC is a "cold-wall construction adapted to maximize gasoline and propylene production," Axens added, and its Prime-G+ FCC naphtha desulfurization technology will enable the production of ultralow-sulfur gasoline, the company said.

Last year, QP let a lump sum front-end engineering design contract to Technip for the facility. An oil pipeline will extend from Al Shaheen oil and gas field 90 km offshore to Messaieed, 110 km onshore, as well as to other import-export facilities (OGJ Online, Aug. 31, 2007).

SK Energy builds diesel unit at Inchon refinery

South Korea's SK Energy Co. plans to build a 40,000 b/d diesel-producing hydrocracking unit at its refinery in the port city of Inchon, 40 km west of Seoul. The unit will process heavy oil into transportation fuel.

The project aims to increase exports of lighter, higher-value products to China and Southeast Asia. The new unit will produce naphtha, diesel, and kerosine using low-priced bunker-C fuel as feedstock.

SK Energy said construction on the unit, expected to cost 1.5 trillion won, is scheduled to start in June, with commercial production to go online in June 2011.

The facility will eventually increase SK Energy's overall heavy oil-processing capacity to 202,000 b/d from the current 162,000 b/d. It also will expand the ratio of SK Energy's heavy-oil processing facilities to overall refining ones to 17.6% from the current 14.5%.

In March, SK Energy completed construction of a residual fluid catalytic cracker at its 840,000 b/d refinery in Ulsan, 414 km southeast of Seoul.

The 60,000 b/d capacity unit is set to launch operations in June, when SK Energy will be operating three RFCCs with a combined capacity of 162,000 b/d.

Nippon Oil to add to Negishi refinery

Japan's Nippon Oil Corp., facing reduced domestic demand for oil products, plans to increase exports and to begin mass-producing ethyl tertiary butyl ether at yearend 2009.

The petroleum wholesaler will invest about ¥2 billion at its Negishi refinery in Yokohama to build a facility capable of turn-

ing out 100,000 kl/year of ETBE. Demand for ETBE in Japan is expected to reach 840,000 kl in 2010, based on projections for sales of biofuel.

Japan currently imports all ETBE used for biofuel, and domestic production will help reduce transport costs and carbon dioxide emissions. Nippon Oil aims to purchase bioethanol from domestic sources in Hokkaido.

Meanwhile, Nippon Oil, aiming to offset the fall in demand for oil products in the domestic market, will nearly double its oil product exports to 2.7 million kl in the fiscal year started in April.

The refiner will increase its export capacity to 260,000 b/d from 230,000 b/d by the fiscal year ending March 2011, said Nippon Oil Pres. Shinji Nishio.

Shinji said most of the planned exports, mainly kerosine, jet fuel, and gas oil, will be sold to oil traders in the Asia Pacific market.

Lummus taps GTC for BTX extraction unit

Chinese Petroleum Corp. (CPC), Taiwan, will use GTC Technology's GT-BTX extractive distillation technology as part of its No. 6 naphtha cracker and No. 7 BTX project in Lin Yuan, Kaohsiung, Taiwan.

Lummus Technology (formerly ABB Lummus Global) was awarded the overall contract for the project, which will produce 600,000 tonnes/year of ethylene (OGJ, Aug. 13, 2007, p. 10).

GTC's technology extracts high-purity benzene, toluene, and mixed xylenes (BTX) from hydrotreated pyrolysis gas.

This is the 20th license of the GT-BTX technology. ✦

Transportation — *Quick Takes*

Iran, Pakistan resume IPI gas line talks

Iran and Pakistan have restarted talks on the design and construction of the 2,700-km Iran-Pakistan-India (IPI) natural gas pipeline. India, which earlier had reservations about the project, is showing interest as well in becoming a project stakeholder.

The proposed line, which initially would transport 600 million cu m/day of gas, is scheduled for completion in 2011.

Following a recent visit of Indian Petroleum and Natural Gas Minister Murli Deora, a delegation from Iran, led by President Mahmoud Ahamdinejad, visited Pakistan to discuss the project. Ahamdinejad met on Apr. 28 with Pakistan President Pervez Musharraf and exchanged views on bilateral matters, including the IPI pipeline project.

India welcomed the Iranian president's visit and expressed hope that it would advance the project.

According to Deora, the $7.4 billion IPI pipeline deal would be "clinched soon." He said India and Pakistan were near reaching a general agreement on the transit fee. Deora added that Ahmedinejad's visit would be utilized to pave the way for trilateral talks on the deal.

Indonesia's Seroro LNG start-up delayed again

Indonesia's planned fourth LNG plant, to be built in Senoro, Central Sulawesi, will begin operations later than expected due to a disagreement over the pricing of gas for the facility.

"We have extended the target for initial production as negotiations on the gas prices have yet to reach an agreement," said Lukman Mahfoedz, president director of Medco E&P. The project partners are Mitsubishi Corp. 51%, state-owned PT Pertamina 29%, and Medco 20%.

Lukman said the Senoro facility is to start production in first quarter 2012, marking the second delay in the project, which was initially expected to go online in 2010 but was delayed until 2011 amid similar price uncertainties. Upstream regulators are still calculating the budget needed to develop the gas fields that will supply the plant.

Project partners will buy gas from two fields in Senoro. The first, on Toili block, is jointly owned by Pertamina and Medco, while the second, on Donggi block, is wholly owned by Pertamina.

Indonesia operates two LNG plants. The Arun LNG plant in Nanggroe Aceh Darussalam has a total capacity of 12.5 million tonnes/year, while the Bontang plant in East Kalimantan has a capacity of 18.5 million tpy.

A third plant in Papua, designed to have capacity of 7.6 million tpy, is due to begin operations under BP PLC by yearend.

Brazilian firm plans $1 billion ethanol line

Brazil Renewable Energy Co. (Brenco) plans to invest $1 billion to build a 1,100-km, 4 million l./year ethanol pipeline extending from Alto Taquari in Mato Grosso state to Santos—the country's largest port—in Sao Paulo state on the country's south Atlantic seaboard.

Brenco has applied to Brazil's environmental protection agency Ibama and the national petroleum agency ANP for the necessary licenses to construct the pipeline. Brenco said its line would not compete with other ethanol pipelines planned by state-owned Petroleo Brasileiro SA (Petrobras).

In addition to the Port of Santos, the pipeline will serve five other proposed terminals at Alto Taquari in Mato Grosso; Costa Rica in Mato Grosso do Sul; Paranaiba in Goias state; and Sao Jose do Rio Preto and Paulinia, both in the state of Sao Paulo.

The announcement was made as construction began on Brenco's 450-million-real sugar and ethanol mill in Alto Taquari. The facility will process 3 million tonnes of sugar cane and produce 275 million l. of ethanol by 2009.

The Alto Taquari mill will be the first of 10 units Brenco plans to build in Brazil by 2009 having a combined capacity of 3.7 billion l./year of ethanol. All of the output will be carried by the proposed ethanol pipeline, which may also ship ethanol produced by other operators in the region.

In 2007, Brazil exported just over 3 billion l. of ethanol, according to the Brazilian Development Ministry Foreign Trade Department. The Port of Santos handled some 60% of the exports, followed by the Port of Paranagua with around 23%.

The country's ethanol exports are expected to reach 3.91 billion l. in 2008-09, up 27% from the 3.1 billion l. exported in 2006-07, according to the Union of Sugarcane Industries.

Brazil's total ethanol production in 2007 was reported to be 20-22 billion l. Production is expected to exceed 100 billion l./year by 2025, according to ICIS Chemical Business. ✦


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Letters

Declining production

I reckon Thomas Wyman's letter, "A disquieting look," has factual merit, but let's not take the wrong trail (OGJ, Apr. 14, 2008, p. 12). Oil production has always declined since Drake drilled the first well. What doesn't get replaced by newly discovered, but surely more costly, reserves will be replaced by rerouting use.

Nuclear can displace a significant amount of oil and gas used for generating electricity. Coal is moving into the picture, too, but it needs the people's help. Coal was made clean and safe 25 years ago.

The Oil & Gas Journal's editorial, "Energy and the poor," had it dead center (OGJ, Mar. 17, 2008, p. 23). "The tactics governments use to implement fuel preferences raise costs more generally than [costs of specific regulations] and often more insidiously"—not to mention the reserves they keep out of the pipeline. That keeps supplies short, and the prices rise.

Toby Elster
Consulting geologist
Wichita, Kan.

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

MAY

IOGCC Midyear Meeting, Calgary, Alta., (405) 525-3556, (405) 525-3592 (fax), e-mail: iogcc@iogcc.state.ok.us, website: www.iogcc.state.ok.us. 4-6.

PIRA Canadian Energy Conference, Calgary, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 5.

API International Oil Spill Conference, Savannah, Ga., (202) 682-8000, (202) 682-8222 (fax), website: www.api.org/events. 5-8.

Offshore Technology Conference (OTC), Houston, (972) 952-9494, (972) 952-9435 (fax), e-mail: service@otcnet.org, website: www.otcnet.org. 5-8.

Calendar

GPA Permian Basin Annual Meeting, Odessa, Tex., , (918) 493-3872, (918) 493-3875 (fax), e-mail: pmirkin@gasprocessors.com, website: www.gasprocessors.com. 6.

PIRA Understanding Global Oil Markets Conference Calgary, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 6-7.

ERTC Asset Maximization Conference, Lisbon, +44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 12-14.

Oil and Gas Pipelines in the Middle East Conference, Abu Dhabi, +44 (0) 1242 529 090, e-mail: c.pallen@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk/mepipes8/mepipes8register.html. 12-14.

GPA Houston Midstream Conference, Houston, (918) 493-3872, (918) 493-3875 (fax), e-mail: pmirkin@gasprocessors.com, website: www.gasprocessors.com. 13-14.

International School of Hydrocarbon Measurement, Oklahoma City, (405) 325-1217, (405) 325-1388 (fax), e-mail: lcrowley@ou.edu, website: www.ishm.info. 13-15.

Uzbekistan International Oil & Gas Exhibition & Conference, Tashkent, +44 207 596 5016, e-mail: oilgas@ite-exhibitions.com, website: www.ite-exhibitions.com/og. 13-15.

NPRA National Safety Conference, San Antonio, (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npradc.org. 14-15.

IADC Drilling Onshore America Conference & Exhibition, Houston, (713) 292-1945, (713) 292-1946 (fax); e-mail: conferences@iadc.org, website: www.iadc.org. 15.

SPE Digital Energy Conference, Houston, (972) 952-9393, (972) 952-9435 (fax), e-mail: service@spe.org, website: www.spe.org. 20-21.

Mediterranean Offshore Conference & Exhibition (MOC), Alexandria, Egypt, + 39 0761 527976, + 39 0761 527945 (fax), e-mail: st@ies.co.it, website: www.moc2008.com. 20-22.

NPRA Reliability & Maintenance Conference & Exhibition, San Antonio, (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npradc.org. 20-23.

Society of Professional Well Log Analysts (SPWLA) Annual Symposium, Edinburgh, (713) 947-8727, (713) 947-7181 (fax), website: www.spwla.org. 25-28.

Middle East Refining and Petrochemicals Conference & Exhibition, Bahrain, +973 1755 0033. +973 1755 3288 (fax), e-mail: mep@oesallworld.com, website: www.allworldexhibitions.com. 26-28.

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

SPE International Oilfield Scale Conference, Aberdeen, (972) 952-9393, (972)

Calendar

952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 28-29.

The CIS Oil and Gas Summit, Paris, +44 (0) 207 067 1800, +44 207 430 0552 (fax), e-mail: l.hannant@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk/summit8/summit8register.html. 28-30.

JUNE

ERTC Management Forum, Copenhagen, +44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 2-4.

Caspian Oil & Gas Exhibition & Conference, Baku, +44 207 596 5016, e-mail: oilgas@ite-exhibitions.com, website: www.ite-exhibitions.com/og. 3-6.

Oklahoma Independent Petroleum Association (OIPA) Annual Meeting, Dallas, (405) 942-2334, (405) 942-4636 (fax), website: www.oipa.com. 6-10.

SPEE Society of Petroleum Evaluation Engineers Annual Meeting, Hot Springs, Va., (713) 651-1639, (713) 951-9659 (fax), e-mail: bkspee@aol.com, website: www.spee.org. 7-10

PIRA Scenario Planning Conference, London, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 9.

Asian Geosciences Conference & Exhibition, Kuala Lumpur, +44 (0) 20 7862 2136. +44 (0) 20 7862 2119, e-mail: geoasia@oesallworld.com, website: www.geo-asia.com. 9-11.

Independent Liquid Terminals Association (ILTA) Annual Operating Conference & Trade Show, Houston, (202) 842-9200, (202) 326-8660 (fax), e-mail: info@ilta.org, website: www.ilta.org. 9-11.

SPE Tight Gas Completions Conference, San Antonio, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 9-11.

EAGE/SPE EUROPEC Conference & Exhibition, Rome, +31 30 6354055, +31 30 6343524 (fax), e-mail: eage@eage.org, website: www.eage.nl. 9-12.

ASME Turbo Expo, Berlin, (973) 882-1170, (973) 882-1717 (fax), e-mail: infocentral@asme.org, website: www.asme.org. 9-13.

PIRA London Energy Conference, London, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 10.

Asian Oil, Gas & Petrochemical Engineering Exhibition, Kuala Lumpur, +44 (0)20 7840 2100, +44 (0)20 7840 2111 (fax), e-mail: oga@oesallworld.com, website: www.allworldexhibitions.com. 10-12.

Global Petroleum Show, Calgary, Alta., (403) 209-3555, (403) 245-8649 (fax), website: www.petroleumshow.com. 10-12.

IADC World Drilling Conference & Exhibition, Berlin, (713) 292-1945, (713) 292-1946 (fax); e-mail: conferences@iadc.org, website: www.iadc.org. 11-12.

PIRA Understanding Global Oil Markets Conference, London, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 11-12.

Asia's Subsea Conference & Exhibition, Kuala Lumpur, +44 (0)20 7840 2100, +44 (0)20 7840 2111 (fax), e-mail: subsea@oesallworld.com, website: www.subseaasia.org. 11-13.

✦Russia and CIS Oil & Gas Investment and Finance Forum, London, +44 (0)20 7878 6888, website: www.C5-Online.com/OilGasFinance. 16-17.

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.

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.

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

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

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.

Calendar

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

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) 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.

FEDERAL MINISTRY OF ENERGY
Office of the Honourable Minsister of State for Energy (Gas)

NIGERIAN NATIONAL PETROLEUM CORPORATION

REPOSITIONING FOR GROWTH: NIGERIA ROLLS OUT ITS GAS POTENTIALS

The Nigerian Gas Master Plan Investors Road Show 2008

Abuja 15th May **London** 19th May **Singapore** 23rd May

The Federal Ministry of Energy (Gas) and the Nigeria National Petroleum Corporation (NNPC) invite interested investors in the gas sector to the Nigerian Gas Investor roadshow. Nigeria is set to reposition its gas sector for aggressive growth in both domestic and export market. To drive this growth, the government recently approved the first Nigerian Gas Masterplan. The investor roadshow will showcase investor opportunities inherent in this masterplan. The event aims to:

- Present Nigeria's $20-$30bn strategic gas infrastructure blueprint that will anchor the aggressive utilization of its over 185 TCF proven gas reserves and over 150+TCF undiscovered reserves
- Outline investor opportunities in the rapidly growing gas sector
- Present an overview of the investment climate in the Nigerian economy and the gas sector including regulatory, fiscal and commercial framework for investment
- Outline the selection process for investors in the Nigerian gas infrastructure
- Foster network and partnership with other potential investors

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We invite you to learn more about the investors road show by visiting
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Questions about surveys

Leena Koottungal
Survey Editor/
News Writer

Oil & Gas Journal editors receive questions every day from readers and researchers. The inquiries usually involve the industry or OGJ-related matters.

The question that floods this editor's Outlook inbox and keeps the voicemail red-light indicator on is: How are the surveys conducted?

Steps

It all begins with communication. A comprehensive collection of contact information for each survey is updated regularly. The databases contain phone and fax numbers, e-mail and business addresses, dates of previous responses, and other company information.

The survey forms and a letter describing the intensive industry study are typically e-mailed to the contacts about 4 months prior to the publication date. The letter also states the response deadline, which is about 2 months before the issue is published. Previous responses or the company's data in the latest survey are provided when requested.

The forms and letter are sent by mail when the contact prefers or when an e-mail address is unavailable. This mailing includes a postage-paid business reply envelope.

Contacts who have not submitted data receive a reminder with the survey forms about 3 weeks before the deadline. When the deadline arrives, this editor attempts a third round of reminders, phone calls mostly, to the major companies, contacts that planned on responding but forgot, and late responders. The aim of this aggressive follow-up effort is to keep from simply rolling a company's data over from the previous year's survey.

Responses go into Excel spreadsheets. The presentation editors then format the tables and create electronic pages available online to subscribers.

The OGJ Online Research Center also formats the spreadsheets but keeps the files in Excel arrangement. These are available for purchase.

More questions

Other popular questions are: How do I access the surveys? Can you walk me through your web site to view the surveys? How do I purchase the surveys in Excel? What does the construction survey include? When will the survey be up?

Readers can access the surveys at www.ogjonline.com. Go to the Current Issue box on the left side of the screen, and click on the ninth bullet, OGJ Subscriber Surveys. This link provides a list of the following surveys: OGJ 200/100 (the OGJ 200 is conducted by Statistics Editor Laura Bell), Worldwide Construction (semiannual), Worldwide Gas Processing, Worldwide Refining, Worldwide Production (conducted by Senior Editor-Economics Marilyn Radler), Ethylene, Worldwide EOR (biennial), and Catalyst Compilation (biennial). Click on a survey link from the list. For example, clicking on Worldwide Gas Processing takes the reader to the latest report as well as previous editions of the survey.

The link above the survey list, Surveys and Reports in Excel, leads to order forms and instructions on purchasing spreadsheet versions of the data. The direct web address is: www.ogj.com/resourcecenter/orc_survey.cfm. Free samples are also downloadable from this site. For more information on the Excel versions, call 918-831-9488, or e-mail the Online Research Center at orcinfo@pennwell.com.

The twice-yearly Worldwide Construction Update surveys provide project information in the areas of refining, petrochemicals, gas processing, LNG, gas-to-liquids and other gas, sulfur, and pipelines. Details include the company and location, project type, added capacity, status (planning, engineering, under construction), expected completion date, and contractor and contract type.

Also included is a project-notes column. This section provides additional information on the construction project and varies with the thoroughness of responses. It specifies whether a project is new or an expansion. It also mentions upgrades and revamps. Investors, project cost in US dollars, and other details are listed if available.

Editorial Calendar

To see when surveys will appear in OGJ, check the Editorial Calendar online. Click on the second bullet, Media Kit, in the Current Issue box. Go to the Additional Information box, and click on Editorial Calendar to look at the weekly special report topics with brief descriptions.

This editor has answered some of your questions, so please answer OGJ's—on the survey forms. ✦

Editorial

Energy trade and security

Given the concern they profess for energy security, Democrats in the US Congress—including the two seeking their party's presidential nomination—should act thoughtfully rather than scornfully on international trade. Energy security and free trade are connected in ways that shouldn't be ignored.

Hoping to be president, Sens. Hillary Clinton of New York and Barack Obama of Illinois have entered a contest of revulsion toward the North American Free Trade Agreement. Obama asserts that NAFTA is bad for the US but says he would fix rather than repeal it. Clinton also promises to fix the agreement but must deal with her own past enthusiasm for the pact, an achievement of her husband's presidency. There have been reports that one side or the other is really just posturing for support from labor unions so no one interested in trade needs to worry—reports promptly denied, of course.

No comfort

Apparently, a trading partner to the north takes no comfort from those assurances. In an annual meeting of the leaders of Canada, Mexico, and the US last month, Canadian Prime Minister Stephen Harper responded to the Democrats' chatter about renegotiating NAFTA by flexing his country's oil muscle. Noting that Canada is the premier supplier of energy to the US, Harper said that if NAFTA renegotiation became necessary, "We would be in an even stronger position now than we were 20 years ago, and we will be in a stronger position in the future."

Harper and Mexican President Felipe Calderon both called for damage control on another trade initiative Democrats want to wreck: the Colombia Free Trade Agreement (CFTA). Democratic House Speaker Nancy Pelosi of California on Apr. 10 changed procedural rules to block a vote on CFTA, to which the US agreed in 2006 after negotiations conducted under a now-expired law designed to expedite approval of trade deals.

Pelosi has long opposed CFTA, claiming it hurts US workers and doesn't hold Colombia accountable for human rights violations and labor-related violence. Her objections are hollow. If anything, CFTA favored the US in its already-fluid trade with Colombia. And the Latin American country not only has made progress in human issues and the rule of law but also wants to solidify relations with the US in response to the growing menace of nearby Venezuela. Pelosi's maneuver rebuked an important ally and oil supplier and weakened US leadership on trade.

Continuing her assault on US economic interests, Pelosi on Apr. 22 sent a letter asking President George W. Bush to support three bills he has threatened to veto. One of them, the No Oil Producing and Exporting Cartels Act, would let the Department of Justice bring antitrust action against the Organization of Petroleum Exporting Countries. Passage of the bill would be a clumsy and heavy-handed way to deal with OPEC and a sound reason for its members to shy away from the enormous investments energy consumers need them to make in future oil supply.

A more-constructive way to respond to OPEC would be to compete. But competition requires new oil and gas production in the US, which depends on increased leasing of federal land. Democrats show nothing but disdain for leasing and thus for domestic oil and gas supply.

Crimping supply

Americans dislike their dependence on foreign oil, especially OPEC oil. But they like energy security. The latter can't be achieved in isolation from the former; assertions to the contrary are fantasies promulgated by political opportunists. The US does and will continue to rely on imported oil and needs to view oil in trade—oil from producers with strong motivation to sell—as a vital element of energy security. It needs to treat oil as a component of trade in general, which should be promoted as essential to national economic and security interests.

Congress should be encouraging US competitiveness and the development of all economically sensible and quantitatively meaningful energy sources. The hostility now on display toward trade, resource development, and commercial energy sources promises only crimped supply, rising cost, and diminished American credibility. ✦

COMMENT

Iranian oil industry, 100, showing wear

Mansour S. Kashfi
Kashex International Consulting
Dallas

The Iranian oil and gas industry approaches its 100th anniversary bloated, corrupt, and nearly bankrupt, managing four times the employees but two-thirds the oil production it had before the Islamic Revolution of 1978-79.

The industry began life on May 26, 1908, when William K. D'Arcy discovered commercial amounts of oil in southwestern Iran, giving rise to Anglo-Persian Oil Co., later called Anglo-Iranian Oil Co. Its history, characterized by stormy relations between the Iranian government and international oil companies, includes nationalization, participation in the formation of the Organization of Petroleum Exporting Countries, growth coupled with technological advance, and eventual decline.

It's a history that demonstrates the benefits a healthy oil and gas industry can bring to a country rich with hydrocarbon resources. It's also a history that shows the regrettable results of mismanagement by a revolutionary regime concerned more about political control than about economic performance.

Route to nationalization

Nationalization of the Iranian oil industry followed years of unsuccessful negotiations between the government and Anglo-Iranian Oil.

Throughout the global economic depression of the decade before World War II, the government sought a greater share of revenue from oil produced in Iran, eventually settling for an increase of only 2 British shillings/tonne of exported oil. Its efforts to secure a fair share of oil revenue during and after the war failed.

From the Iranian viewpoint, Anglo-Iranian Oil sought only to prolong the colonization of Iranian oil rather than to commercialize it, making nationalization inevitable. The government acted on Mar. 20, 1951, with the formation of National Iranian Oil Co. (NIOC).

For more than 3 years after nationalization, the entire Iranian petroleum industry was shut down, and Abadan refinery, the largest in the world at that time, remained idle. The crisis ended with a change of administration in Iran and a new agreement with not only Anglo-Iranian Oil's successor, British Petroleum Co., but also the largest international oil companies—the so-called seven sisters.

The companies formed the Iranian Oil Consortium in October 1954 to work in partnership with NIOC. Their shares were BP 40%;

FEATURES IN IRAN'S OIL HISTORY

Source: M. Kashfi; base map from US Energy Information Administration

Royal Dutch Shell 14%; Standard Oil Co. of California, Standard Oil Co. of New Jersey, Texas Oil Co., Gulf Oil Co., and Mobil Oil Co. 8% each; and French Oil Co. 6%. Once again Iranian oil started to flow.

The Iranian share of profits in the consortium agreement was not impressive by modern standards, barely matching Aramco's 50-50 profit-sharing agreement in Saudi Arabia. However, Iran's success in nationalization of its oil industry became a model for other oil-producing countries, particularly the Arab producers in the Persian Gulf region, which nationalized their oil industries in the following years.

Era of development

From 1954 onward was an era of construction and economic development in Iran. The successful application of nationalization and the recapture of oil wealth inspired Iranians and stimulated economic expansion for a quarter of a century.

In 1957, the government of Iran established a new standard for oil agreements worldwide: the principle of 50-50 profit sharing plus 25% income tax payable by international oil companies. Thus was the concept of 75-25 profit sharing created.

Agip and Pan American Oil Co. were the first companies to participate with NIOC on the basis of the 75-25 contracts. This kind of agreement, although not popular with international oil companies, caught on quickly in oil-producing nations.

In the following years, NIOC captured parts of the East European markets, to the dissatisfaction of major oil companies. Iran also quickly recognized the value of the gas that had been flared under the consortium contract. Under an unprecedented agreement with the former Soviet Union, Iran began to export moderate volumes of gas in exchange for its first large steel mill.

In 1973, after long and difficult negotiations, the government dissolved the consortium, 6 years before the termination date of the original agreement. With that act the Iranian oil industry became nationalized not only officially but in practice as well. NIOC became the essence of the oil industry in Iran and took on the responsibilities and challenges that went with a modern and well-established oil company.

The company had grown from a passive office in 1951 after nationalization to an active, mature, and well-respected international oil company in 1973. Its managerial team by then was well-trained and experienced.

After 1973, Iranian oil production easily surpassed 6 million b/d, and NIOC kept an average of 52 drilling rigs active in the Zagros fold belt (see map). New pipelines were laid to refineries and exporting terminals. Nine well-maintained refineries were in operation, and two more were near completion, with total capacity reaching more than 1.58 million b/d. The largest and the most modern terminal (Azarpod) in the region was constructed in the Persian Gulf to accommodate very large crude carriers.

Also in the early 1970s, NIOC expanded internationally, investing heavily in refinery construction in South Korea, India, Senegal, and South Africa under agreements to provide crude oil to the new facilities. NIOC also signed a preliminary agreement to enter US markets to refine crude and distribute products.

All of this was accomplished while Iran played a leading role in decision-making by OPEC, which it helped found in September 1960.

Revolution, destruction

The Islamic Revolution changed everything. A healthy, economically sound oil industry gradually ceased to exist. Production of over 6 million b/d dived to below 3 million b/d after the revolution and never reattained its prerevolution peak. Experienced and well-trained oil workers from all levels in every industry sector were arrested or terminated; many fled the country to escape execution.

Before these chaotic acts of retaliation showed any sign of abatement, the 8-year war with Iraq began with an Iraqi invasion in September 1980. A result of this nonsensical conflict was the destruction of the Abadan refinery, the Kermanshah refinery near the Iraqi border, many miles of pipelines and oil field installations, particularly in southwestern Iran, and major production platforms in the Persian Gulf.

Twenty years after the war ended, the damage to the oil industry is still evident. Hardly any of the affected installations have been replaced or repaired by the Islamic regime.

Currently, oil production is barely 3.8 million b/d, declining at an average rate of at least 200,000 b/d/year (OGJ, Feb. 10, 2003, p. 20). Lack of regular maintenance and rare replacement of worn-out parts and equipment for the past 29 years have caused much irreversible damage to the Iranian oil industry. Uncontrolled production during the war with Iraq and in the aftermath, lack of investment and introduction of new and modern technologies to the Iranian oil industry, and—most of all—ever-increasing sanctions by the western powers and by the United Nations Security Council coupled with poor management with roots in bribery and corruption, have driven the Iranian oil industry to the brink of bankruptcy (OGJ, Jan. 28, 2008, p. 20).

The throughput capacity of the refineries in Iran has been so limited that the Islamic Republic has been forced to import petroleum products, including gasoline, from foreign producers in order to meet public needs. To make the situation worse, presently there is only one gas station in Iran for every 37,000 automobiles, far below the ratios of other oil-exporting countries.

NIOC changes

NIOC before the revolution was a very effective organization with a well-functioning management. It operated efficiently not only in refining but also in production, petrochemicals, natural gas, domestic performance, and international marketing.

It accomplished all this with merely 32,000 employees. Presently, with the creation of the Ministry of Petroleum in addition to NIOC, a near-bankrupt oil industry is struggling to survive with nearly 112,000 employees.

In the name of privatization, the Islamic Republic divided NIOC into pieces, each given to an individual affiliated or ideologically associated with the regime. In most cases, each sector registered under a new company outside of Iran.

Many formally named and unnamed oil companies and petroleum-oriented businesses have been established under the regime for the sole purpose of collecting bribes under the guise of commissions in order to prepare and fix contracts with the Ministry of Petroleum. Under these conditions one has to be connected to the system to be successful. The connection too often requires illicit payments.

In a well-publicized example, Statoil of Norway in 2006 acknowledged the payment of bribes in 2002 and 2003 to an Iranian official to secure a development contract for part of offshore South Pars gas field. The company paid fines and disgorgements in the US and Norway totaling $21 million and submitted to a 3-year deferred-prosecution agreement.

Last year, top executives of Total came under formal investigation by French authorities for suspected bribes paid in 1997 in connection with contracts for two South Pars development phases. Total in March 2007 acknowledged the investigation and said the agreements under investigation complied with "applicable law." France didn't totally prohibit the payment of bribes until 2000.

The oil ministry of the Islamic Republic has a section under the name of "office" for foreign negotiations and contracts. NIOC, now part of the ministry, has a similar department that independently negotiates and signs contracts with foreign oil companies. Therefore, one organization has different offices for the same purpose.

Often a contract is awarded to an unqualified domestic "oil company" to carry out a specific assignment. The "oil company" then delegates the assignment to an inexperienced foreign company of East Asian origins, awarding a much cheaper—possibly half the original—amount while appropriating the remainder for itself. This results in a great setback for the Iranian oil industry. All of these corrupt actions are knowingly carried out to benefit only a small group within the system.

Iran's corruption is widely acknowledged. In the 2007 Corruption Perceptions Index published by Transparency International, the country scored 2.5 on a scale in which 10 means "highly clean" and 0 means "highly corrupt." Other countries receiving that score were Burundi, Honduras, Libya, Nepal, Philippines, and Yemen.

The Iranian regime's deceptions extend to oil and gas reserves disclosures. While most oil-producing countries publish estimates of their proved reserves periodically, state-controlled firms in Iran, such as NIOC, do not let outsiders verify their extremely inflated estimates (OGJ, Nov. 1, 2004, p. 20). Oil industry authorities in the Islamic Republic, in order to secure loans from international monetary organizations, to attract private investors and major companies, and inflate Iran's production quota in OPEC, have always provided false reserves information. Further, reserves estimates are used as political tools, bolstering power and prestige for the Islamic Republic.

There is a massive managerial vacuum in Iran due to a bureaucratic and hierarchical decision-making structure and the fact that many decision-makers are not necessarily appointed for their managerial competence. Because only a few leaders in the Islamic Republic control the wealth, the system is incompetent and open to abuse.

Shrinking income

Oil accounts for about 90% of Iran's hard-currency income. Increased oil prices in the last several years have encouraged many members of OPEC to invest this extra cash flow in their own petroleum infrastructures.

Iran and Venezuela are exceptions. For the past 29 years, Iran has produced an average of 3.395 million b/d of oil and exported an average of 2.445 million b/d. The average export per year has been 892.425 million bbl. The Islamic Republic thus has sold 25,880,325,000 bbl of crude oil in the past 29 years at an average price of $30.96/bbl, earning more than $801.2 billion.

Where has this huge amount of money gone? Certainly, none of it was invested in Iranian oil infrastructure, which badly needs renovation and repair, upstream and downstream.

The Islamic regime of Iran is one of a few governments that the world community has accused of promoting international terrorism, purchasing and storing weapons of mass destruction, and abusing human rights. Critics, including western democracies, believe oil revenues are making these programs possible.

No one can recall any part of the world where a country so rich in manpower and natural resources (about 10% of total world oil and about 17% of total world gas reserves, according to official estimates) and with such a huge well-educated middle class, has experienced such a profound and rapid deterioration of its living standards as Iran has since the revolution of 1979. ✦

The author

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House SPR oil purchase hearing splits along party lines

Nick Snow
Washington Editor

Democrats and Republicans at an Apr. 24 US House committee hearing on continuing oil purchases for the Strategic Petroleum Reserve when prices are breaking records disagreed on which government policies send the wrong signals to markets.

Democrats on the Select Committee on Energy Independence and Global Warming said suspending purchases for the SPR would effectively ease upward price pressure by sending more oil onto global markets instead of into storage (OGJ Online, Apr. 25, 2008). Republicans responded that authorizing leasing with appropriate environmental safeguards within the Arctic National Wildlife Refuge and on more of the Outer Continental Shelf would be even more effective.

Witnesses testifying before the committee offered recommendations ranging from generating more research and development funding by exchanging some light, sweet crude in the reserve for heavier grades to adjusting scheduled deliveries of royalty in-kind crude so that continuing to fill the SPR would cost less money.

Democrats on the committee said it made no sense to continue buying crude for the reserve when prices are so high. "When your house is on fire, it's insane to increase your insurance instead of grabbing a hose and turning on the water," said Rep. Jay Inslee (D-Wash.).

Committee chairman Edward J. Markey (D-Mass.) urged the administration of President George W. Bush not only to suspend SPR purchases, but to release crude from the reserve. "If President Bush were to announce his intention to release oil from the [SPR] today, it would put an immediate end to the speculative feeding frenzy that is driving up prices," he said in his opening statement.

'The biggest problem'

F. James Sensenbrenner (R-Wis.), the committee's ranking minority member, said, "I don't know whether tapping the SPR would have an effect on gasoline prices. I do know that the biggest problem is a lack of domestic supply. Congress has closed off ANWR, most of the OCS, and much of the Rocky Mountains. It has tried to take tax breaks away from domestic producers. In short, it has voted down every measure which would have increased US production."

John J. Hall (D-NY) said, "We are, in fact, working on increasing domestic production of other fuels to reduce our dependence on oil which has so many adverse consequences. There are a lot of new energy sources coming into play with the financial incentives we have enacted."

But John B. Shadegg (R-Ariz.) said upward pressure on gasoline prices would best be reduced by increasing domestic oil supplies. "I agree that we need to develop alternative forms of energy, but every expert who has appeared before this committee has said that the US economy will be oil-based for the next 30 years at least. We have already sent the wrong kind of signal to speculators by locking up so much of our domestic resources on the OCS and in the Intermountain West," he said.

Democrats said legislation is needed to limit financial speculators' impacts on oil markets. "We have heard from a number of oil and gas executives about the role of speculators and greed in driving the price at the pump up, especially for home heating oil," said John B. Larson (D-Conn.).

Inslee added that the US Commodity Futures Trading Commission's authority needs to be expanded so it can regulate over-the-counter energy commodity transactions. He said that HR 594, the Prevent Unfair Manipulation of Prices (PUMP) Act which Rep. Bart Stupak (D-Mich.) has introduced, should be seriously considered.

'Not the entire story'

One witness questioned committee members' focus on market speculators. "They're not the entire story," said Kevin Book, senior vice-president for energy policy, oil, and alternative energy at Friedman, Billings, Ramsey & Co. in Arlington, Va. "In tight markets, refiners have to bid up the price of crude to continue operating. The SPR's existence keeps them from hoarding by allowing them to maintain lower inventories," he said.

Growing global demand for oil, particularly in China, India, and other economically emerging nations, amid limited supplies is the main reason crude prices have climbed so dramatically, Book said, adding, "Simply put, these economies have entered into their energy adolescence."

But Mark Cooper, research director at the Consumer Federation of America in Washington, DC, contended that producing nations and integrated oil companies' refusals to invest in new production and refining capacity has been primarily responsible. "In a well-functioning market, growing demand does not produce the kinds of price increases that we have seen," he said. The SPR's size relative to the global oil market is so small that suspending purchases or releasing inventory would have little impact on prices, he added.

Dave Berry, vice-president of Swift Transportation in Phoenix, who testified on behalf of the American Trucking Association, said the trade association has previously recommended suspending SPR oil purchases and releasing inventory to ease the impact of high prices. But he also said that other measures are needed, including increased domestic oil and gas development, more refin-

ing capacity, sensible renewable fuels strategies, and a single national diesel fuel standard.

Congress also should consider instituting a nationwide 65 mph speed limit to reduce demand, Berry told the committee. It already has asked the administration to require that all new trucks be equipped with factory-installed devices that electronically limit the vehicle's speed to 65 mph, he said. "The users also need to be included in research and development discussions. Some of them are coming up with fabulous ideas already," he said.

SPR management measures

Two other witnesses said the Bush administration could take other steps to manage the SPR more effectively. Frank Rusco, acting natural resources and environment director at the Government Accountability Office, said the congressional watchdog agency has found that if DOE had used a steady dollar value instead of volume goals to fill the SPR from October 2001 through August 2005, it could have reduced fill costs by $590 million, or more than 10%.

"I think there has been opposition because DOE has used royalty in-kind oil to fill the SPR since 1999. There has been no coordination between DOE and the Department of Interior on this. There could be a cost benefit in DOI's deferring deliveries when prices are high and accelerating them when prices are low," he told the committee.

Melanie A. Kenderdine, associate director of the Massachusetts Institute of Technology Energy Initiative, said the RIK program was effective when low oil prices threatened to shut in domestic production in 1999. Energy secretaries Bill Richardson and Spencer Abraham each directed the SPR office to defer deliveries when prices started to climb, she said.

"We also need new ways to finance the research, development and demonstration of key technologies to enhance our energy security and sustainability and mitigate the impacts of climate change," Kenderdine said. She listed

three specific steps: an outright sale of 40 million bbl from the SPR (which would produce almost $4.5 billion in new revenues), suspending the RIK program in ways that reduce a positive budget score which could generate at least $1 billion of new funding for carbon sequestration and energy efficiency programs, and exchanging 50 million bbl of light, sweet crude in the reserve for heavy oil on the market which, if done correctly, could net $500 million without reducing the SPR's overall size.

Markey said that steps clearly need to be taken. "We have the worst of both worlds right now: wasting taxpayers' money buying oil at record-high prices and putting upward pressure on those prices with our purchases," he said. Following the hearing, he told OGJ that he had not invited anyone from the Bush administration to testify that day. "But I plan to in the very near future," he said. ✦

Bush to Congress: remove obstacles to raise oil, gas supplies

Nick Snow
Washington Editor

US President George W. Bush urged Congress to send a positive signal to world energy markets by removing obstacles to more domestic oil and gas production. He also rejected calls to quit filling the Strategic Petroleum Reserve while oil prices are near record levels but said he would consider suspending the federal gasoline tax through the summer and other proposals.

"If Congress is truly interested in solving the problem, they can send the right signal by saying we're going to explore for oil and gas in the US territories, starting with [the Arctic National Wildlife Refuge]," Bush told reporters at an Apr. 29 press conference.

"If we're generally interested in moving forward with an energy policy that sends a signal to the world that... we're going to become less reliant on foreign oil, we can explore at home as well as continue with an alternative fuels program," Bush said.

Congressional Democratic leaders immediately dismissed Bush's proposal. "Only President Bush could allow 'Big Oil' to write our nation's energy policy, guarantee billions in oil tax breaks and refuse to stand up to [the Organization of Petroleum Exporting Countries], and then shirk responsibility for [gasoline] prices that have more than doubled and oil prices that have quadrupled since he took office," Senate Majority Leader Harry M. Reid (D-Nev.) said.

"President Bush's 'Rose Garden' rhetoric will not lower gas prices for Americans struggling in a weakening economy. He must work with Democrats in Congress to invest in renewable energy and lessen our dependence on oil," Reid said in a written statement.

'Same failed energy policy'

House Speaker Nancy Pelosi (D-Calif.) termed Bush's call for more domestic drilling "the same failed energy policy that has brought record gas prices." She said, "Drilling has increased dramatically since 2000—the number of wells on land has increased about 66%—and yet the price of gasoline has more than doubled since President Bush took office."

Authorizing leasing within ANWR would not significantly reduce US dependence on foreign oil or reduce retail gasoline prices, Pelosi said. "Experts have concluded that opening up the Arctic for drilling would produce only a 6-month supply of oil 10 years from now [but] nothing that will help consumers today," she said.

Bush said a major reason for higher gasoline prices is that global oil production has not kept pace with growing demand. "Members of Congress have been vocal about foreign governments increasing their oil production. Yet they have been just as vocal in opposition to efforts to expand our production here at home," he said.

Bush said the US Department of Energy estimates that ANWR contains enough crude to allow US production to grow by about 1 million b/d, "which translates into 27 million gal of gasoline and diesel every day."

Bush said the country is making a transition to "a new era where we're going to have batteries in our cars that allow people to drive 40 miles on electricity." There will be more ethanol and alternative fuels, he said. "But in the meantime, we need to be sending a signal to the world markets that we intend to explore here in America."

Expand refining capacity

Bush said, "We can also send a clear signal that we understand supply and demand, and then when you don't build a refinery for 30 years, it's going to be a part of restricting supply. And therefore, we ought to expand our refining capacity by permitting new refineries and getting after it quickly."

Pelosi urged Bush to suspend oil purchases for the SPR before and after his press conference, but the president rejected the idea. Buying crude for the reserve represents 0.1% of total global demand, he said. "I don't think it's going to affect price when you affect 0.1% and I do believe it's in our national interest to get the SPR filled in case there's a major disruption of crude oil around the world," he said.

A full SPR is particularly necessary because Al Qaeda believes an attack on a major overseas oil production facility would disrupt US and other nations' economies, according to Bush. He said he does not see any cost benefits from suspending crude oil purchases for the reserve but feels "it costs you oil in the case of a national security risk."

Pelosi responded, "Contrary to the

WATCHING GOVERNMENT

Nick Snow, Washington Editor

Momentum builds for SPR bill

Truckers drove around the National Mall in Washington, DC, on Apr. 28, blowing the horns on their rigs and shouting through bullhorns before an afternoon rally to protest record-high diesel fuel prices.

The US Energy Information Administration reported the same day that the nationwide average retail price for diesel was $4.177/gal, up 49% from Apr. 30, 2007, when diesel was selling for $2.811/gal.

Members of the 110th Congress say their constituents complain about high food and fuel prices. The voters are restless as almost a third of the Senate and nearly the entire House stand for reelection. It's increasingly apparent that many members feel pressure to "do something."

Most probably won't be satisfied for very long to simply let House Minority Whip Roy Blunt (R-Mo.) say Democrats have done nothing since regaining control of Congress early in 2007 while fuel prices have continued to climb, or let Speaker Nancy Pelosi (D-Calif.) respond that House Democrats have passed at least three measures aimed at higher fuel prices that deserve Republican support.

What measures involve

That support isn't likely. The measures involve giving the Federal Trade Commission broader authority to prosecute alleged price gouging activity, ordering the Department of Justice to apply US antitrust laws to the Organization of Petroleum Exporting Countries, and moving $18 billion in tax incentives from major oil companies to alternative energy programs.

Republicans argue that it would be more constructive to increase domestic oil and gas supplies by authorizing leases on more of the Outer Continental Shelf, within the Arctic National Wildlife Refuge, and in more of the Rocky Mountains. Many Democrats think producing more fossil fuels simply will accelerate global climate change.

Democrats and Republicans also won't likely come together behind Sen. John McCain's (R-Ariz.) call to suspend the federal gasoline tax through the summer. But they could embrace Sen. Byron L. Dorgan's (D-ND) bill to halt purchases for the Strategic Petroleum Reserve.

'Momentum is building'

Dorgan, who has changed the purchase suspension trigger from $50/bbl to $75/bbl after introducing the measure on Feb. 6, still plans to attach it to another bill. "He has the support of all 51 Democratic senators and, now, all three major presidential candidates. So momentum is building," a member of his staff told me.

In the House, Rep. Edward J. Markey (D-Mass.) has spoken out frequently on the issue. The night before an Apr. 24 hearing on SPR management issues by the Select Committee on Energy Independence and Global Warming, which Markey chairs, nine House Republicans said they support halting purchases in a letter to Pelosi. If GOP backing continues to grow in Congress, pressure will increase on the White House to drop its opposition.

Markey was noncommittal when asked if he would support Dorgan's bill if it reaches the House. "Hope springs eternal. I'm hoping the president realizes this is a problem and does something," he said. ✦

president's assertion, the American people would benefit from suspending these government purchases. It could reduce [gasoline] prices by 5-24¢/gal, a critical first step for America's families, businesses and the economy." She said the SPR has been tapped previously by Bush, as well as former Presidents Bill Clinton and George H.W. Bush. "In 2000, this action brought the price of oil down by one-third—from $30 to $20/bbl," she said.

Responding to a question about the proposal by Sen. John McCain (R-Ariz.), the presumed 2008 Republican presidential nominee, to suspend the federal gasoline tax from Memorial Day through Labor Day to ease upward price pressure, Bush said he did not want to wade into presidential campaigns but added that he would consider this and other ideas.

Candidate observations

Sen. Hillary R. Clinton (D-NY), who is pursuing the Democratic presidential nomination, said Apr. 28 that she would fund a suspension of the levy with a windfall profits tax on oil companies. Her opponent, Sen. Barack Obama (D-Ill.), told an audience Apr. 29 in Winston-Salem, N.C., that the "gas tax holiday" idea was "a gimmick that would save you half a tank of gas over the entire summer so that everyone in Washington can pat themselves on the back and say that they did something." He also supports a windfall profits tax, he said.

Responding to a reporter's statement that the World Bank estimates that 85% of the increase in world corn prices since 2002 has been due to the growth of ethanol demand, Bush said he thought that weather, increased demand for corn, and higher costs of raising it were responsible for 85% of the increase and that ethanol represented only 15%.

"By the way, the high cost of gasoline is going to spur more investment in ethanol as an alternative," Bush said, adding, "The truth of the matter is it's in our national interest to have our

farmers grow energy as opposed to us purchasing it from parts of the world that are unstable or may not like us."

Bush said, "We've put a lot into ethanol. As a matter of fact, the solution to corn-fed ethanol is cellulosic-ethanol... and we're spending a lot of money along those lines. But energy policy needs to be comprehensive and we got to understand that we're in a transition period. The problem is that there's been a lot of focus by the Congress in the long-term steps such as hydrogen and the intermediate steps such as biofuels and battery technology research, but not enough emphasis on the here and now."

Pelosi said congressional Democrats are pressing the Federal Trade Commission to use the authority it received in the 2007 Energy Independence and Security Act to investigate record gasoline prices.

"The House has also passed legislation to crack down on oil price gouging, hold OPEC accountable for oil price fixing, and repeal profit subsidies for profit-rich Big Oil companies so that we can invest in a renewable energy future," Pelosi said, adding, "However, President Bush and most of his Republican allies in Congress have opposed these efforts. Today, American consumers face more pain at the pump, paying a record $3.61/gal." ✦

EIA: Lieberman-Warner bill could raise gas prices

Nick Snow
Washington Editor

Climate change legislation headed for debate on the US Senate floor in early June would significantly reduce domestic greenhouse gas emissions but also could dramatically increase natural gas prices, the US Energy Information Administration said Apr. 29.

Electricity generation would account for "the vast majority" of GHG emissions cuts under S. 2191, which Sens. Joseph I. Lieberman (I-Conn.) and John W. Warner (R-Va.) introduced on Oct. 18, 2007, according to EIA. New nuclear, renewable, and fossil fuel plants with carbon capture and sequestration would be the key compliance technologies through 2030 in most cases, it said in its analysis.

But EIA also warned that if such technologies are not used, electricity generators probably would use more gas to offset reductions in coal-fired generation, "resulting in markedly higher delivered prices of natural gas."

The bill would raise electricity costs by 5-27% by 2020 and 11-64% by 2030, EIA said. The projected real US gross domestic product would be reduced as real economic output, purchasing power, and aggregate demand for goods and services dropped in response to higher energy prices, it said. Total discounted gross domestic product losses from 2009 through 2030 range from $444 billion to $1,308 billion under the base cases in the analysis, EIA said.

It said that manufacturing and other industrial activity would feel a bigger impact than the general economy. By 2030, industrial shipments excluding services could be reduced by $233-589 billion if S. 2191 becomes law, it predicted.

Sponsors respond

But EIA's analysis shows that the economic impact of the bill would be virtually identical to growth in S. 2191's absence, Lieberman and Warner said in a joint statement. The cost to US businesses of tradable allowances to emit greenhouse gases came in below figures which the US Environmental Protection Agency projected last month, they indicated.

"Two separate government analyses have now come to the same conclusion. Our bill curbs global warming without harming the US economy," Lieberman said.

Sen. James M. Inhofe (R-Okla.), the Environment and Public Works Committee's ranking minority member, disagreed. "The EIA analysis projected unacceptable increases in Americans' average annual household energy bill [of] up to $325 in 2020 and $723 by 2030, and this does not factor in transportation-related costs," he said.

"Further, EIA's gloomy economic analysis is contingent upon the US building more than two-and-a-half times as many nuclear plants as are now operating—an increase so massive and unrealistic as to be fictional. EIA also found that Lieberman-Warner would result in a 9.5% drop in manufacturing output by 2030," Inhofe continued.

The report showed that S. 2191 would have an adverse economic impact, agreed Sen. Pete V. Domenici (R-NM), the Energy and Natural Resources Committee's ranking minority member. "Four out of four major economic studies agree: Lieberman-Warner will increase energy costs and decrease economic growth. At a time when Americans are increasingly concerned with the rising costs of energy and the state of the economy, it is rather shocking that Congress would seriously consider measures which will send us on the wrong track on both," he said Apr. 29. ✦

Forum: US, Mexico must solve gulf boundary dispute

Nick Snow
Washington Editor

The US and Mexico are becoming more aware of the potential for disputes over deepwater Gulf of Mexico oil resources, experts agreed at an Apr. 23 forum at the Woodrow Wilson International Center for Scholars in Washington, DC.

But some of the participants suggested that discussions between the two countries could be severely limited unless Mexico finds a way to make the transboundary resource question a binding international matter separate from oil's place in the national constitution.

"International law is the only vehicle that can effectively deal with this issue," said David Enriquez, a partner in the Goodrich, Riquelme, and Associates law firm in Mexico City. He suggested that the United Nations Law of the Sea could provide a basis for a Mexican-US transboundary oil resources agreement and said the countries should form bilateral working groups soon.

But Miriam Grunstein, an associate in the Thompson & Knight law firm's Mexico City office, said the transboundary oil resource question may ignite a drive for broader energy reforms, which could take years to achieve. "It not only would be crossing national boundaries but also boundaries involving industry practices," she maintained.

Lourdes Melgar, an independent energy consultant who served in various diplomatic positions in Mexico's foreign affairs ministry during 1993-07, said the two countries agreed to a boundary in the Gulf under a 2000 treaty, which included a 1.25-mile leasing buffer on each side.

'Mexico needs to act'

No discussions have been held since, and there could be a rush to lease tracts on the US side when the agreement expires on Jan. 1, 2011, because of significantly higher crude oil prices and improved deepwater exploration and production technology, she continued.

"There very likely are significant fields in the Perdido Belt between the Western Gap and the coast. Mexico urgently needs to act or it will lose its share of these resources," Melgar said.

But a US Minerals Management Service official

WATCHING THE WORLD

Eric Watkins, Senior Correspondent

Mexico's oil critics

Mexico has agreed to talks with a rebel group that last year claimed responsibility for a series of attacks on oil and gas installations that severely dented the country's economy (OGJ Online, Sept. 21, 2007).

The Ejercito Popular Revolucionario bombed the Cactus-San Fernando natural pipeline to force the release of fellow militants it alleges were arrested by the government on May 25, 2007. Back then, Mexican officials said the rebels were not in custody.

The Mexican government still claims to have no idea about them. But the Interior Ministry at least promised to keep investigating the disappearance of the two men, identified as Edmundo Reyes Amaya and Gabriel Alberto Cruz Sanchez.

Mexico has good reason to be cooperative with the militants. Although state oil firm Petroleos Mexicanos said the attacks did not result in any casualties, some 2,000 businesses in 10 states went without power at a cost of about $100 million/day.

Fewer enemies better

However the talks go, having fewer enemies will definitely be in the interests of the state oil company. Why, just last week, a group of armed robbers stole about $480,000 from Pemex headquarters.

Pemex said seven assailants entered its administrative offices, where they attacked security officers guarding an armored truck. One of the two guards was beaten, but there were no bullet wounds. Pemex said the robbers escaped with their loot in a green Ford Escort.

Even as the Mexican police went in hot pursuit of the getaway car, Pemex was in the throes of fending off an attack of a much different kind. This time, the attack was launched by thousands of demonstrators who marched in Mexico City to protest a government bill to partly privatize Pemex.

The reform looks to bolster Mexico's oil industry by offering incentive-based oil service contracts and opening the refining industry to private capital.

'Constitution violated'

Organized by the so-called Oil Defense Movement, the demonstration was headed by former Mexico City mayor and presidential candidate Andres Manuel Lopez Obrador, who said President Felipe Calderon's plan "violated the spirit and letter" of the constitution.

Obrador, who lost to Calderon in contested elections in 2006, said the president "intends to turn over to private and foreign individuals the exploration, drilling, refining...pipelines and storage of (Mexico's) oil."

The public protest came after lawmakers of Obrador's Broad Progressive Front took over both houses of Congress on Apr. 10 to stop the government from submitting its oil bill to a vote without debate.

Having achieved his aim in Congress, Obrador said the demonstration kicked off "the second phase of the civil resistance."

Wisely enough, in an effort to head off anything like a popular protest, Mexico's Senate energy committee has agreed to a series of national debates on the proposed energy reforms to be held May 12-July 22.

Still, it could be a very hot summer in Mexico. ✦

said that exploration activity near the boundary has been modest in the 10 years that the Department of Interior agency has been issuing leases. "It's still largely a wildcat area at its initial stage of geologic evaluation. Only one development is proceeding, about 10 miles from the boundary which is far enough to not raise drainage questions, and it would not produce before 2010," said Chris Oynes, associate director of the offshore minerals management program at MMS.

"Currently, the US government does not have a mechanism to acquire data from Mexico to enhance our understanding of the region. There are indications that the faulting is complex, which mitigates the risk of the resources migrating. The question could arise with leases closer to the boundary," he added.

"Time is running out," declared Joseph M. Dukert, an independent energy consultant who is president-elect of the US Association for Energy Economics. "When producers talk about drilling wells in water 2 miles deep and not stopping until they've gone 5 miles down, sometimes through a layer of salt, they're not talking about producing conventional oil."

He noted that Mexico's national oil company, Petroleos Mexicanos, has not had the financial resources to develop deepwater drilling expertise and consequently is unprepared to produce much of Mexico's remaining oil resources. Dukert said that he does not expect Pemex to be privatized but added that the boundary agreement of 2000 has set the stage for bilateral cooperation that could be extended to the transboundary resource question.

'Doomed us to isolation'

Other participants questioned whether the issue can be addressed without major reforms at Pemex that could require a constitutional amendment.

"In my view, constitutional change would be preferable. Our constitution has pretty much doomed us to isolation," said Grunstein, who noted that in the 5 years since Vicente Fox became

Mexico's president, there have been 500 constitutional trials. Felipe Calderon succeeded Fox on Dec. 1, 2006.

Grunstein said that energy reform proposals currently before Mexico's congress are "a sliver of a solution" because they simply give Pemex authority to negotiate transboundary agreements without requiring it to provide contract arrangements to attract the necessary foreign partners to evaluate, explore, and develop deepwater oil resources. The bill acknowledges that the transboundary question exists but provides no legal framework to reach and implement agreements, she said.

Melgar conceded that the bill actually is a very limited oil sector reform proposal but added that the national constitution said that international law can apply when transboundary questions arise. "That could form the basis for talks and agreements," she said.

Foreign companies see it as a very timid effort, Grunstein responded. "They think it's interesting that the government is starting to discuss this question. But they still want to be able to book reserves if they help develop the resources," she said. The problem extends to refining because building and operating a plant for Pemex without having title to the property and equipment, to the feedstock, or to the products is not appealing, she added.

"There is a political consensus that the transboundary reservoir issue needs to be addressed," Enriquez said. But he also expects that it will be necessary for the courts to rule on any reforms that pass Mexico's congress and become law to provide a possible legal basis for contracts.

Grunstein said that this would pose a risk. "If the [Mexican] Supreme Court does not rule in favor of the reforms, we're toast. We'll be confronting not only the constitution but also a judicial opinion which would be setting a legal precedent," she warned. ✦

Mexico imports more gasoline as oil production drops

Eric Watkins
Senior Correspondent

Mexico's gasoline imports rose to 360,700 b/d in March, the highest level since November 2007. This coincided with a 7.8% decline in the country's oil production in this year's first quarter to 2.91 million b/d, largely due to declining output from traditional oil fields.

State-owned Petroleos Mexicanos said March gasoline imports were up 6.5% compared with February, largely due to increasing numbers of cars in the country that consume some 41% of total supply.

Gasoline imports are projected to increase by 58% to 489,000 b/d by 2015 unless new refining capacity comes online, according to a recent report by the energy ministry. It said Pemex has not built a refinery since 1979.

Pemex is already drafting plans for a plant with two separate refining trains that would process 300,000 b/d by about 2015.

Elsewhere, Pemex's Minatitlan refinery will add 100,000 b/d in capacity in 2009.

Still, to fully reduce imports, officials say Mexico will need to build a refinery every 3-4 years over the next 2 decades.

Oil production drop

Mexico's premier Cantarell field produced 1.15 million b/d of oil in March, down 5.7% from February and—according to the energy ministry—the seventh straight month of waning production at the field.

Mexico to reduce oil exports to US in 2008

Eric Watkins
Senior Correspondent

Mexico will reduce its crude oil exports to the US by an average of 184,000 b/d throughout 2008, a situation that could continue for 2 years longer, reported a Mexican media outlet.

Citing PMI Comercio Internacional, the Petroleos Mexicanos affiliate in charge of marketing, El Universal newspaper said a reduction in US-bound exports for 2008—and possibly until 2010—was due to Mexico's reduced oil output.

It said the original plan for oil exports in 2008 envisioned some 1.678 million b/d heading to the international market, but the sales volume at the end of the first quarter stood at 1.499 million b/d, or 179,000 b/d less than initially anticipated.

El Universal said the US Energy Information Administration earlier this month predicted a 13.2% shortfall of imports from Mexico during the current fiscal year. According to EIA figures, Mexico exported 1.533 million b/d to the US in 2007.

Based on its December 2007 Short-Term Energy Outlook, EIA forecast Mexico would produce 3.52 million b/d of oil in 2007 and 3.32 million b/d in 2008. The decline in Mexican output is driven mainly by falling production at supergiant Cantarell field, according to EIA.

During the first quarter, production from Cantarell averaged 1.2 million b/d, which was less than the 1.3 million b/d Pemex had targeted for the year.

Due to the reduced output, Mexico's exports of oil fell by 12.5% to 1.5 million b/d in the quarter, compared with the year-ago period.

Despite its falling crude production, Pemex witnessed a 13.2% growth in its natural gas production in the first quarter to 6.59 bcfd.

In March alone, gas production hit a record 6.68 bcfd, coming largely from fields at Cantarell, Samaria-Luna, Burgos, Lankahuasa, and Veracruz. ✦

France's EU presidency to highlight energy security

Doris Leblond
OGJ Correspondent

Energy will be a leading priority when France assumes its half-year turn to preside over the European Union, beginning July 1.

French Prime Minister Francois Fillon recently asked Claude Mandil, former executive director of the International Energy Agency, what France should do to enhance EU energy security.

Mandil said that whether national or European, an energy policy should simultaneously pursue three main objectives: supply security, climate change amelioration, and economic growth.

"None of the measures taken should achieve one object to the detriment of the other," he said.

Addressing supply security, he said most supply interruptions are due to internal causes, such as the electricity breakdowns in Europe and Japan, rather than to import shortages.

"In an open economy, imports are not a real problem," Mandil said. Aiming for so-called energy independence is a notion that "could lead to absurd and costly decisions such as the development of biofuels."

Supply risks exist, he admitted, "and serious crises will crop up in the years ahead," but import risks have three causes: lack of investments in all energy sectors, lack of transparency, and lack of flexibility and choice, giving the impression that Europe has little margin for maneuvering.

However, whenever energy security is at risk, he said, the EU doesn't speak with a single voice and will never do so unless greater solidarity is achieved among member states and responsibility is shared. Developing energy flows within the EU is required as is working to achieve a real single energy market.

"The mission of regulators is essential and should extend to security," he added.

European solidarity does not mean strategic gas stock builds as the European Commission is advocating, he said. Through agreements with industry, about 10% of its peak consumption could be put on the market via interruptible contracts, triggered by a collective decision of EU leaders when a shortage occurs. Development of interconnections would ensure that the gas circulates easily within the EU.

Russian relations

Mandil said relations with Russia remain too confrontational, with the EU giving the impression of "having its back to the wall." Instead of trying to "reform" Russia, and insisting that it join the Energy Charter, "which it will never do," he said, the EU should reduce its dependence on Russia through energy efficiency, LNG development, renewables, and nuclear power. Heavy gas users such as Germany and the Baltic countries should develop LNG import capability to lessen their reliance on piped gas from Russia, although Mandil insists Russia has always been a reliable supplier to them.

The Nabucco gas line is the typical example of how confrontation with Russia can be counterproductive, explained Mandil. The project was to carry Caspian Sea gas through Turkey to EU countries as an alternative to gas transported from Russia and was described as a means of countering Russia's "domination" over the gas market.

The result was contrary to expectations as Russia reacted swiftly, depriving Nabucco of its gas by setting up its own long-term contracts with East Caspian gas producers, and launching the South Stream gas line, thus dividing Nabucco supporters.

Mandil's conclusion is that Nabucco will now only be built if it is supplied with either Russian or Iranian gas or both. Iranian gas is out of the question until international tensions over its nuclear program are eased. But Mandil suggests that one day Nabucco could benefit from Iranian exports and should stand by to take advantage of such a possibility. He also advises that if Nabucco is built, Russian gas must be accepted, and the gas line must be built not against Gazprom but with Gazprom.

As with Russia, Mandil advocates organizing relations with Central Asian-Caspian Sea countries on a new basis, keeping up a modest but nonstop dialogue with these countries. Turkey, a major gas transit country, should be included in this permanent dialogue with the EU, he insists.

France likely will take some of these positions during its EU presidency, possibly clashing with the EU Commission on a number of controversial subjects. In any case, the report will be discussed "in detail," over the next few weeks within the Prime Minister's cabinet, presumably to sort out the wheat from the chaff. ✦

Energy group offers EU strategy for attracting LNG

Doris Leblond
OGJ Correspondent

The regulation of future LNG terminals will play a commanding role in the European Union's ability to attract LNG imports, reported an independent group of energy experts established by France's Energy Regulatory Commission (CRE).

This is crucial because the EU must raise its share of natural gas imports to 80% by 2030 from 50% in 2007 to meet future demand and offset declines in domestic gas production, the group reported. LNG is key to its supply security—increasing source diversification and enabling access to global gas reserves.

The main mission of the working group was to determine the most appropriate regulatory framework for new LNG projects so that world gas would come to Europe rather than to the US or Asia.

Regulatory approaches applied to LNG terminals and tariffs for associated services are part of the criteria that producing countries take into account when assessing the attractiveness of a given market, the study group reported.

The existing Montoir-de-Bretagne and Fos-Tonkin terminals, which account for 30% of the gas consumed in France, are subject to regulated third party access, with tariffs for their use set by the government on CRE's recommendation.

Five LNG terminal projects, expected to come on stream during 2012-15, could benefit from exemption from such third party access in application of an EU directive, the study group said.

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The second Oil Sands and Heavy Oil Technologies Conference & Exhibition is scheduled for July 15 – 17, 2008, at the Calgary TELUS Convention Centre in Alberta, Canada. Once again this conference will highlight new technology in the growing oil sands and heavy oil industry.

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It added that regulation of future LNG terminals in France should encourage investment so that France and the European Union will have sufficient regasification capacity, and it emphasized that operators must follow market rules in their relationship with clients.

To enable the smooth cohabitation of exempted and regulated terminals, regulations should not favor one regime over another, but encourage investment in both cases, the working group insists. Competition will be exercised on the offer of services and the price level, it added.

In the medium term, a better balance between capacity offer and demand will lead to an adjustment of the prices applied by the exempted terminals with regard to those of the regulated terminals. The same transparency and "Use it or lose it" requirements should be applied to both regulated and exempt terminals. These mechanisms should all be applied with flexibility and should be open to change, with dissuasive penalties provided.

Surplus capacity urged

Another strategy involves the amount of regasification capacity provided. Because the market is set to become a sellers' market dominated by gas producers and the strong development of arbitrage between destinations, importing countries are better off maintaining or developing surplus regasification capacity and surplus LNG terminals, the study group advised.

It said France offers many possibilities for hosting new LNG terminals because of its geographic situation and extended coastline.

The group said the priority for regulation should be to set up a stable framework favorable to investments in gas terminals because construction or extension of a terminal is a heavy industrial investment. In a European market open to competition, all projects should be considered within a private investment logic.

"Supply safety does not depend only on import capacities and regulation; transparency of infrastructure data also plays a prime role," concluded Colette Lewiner, president of the working group and vice-president at consultant CapGemini. ✦

That the Caribbean Plate formed in the Pacific is a 40-year-old idea, and there is much evidence that continental crust is abundant.

Caribbean has overlooked hydrocarbon potential on North America's doorstep

Keith H. James
Consulting Geologist
Burgos, Spain

Recent huge discoveries below salt in the Gulf of Mexico and Brazil show that much remains to be learned about deepwater areas. They also disprove the notion that the elephants have all been found.

Another paradigm that needs to fall is the 40-year-old idea that the Caribbean Plate formed in the Pacific and migrated between the Americas. This understanding implies that the plate consists mostly of oceanic crust and volcanic arc rocks—not many think about hunting for oil in deep water here. However, there is much evidence (continental rocks, continental gravity densities, seismic velocities and crustal thicknesses, abundant high-silica rocks, and regional tectonic fabric) that continental crust is abundant (Figs. 1 and 2).

Middle America, including the Caribbean Plate, exhibits a regional NE and NW structural pattern (Fig. 2). The former reflects Triassic-Jurassic rift/drift reactivation of Paleozoic sutures and is well known in North and South America. The latter is the trend of ocean fractures and major intracontinental faults active during northwestward separation of North America from Gondwana.

Major Jurassic faults crossing the Maya and Chortis blocks in the west (Fig. 1) remain parallel to the regional NE trend (Fig. 2) and show that they have not rotated, as commonly believed. Continental rocks are exposed on mainland Chortis, but this block extends to Jamaica via the Nicaragua Rise and forms a large part of the western Caribbean. Its presence there precludes migration of a Pacific plate both geometrically and geologically.

Part of the Caribbean Plate is up to 20 km thick. Deepsea Drilling Project holes encountered Turonian basalts at the top of this Caribbean "oceanic plateau" (Fig. 1), which is generally seen to be the result of Cretaceous oceanic plate thickening over a hot spot or mantle plume in the Pacific.

If this were true, the plateau would exhibit a radial structural pattern. Instead, it shares the regional NE trend of Middle America—an unlikely coincidence if it had formed in the Pacific.

Seismic data over the plateau (Fig. 3) reveal a deep architecture that repeats the form of distal basins along the eastern seaboard of North America from Baltimore Canyon to the Blake Plateau. These asymmetric basins contain wedges of Triassic red beds and Jurassic-Cretaceous sediments, source rocks, and salt. They share the Gulf of Mexico history of Mesozoic extension.

The Caribbean "plateau" is probably their southern continuation. Instead of blocks of vertical igneous dykes flanked by wedges of volcanic flows and volcaniclastic sediments, with seamounts locally at the seafloor (current understanding), it probably consists of

MIDDLE AMERICA

Fig. 1

*On the Caribbean Plate (heavy dashed line) only Chortis is supposed to carry continental crust.

40-km-wide continental blocks flanked by 100-km-wide wedges of Triassic-Jurassic clastic sediments, including source rocks and salt, overlain by Jurassic-Cretaceous carbonates.

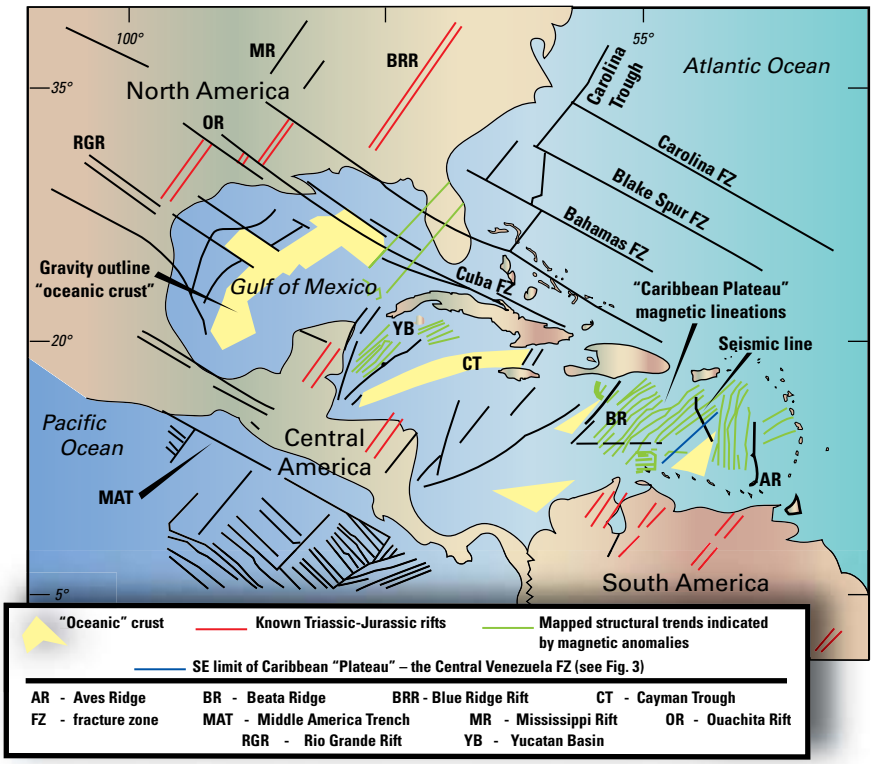
Smoothness and great lateral extent of seismic Horizon B" (Fig. 3) and vesicularity of cored Turonian basalts suggest they were shallow/subaerial, perhaps causing restriction that produced prolific source rocks known along northern South America. Supposed seamounts that push up through overlying upper Cretaceous-Recent sediments are very similar in appearance to Sigsbee salt knolls of the Gulf of Mexico. At least some are salt diapers, with indications of adjacent rim synclines.

Other parts of the Caribbean Plate, west and southeast of the plateau, resemble oceanic crust (Fig. 3, Rough Horizon B"). However, they are abnormally thin (3-4 km) and do not manifest spreading magnetic anomalies. They are likely to be areas of extremely attenuated continental crust or serpentinized upper mantle (serpentinite is remarkably abundant around the plate margins). The only spreading anomalies (Miocene-Recent) in the whole of Middle America occur in the central 300 km of the Cayman Trough.

Instead of bearing a "foreign" Caribbean Plate, Middle America shows an internal geological integrity that reflects ancient basement structures extended by drift of North America away from

MIDDLE AMERICA NE AND NW STRUCTURAL FABRIC*

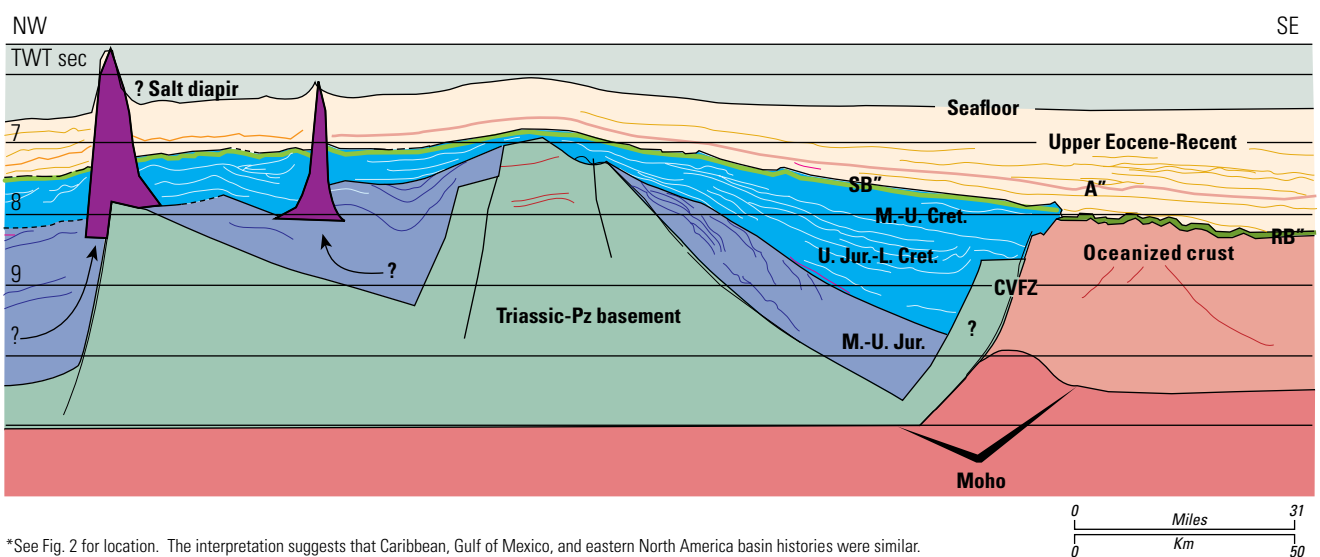
Fig. 2



*The NE trend over the 'plateau' area (Fig. 1) reflects basement structures and shows that it shared regional geological history.

INTERPRETED SEISMIC LINE OVER CARIBBEAN PLATEAU*

Fig. 3



*See Fig. 2 for location. The interpretation suggests that Caribbean, Gulf of Mexico, and eastern North America basin histories were similar. Triassic-Jurassic rifting accommodated continental-shallow marine sediments and salt. Drifting introduced open marine Jurassic-Cretaceous sediments. Late Cretaceous extension resulted in shallow marine-subaerial flows over the Caribbean Plateau, forming smooth Horizon B" (SB") and serpentinization of adjacent mantle, forming rough Horizon B" (RB"). Horizon A" is the Middle Eocene contact between chert and unconsolidated sediments. CVFZ – Central Venezuelan Fault Zone (see Fig. 2).

and South America. Proximal margins subsided gradually, accommodating carbonate platforms many kilometers thick (Florida-Bahamas, Tamaulipas, Campeche-Maya). More distal areas foundered below the deeper Gulf of Mexico and the Caribbean. Areas of greatest extension suffered "oceanization."

Caribbean geology is related to that of the Gulf of Mexico and marginal basins along the eastern flanks of the Americas.

The area lies between the giant oil provinces of the Gulf of Mexico and northern South America. It probably carries a wide variety of hydrocarbon plays involving Jurassic and Cretaceous source rocks. The risk is that igneous activity overmatured these in some areas. However, live oil stain occurs in fractured rocks on Puerto Rico, oil is present on Hispaniola, Jamaica, Belize, Guatemala, Honduras, Nicaragua, Costa Rica, Panama, and Barbados. Some is thought to come from Tertiary sources, but oils of Guatemala, Belize, Jamaica, Costa Rica, and Barbados have Jurassic or Cretaceous chemical signatures.

This 2.5 million sq km, virtually unexplored area lies close to North America and is governed by friendly nations. ✦

The author

Keith James (khj@kjgeology.com) is a consulting geologist that specializes in Central and South America. After 8 years of teaching, he joined Shell International and worked Gabon, Spain, Venezuela, UK, Netherlands, and the US, becoming geological advisor to Global Exploration in The Hague. He then joined Conoco as senior vice-president exploration and chief geoscientist, international studies, Houston. He is the author of the only published, comprehensive synthesis of Venezuelan hydrocarbon geology. He is organizing a workshop on Caribbean geology in June 2008 and an international conference in June 2009. He has an MS in biostratigraphy from the University of Houston and an MSc in micropalaeontology and PhD in marine geology from the University of Wales.

New Zealand

Hyundai Hysco, Seoul, plans to participate in PEP 38451 in the deepwater Taranaki basin off New Zealand.

Deepwater Taranaki is undrilled, and PEP 38451 at 13.8 million acres covers nearly the entire basin and is New Zealand's largest exploration permit. Four shallow-water Taranaki oil fields are under development.

GNS Science, Wellington, NZ, identified several prospects with multiple pay objectives from 6,200 line-km of existing seismic. Three giant prospects are in 225, 1,411, and 1,540 m of water.

Hyundai Hysco will earn 30% interest and Randall C. Thompson LLC will earn 10% by participating in 3,100 line-km of 2D seismic. Global Resource Holdings LLLP, Denver, retains 60% interest.

ceri

28th Oil Shale Symposium

SCHOOL OF MINES 1874 COLORADO

Announcement and Call for Abstracts

The Colorado Energy Research Institute (CERI) at the Colorado School of Mines is pleased to announce the **28th Oil Shale Symposium** to be held at the School of Mines campus **October 13-15, 2008**, and to invite submission of abstracts for presentations and posters. The meeting will be followed by a field trip to the Green River Formation oil shale on **Oct. 16-17, 2008**.

The Symposium will address global oil shale development, including research, development, and demonstration. Abstracts must be written in clear English, and will be reviewed by the Organizing Committee for inclusion in sessions on national programs, surface and in-situ processing, physical and chemical properties, geology and stratigraphy, modeling, environmental & socioeconomic impact, policy, data management, and decision support. **The deadline for submission is June 30, 2008.** Abstracts may be submitted through the Website:

http://mines.conference-services.net/directory.asp

Notification of acceptance will be made by **July 31, 2008**. Additional information will be posted at:

http://www.mines.edu/outreach/cont_ed/oilshale/

For further information, please contact:

Dr. Jeremy Boak, Symposium Co-Chair
Colorado School of Mines,
1500 Illinois Street, Golden CO 80401
1-303-384-2235 jboak@mines.edu

Reservoirs are judged to be in Cretaceous North Cape sandstone sourced by the underlying Cretaceous Rakopi formation, source of most of the oil discovered in Taranaki so far (OGJ, Nov. 25, 2002, p. 28).

Gulf of Mexico

Devon Energy Corp., Oklahoma City, exercised a preferential right to buy Anadarko Petroleum Corp.'s 6.67% working interest in the deepwater Kaskida Unit in the Gulf of Mexico's Lower Tertiary Trend.

The deal brings Devon's interest to 26.67% in the 51,800-acre unit. BP Exploration & Production Inc., Kaskida operator, has 73.33% interest.

The unit covers nine blocks in the Keathley Canyon area where the 2006 discovery well cut 800 net ft of hydrocarbon-bearing sands.

Devon, with ownership in nearly 200 blocks, has one of the trend's most extensive lease positions and considers Kaskida to be the largest of its four Lower Tertiary discoveries. The company expects to begin Lower Tertiary production in 2010 from the Cascade discovery.

Louisiana

Yuma Exploration & Production Co., Houston, is drilling Caviar III, third in a five-well 3D exploratory program in Plaquemines Parish swamps 7 miles west of Black Bay oil and gas field.

Caviar I, the first well, tested 4.2 MMcfd with a trace of condensate with 2,881 psi pressure on a $^{13}/_{64}$-in. choke from Miocene Upper Tex W perforations at 10,359-370 ft.

Caviar IV tested 4.3 MMcfd with 3,660 psi on the same size choke from the same formation at 10,369-430 ft.

Production is to start in mid-2008 after the partners lay a 5-mile pipeline. Yuma, operator with 25% working interest, generated the prospects, each of which is a one-well feature.

Texas

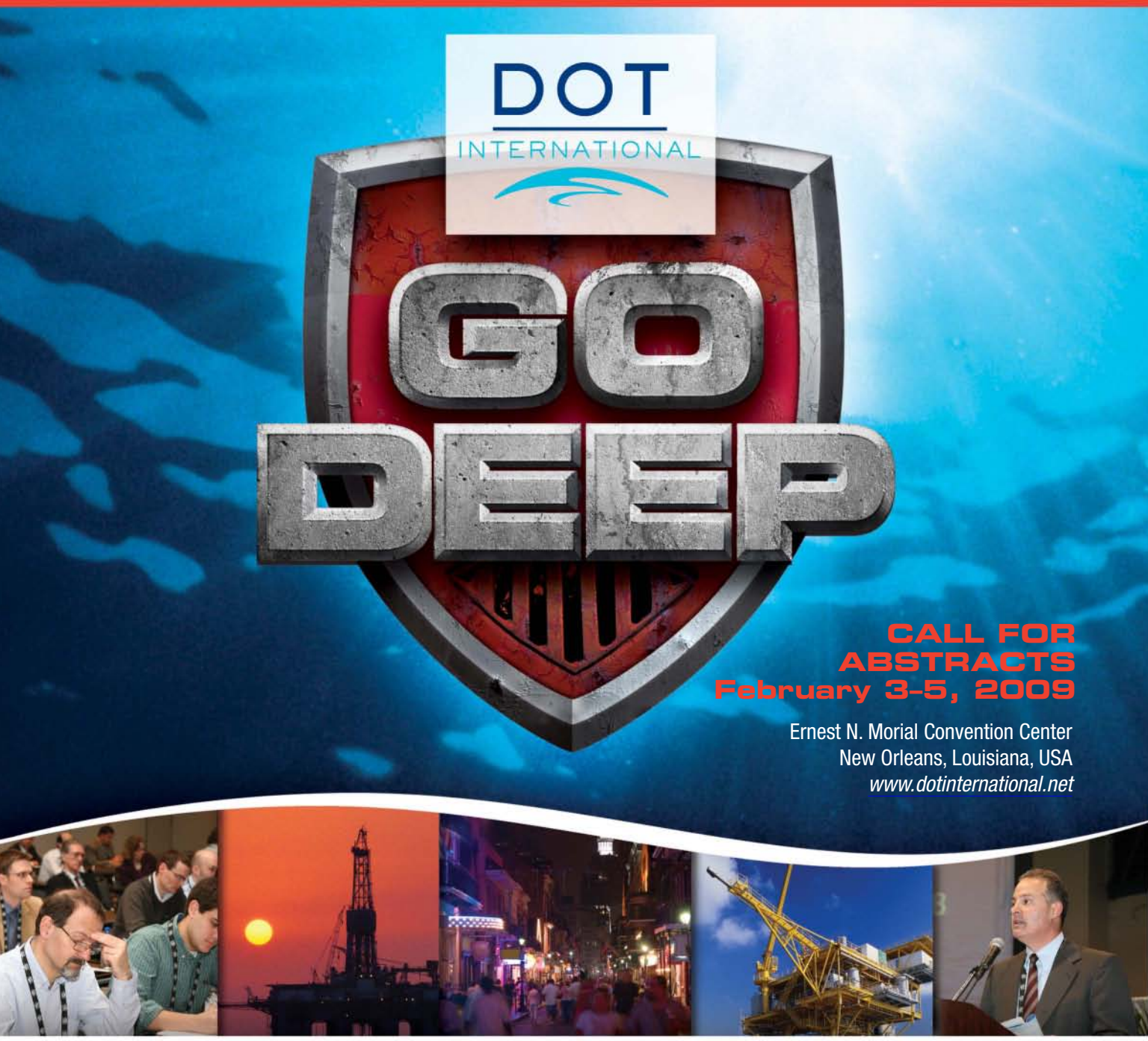
East

EnCana Corp., Calgary, drilled 11 net wells in its Amoruso field deep Jurassic Bossier gas play in East Texas in the quarter ended Mar. 31 and plans to have drilled 35 wells there in 2008.

Five wells brought on line in the quarter averaged 25 MMcfd, and one exceeded 60 MMcfd. Two wells proved up the northern end of the field.

EnCana, with 100% working interest, commissioned a plant in February, increasing processing capacity to 450 MMcfd. In November 2007 when it announced it was acquiring Leor Energy Co.'s 50% interest in Amoruso field, said it expected production to average 315-355 MMcfd in 2008. It estimated that the acquired lands had 200 drilling locations.

Deep Offshore Technology International Returns to New Orleans



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CALL FOR ABSTRACTS

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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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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BOPs & Well Control Equipment
Casing Running
Drilling Automation
Instrumentation

Shell developing heavy oil in deep water off Brazil

Nina M. Rach
Drilling Editor

In its BC-10 integrated field development off Brazil, Shell is using new subsea technologies that incorporate caisson separation with electric submersible pumps, surface BOP with slim riser, and high-power umbilicals.

Paul Dorgant, Shell's BC-10 venture manager, told OGJ that Shell anticipates being in Brazil for a long time.

The heavy oil field will be developed with deepwater, horizontal wells and openhole gravel pack completions and produced to an FPSO.

Shell has interests in 10 offshore exploration blocks in the Santos, Campos, and Espiritu Santo basins off Brazil.

Campos basin

Campos is one of five major basins off Brazil, located between the Espirito Santo basin to the north and the Santos basin to the south. Campos stretches from the State of Espirito Santo south to Cabo Frio, off the northern coast of Rio de Janeiro State.

Campos basin encompasses several major fields: Albacora, Albacora Leste, Barracuda Caratinga, Bijupira-Salema, Marlim, Marlim Sul, Marimba, Marimba Leste, Roncador, and Jubarte. Industry believed the basin held the largest oil reserves on the Brazilian shelf, until Petrobras' recent discovery of giant Tupi oil field in Santos basin.

Shell operates the Bijupirá and Salema fields in the central Campos basin and has non-operating interests in two blocks in the northern Campos basin: BM-C-25 and BMC-31.

Key technologies

Shell will integrate proprietary technologies, in-house expertise, and third-party products to produce the heavy oil at BC-10. The key technologies include:

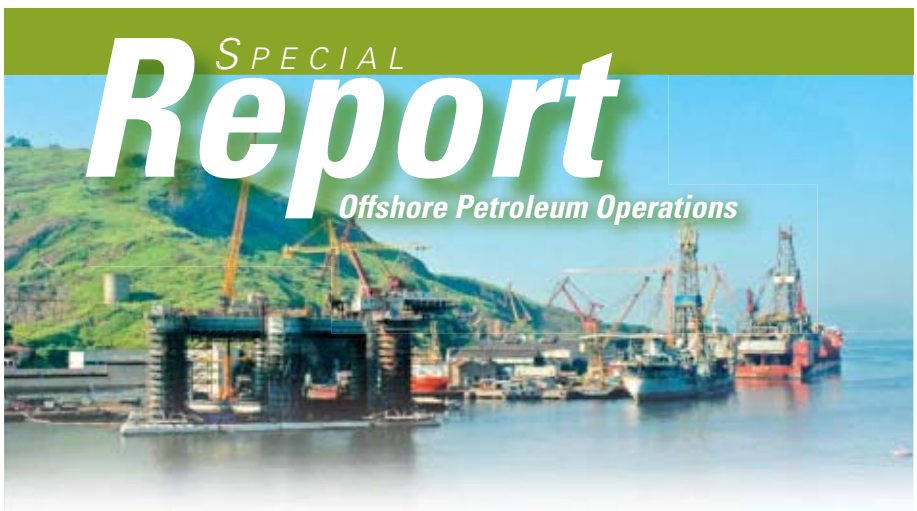
- Horizontal wells.
- Artificial lift—with all boosting at the seafloor and no jewelry downhole. All production will flow at natural reservoir pressure.
- Flow assurance—hot oil circulation required to flow the high-viscosity oil.
- Slim, deepwater riser, electrical umbilicals.
- Heavy oil processing at surface (FPSO).

BC-10 control

Brazil's National Petroleum Agency, ANP, granted the BC-10 exploration license on Aug. 6, 1998.

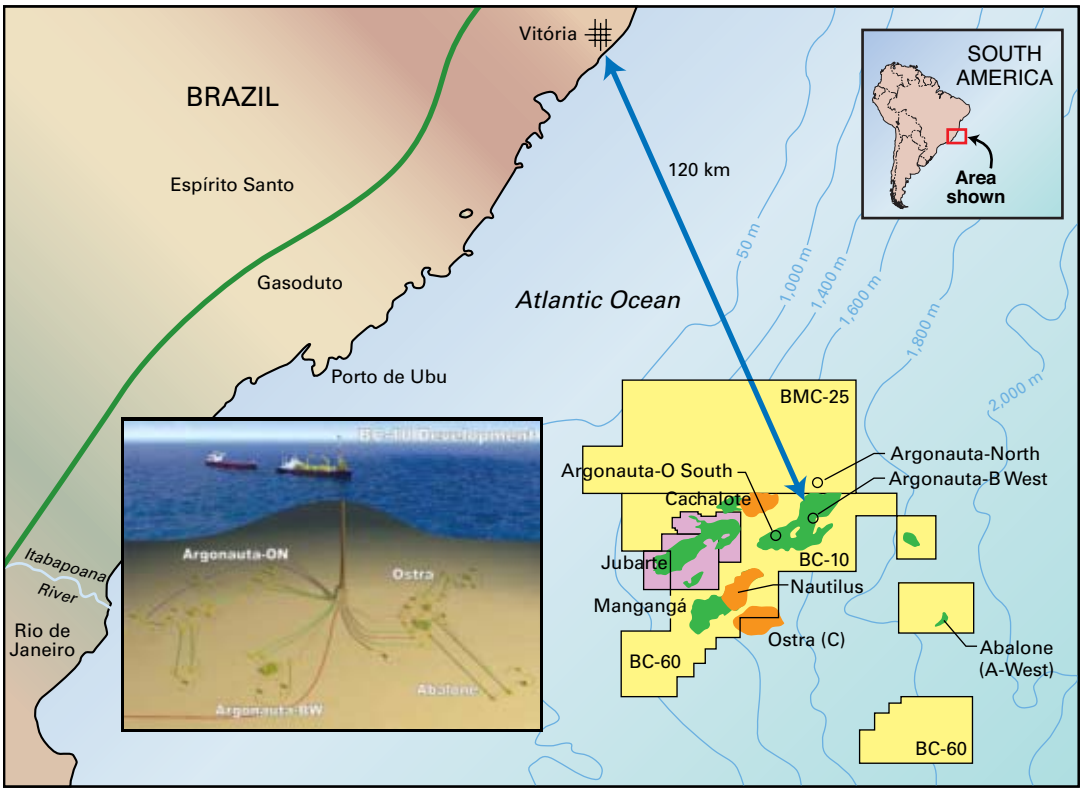
In May 2002, Shell purchased UK independent Enterprise Oil PLC for $700 million. This included Enterprise's Brazilian subsidiary; Shell assumed Enterprise's 35% ownership interest in Block BC-10 and inherited operatorship of the Bijupirá-Salema development project (OGJ, Dec. 16, 2002, p. 22). At that time, Petrobras held 35% of BC-10 and ExxonMobil Corp. unit Mobil Exploração Desenvolvimento Ltda. held 30%.

After drilling 13 wells and finding 17-24° gravity oil, Shell declared BC-10



BLOCK BC-10 DEVELOPMENT, NORTHERN CAMPOS BASIN

Fig. 1



commercial in December 2005 (OGJ, Oct. 2, 2006, p. 5).

In January 2006, ExxonMobil subsidiary Esso Exploracao Campos Ltda. began proceedings to sell its interest to ONGC Videsh Ltd. (OVL), but the transfer was challenged by Exxonmobil's partners. Petrobras later agreed to waive its preemption rights, allowing OVL to acquire the 15% share it holds now. Shell assumed the other half of ExxonMobil's participating interest.

John Haney, Shell E&P vice-president, said "The deepwater offshore Brazil is an important element of our global growth strategy. We believe that an increased interest in BC-10 is an attractive opportunity and reconfirms our commitment to growth in Brazil."[1]

Shell now operates the BC-10 development and controls 50%. Marking its entry into Latin America, OVL officially announced its 15% share in April 2006.[1]

Shell Park

Shell has made six technical discoveries in four areas of BC-10: Abalone, Argonauta (paper nautilus), Ostra (oyster), and Nautilus, all named for local shells. The integrated field development in the northern Campos basin is known locally as Parque das Conchas, or Shell Park.

All four fields are low pressure and require boosting. Abalone and Ostra contain gas and require subsea separation. Argonauta has less gas and no need for the caisson separation.

The Abalone appraisal well produced surprisingly light oil—42° API—compared with the 16-24° API oil produced from the other fields.

Nautilus field lies in the southwest of the BC-10 block and a substantial portion continues into adjacent Block BC-60, where it is known as Manganga field. Dorgant said the unitization must be resolved with Petrobras. Block BC-60 also contains Jubarte and Cachalote fields.

Metocean

Shell's metocean program is investigating full-depth currents and engaged Fugro for field work. The University of Sao Paulo interpreted the raw data. Despite concerns about high on-bottom currents, no evidence was found of scouring.

"The key," Dorgant said, "was getting [subsurface current] data for modeling VIV performance. And we had the data in time for design."

Shell will use a steel "lazy wave" for risers. Dorgant said this provides buoyancy and takes some of the load off the floating structure and the set-down point. Steel lazy wave was also used at NaKika in the Gulf of Mexico for umbilicals.

Geology, geophysics

There are six BC-10 reservoirs, all turbidite sands. The low-pressure reservoirs require equipment rated only to 10,000 psi and standard temperatures.

Shell's Lee Stockwell said the Rio-based subsurface team is using Halliburton's 3D DecisionSpace for visualization, Shell's proprietary 123i seismic software for time and depth migrations, Petrel for inversions and 3D static models, CMG for reservoir engineering, French Teclog software for petrophysics, and Petroleum Experts's GAP software to produce well diagrams.

Much of the work is done in Shell's offices in Barra da Tijuca.

BC-10 falls under the "Bid Round Zero" rules, and although no local content is required, operators must provide equal opportunity to Brazilian compa-

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nies. This includes issuing requests for bids in Portuguese and giving the responses fair consideration.

Some of the work is difficult to accomplish in the country. Cores cannot leave Brazil, and yet there are no commercial paleoservices and few petrology labs available to companies outside Petrobras's private labs.

Rig operations can be monitored by Shell's real-time operations centers, and Houston is the primary location monitoring the company's Brazilian operations. The Arctic I has an RTO server running Halliburton's INSITE Anywhere web delivery service. Using the RTOC system, the company can track and optimize performance, making the data accessible to experts around the world.

Transocean's Arctic I semisubmersible will drill Phase 1 and Phase 2 development wells at BC-10 (Fig. 2; photo from Transocean Inc.).

Drilling

The Stena Tay fifth-generation semisubmersible drilled the first 12 wells at BC-10 and the BS-4 wells in the Santos basin. Shell used Transocean's Deepwater Navigator drillship to drill the 13th well at BC-10.

After deciding to use a surface blowout preventer (BOP) with a slim, high-pressure riser, instead of a BOP and heavy marine riser, Shell was able to step down to a smaller rig for development drilling. The company engaged the GSF Arctic I semisub (Fig. 2) in late 2006 for development drilling March 2008 to January 2011. Shell entered the 34-month, extendable contract with GlobalSantaFe Corp. for the Arctic I (now owned by Transocean Inc.) at $270,000/day, up from $265,000/day.

The rig is a third-generation semisub (Friede & Goldman L-907 Enhanced Pacesetter design), modified earlier this year at the Signal International yard, Pascagoula, Miss., before sailing to Brazil from the Gulf of Mexico. It was inspected by IBAMA, the federal environmental agency, before going to work.

In November 2007, anchor vessels installed the spacer templates and drove the 60 m by 48-in. diameter conductors (Fig. 4). Dorgant said the bottom is soft and the conductors could be driven, with no need to jet or drill.

The mooring system was preset before the Arctic I arrived to drill the topholes and instal 40 m by 42-in. diameter liners.

Shell will batch drill the wells with Schlumberger's PowerDrive rotary steerable drilling system.

Development plan

The target shallow horizons (900-1,200 m below mud line) will require Shell to drill horizontal wells, building angle from the surface in order to minimize dogleg severity.

Phase 1 development includes drilling at Ostra, Abalone, and Argonauta-B West.

At Ostra, the reservoir lies only 900 m below the mudline and produces 24°API oil. Shell will drill six horizontal wells—three in each fault block—and one disposal well.

At Abalone, one reservoir lies about 1,700 m below mud line, and Shell will drill one deviated well. Abalone will be tied back to Ostra (Fig. 1, inset).

At Argonauta-B West, Shell will drill one appraisal well and two deviated horizontal wells.

Phase 2 will include drilling at Argonauta-O North, which will require water injection.

Phase 3 may involve wells at Argonauta-O South, and Phase 4 may include drilling at Nautilus, if the unitization is resolved.

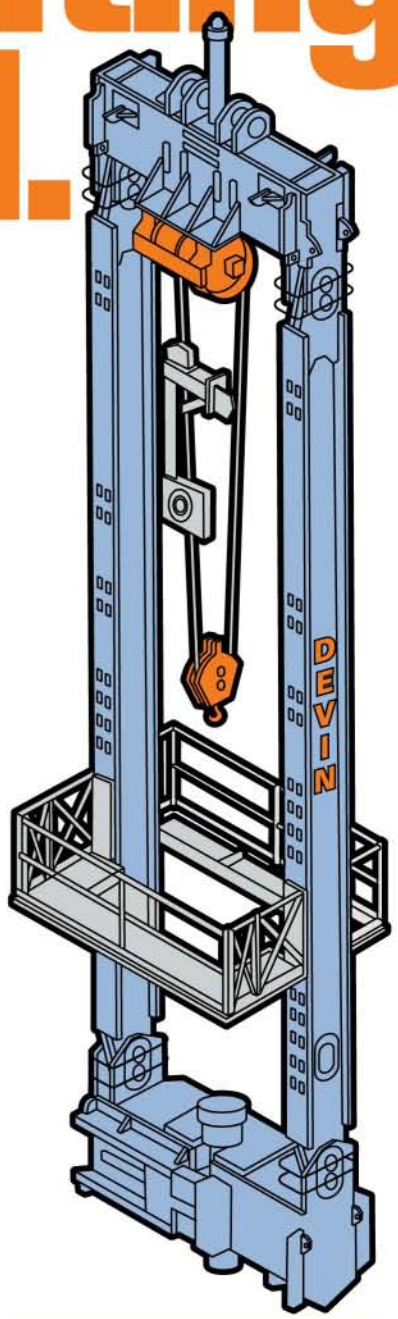
Surface BOP

Surface blowout preventer (SBOP) technology extends the capability of smaller offshore rigs that do not have the space to store large-diameter, heavy marine riser. Using SBOPS can reduce deepwater exploration and development costs because of lower dayrates for the smaller rigs and the use of slimmer riser (16-in. in place of 21-in. diameter) and casing strings.

Unocal Corp. was the first to use SBOPs, in Indonesia's Makassar Strait; it drilled 138 wells from 1996-2000 (OGJ, Dec. 16, 2002, p. 37).

Shell made some modifications to hoisting equipment on the Arctic I to allow movement of the new surface BOP (SBOP) system between the tensioner wires once the wires are connected to the tension ring and supporting the riser.

Just short of reinventing the wheel.



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The 48-in. diameter conductors were launched from a barge and penetrated the soft bottom under their own weight (Fig. 3; photo from Shell E&P).

The new hoisting system had to be able to move the SBOP from its parked position at the edge of the forward moon pool area to the well center (through the tensioner wires). The system that was finally selected has a "U"-shaped rail that can carry four traveling hoists.[2]

Shell tested a prototype hoist system to validate the design before it was implemented on the Arctic I. A new lifting frame was installed for the SBOP that interfaces with the four hoists.

The new riser system is probably the most significant change to the SBOP system for the BC-10 project, according to Shell's Brian Tarr and Tor Taklo.[2]

Key features of the slim, high-pressure risers include:

- Seamless, 16-in. OD, X80 tubulars with ¾-in. WT to meet pressure capacity requirements.
- New Merlin-style connector design.
- 32-in. OD buoyancy, based on the 2,285 m future water depth requirement and available rig tensioner system capacity.

To prevent VIV (vortex-induced vibration), 10 joints of 24-in. OD strake-equipped riser joints will be run above the buoyancy-equipped section of the riser.

The spacer template for an artificial lift manifold (ALM1), built by FMC CBV Subsea, is secured on the A-frame of an anchor-handling vessel, before installation (Fig. 4; photo from Shell).

Tubulars

According to a press release in March, Shell Brasil Ltda. awarded BJ Tubular Services a 3-year extension of its current contract to provide casing and tubing running services off Brazil through 2011. BJ will provide services at BC-10 from its operations base in Macae.

BJ will use a fully mechanized running system, including its Leadhand tong technology with hydraulic casing and backup tongs. BJ will also install its Derrickman system (remotely operated mechanical arm) on the Arctic I rig.

Coatings and pipe for the subsea flowlines are made in Brazil, supplied by Valourec and Mannesman's subcontractor, Bredero Shaw, in Belo Horizonte. Tubulars are shipped by rail to the CPVV support base in Vitoria.

Subsea trees—EVDT

FMC has three facilities in Brazil—two in Rio de Janeiro and one in Macae. The company builds subsea manifolds, trees, wellheads, pipeline, and control systems.

FMC has increased its local subsea tree manufacturing capacity to 350 trees in 2007-08 from 250 in 2006, 200 in 2005, and 175 in 2004. The expansion was driven by three contracts: Shell's BC-10, Chevron's

Frade, and Petrobras's Mexilhao.

Phase 1 of the BC-10 project requires 10 subsea trees, 2 production manifolds, 2 artificial lift manifolds, and 6 ESP boosting manifold modules.

Shell's new subsea tree standard is the EVDT—enhanced vertical deepwater tree—rated to 10,000 psi for 3,000 m water depth. These are 5-in. by 2-in. tree systems with concentric production bores and retrievable choke modules with multiphase flowmeter capability. FMC will exhibit an EVDT at the Offshore Technology Conference in Houston, May 5-8, 2008.

After the Phase 1 trees are installed at BC-10, Shell will have a total of 25 subsea trees among its operated assets off Brazil. Petrobras, by comparison, is the world's leader in implementing this technology, with more than 500 subsea trees installed.

Manifolds

FMC has built two artificial lift manifolds (Figs. 4 and 5) with slots for modules of boosting (MOBO) for Phase 1 of BC-10: ALM1 (4 MOBO slots) and ALM2 (two MOBO slots). Each ALM has about 50,000 individual parts, according to FMC's technical director, Paulo Couto.

The company uses SolidWorks software for design and did some rapid prototyping during the qualification process (for products not field-tested). Hundreds of qualifications were required, and about 75% were completed by March 2008. Couto said that the use of CAD systems has reduced mistakes.

The 4-m by 4-m MOBO boosts oil and separates oil and gas so that only oil passes through the electrical submersible pump. The separation is based on gas-liquid cylindrical cyclone (GLCC); there is no helix in the caisson. In the GLCC system, fluid enters the caisson tangentially, gas goes to the center and rises to the top, and liquid falls down the annulus to the ESP.

The caisson below the MOBO extends about 100 m into the seabed.

ESP caisson

Petrobras championed vertical annular separation and pumping systems (VASPS) in the early 2000s; one is still working in the Campos basin.[3]

Dorgant said Shell will flow multiple wells into single caissons, using new ESP caissons to separate commingled gas and oil. "ESP caisson technology seems to be working extremely well," he said. "Considering the range of outcomes that we could expect, we're doing well."

The base of the ALM2 is installed at Argonauta field in August 2007 (Fig. 5; photo from Shell).

The 1,500-hp electric submersible pumps require high-power electric umbilicals.

Shell is also investigating twin-screw pump technology.

With the base manifold already installed, oriented, leveled, and conductors driven, the liners can be drilled over the next few months.

In October 2008, Shell will install the artificial lift manifolds at Argonauta field using Subsea 7's new state-of-the-art deepwater rigid pipelay vessel Seven Oceans. In December, Shell will install the MOBO, caisson, and ESP assembly using the Arctic I.

FPSO

The Shell-led consortium will lease an FPSO for BC-10 from SBM Offshore NV. Shell said SBM Holdings Inc. will use "industry-standard" solutions for Brazil and design, build, own, and operate the FPSO. The lease contract is for 15 years, with options to extend or purchase.

Keppel FELS Shipyard in Singapore is converting the very large crude carrier Domy, an FSO previously operated off Africa, into the 100,000-b/d FPSO Espirito Santo for SBM with storage for 1.4 million bbl of oil and capacity to hang nine risers (Fig. 6).

The original hull, built in the early 1970s of "mild" steel, had a 30-year design life.

Modifications include a new moon pool for the 21-slot turret, covered sponsons to provide protection from collisions, and processing modules.

Bijupira-Salema

Shell's first sole production operation was the Bijupira-Salema project, one of the first major Brazilian fields developed by a foreign operator, and Brazil's first turnkey subsea project. Shell owns 80% of the project and Petrobas 20%. Shell became the first foreign oil company with oil production in Brazil (OGJ, Nov. 7, 2005, p. 20).

Bijupirá and Salema fields were discovered by Petrobras in 1990, about 250 km (150 miles) east of Rio de Janeiro. The fields are about 20 km apart and the water depth ranges from 480 to 880 m (1,580 to 2,900 ft). Bijupira-Salema has combined estimated recoverable reserves of about 170 million bbl of oil, with a 13-15 year field life.

Bijupirá is the larger field, with eight wells drilled in 2001-02 (six production, two water-injection, and two subsea manifolds). First oil came in August 2003. The gravity of the light oil

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FPSO Espirito Santo is under conversion at Keppel FELS shipyard in Singapore and will arrive in Brazil by yearend 2008 or early 2009 (Fig. 6; photo from Shell).

produced ranges 28-31°.

Salema is the smaller field, with first production from a single well in October 2003. Shell drilled a second well in 2006.

FMC Technologies do Brasil Ltda. and MODEC International supplied the FPSO vessel and turret, flowlines, riser system, controls, manifolds, and tie-in systems for the Bijupira-Salema development.

The Fluminense FPSO was converted in Singapore from an ultralarge crude carrier (Sahara ULCC) and arrived in Brazil early 2003. The ship is 400 m long, can process 81,000 b/d, and store 1.2 million bbl of oil.

FMC SOFEC supplied an external cantilevered bow turret mooring system.

Subsea field equipment includes:

- Fifteen vertical trees rated to 5,000 psi.
- Vertical connection system, 10 hydraulic connectors, 20 light mechanical connectors.
- Five subsea manifolds—three for production and two for water injection.
- Five subsea control modules.
- Pipeline and pipeline end termination (PLET) systems.

The project delivered first oil in August 2004; Shell's Dorgant said in March 2008 that average daily production is about 35,000 bo/d. Gas is exported to Petrobras's P-15 platform.

Shell in Brazil

Brazil represents a relatively small portion of Shell's global E&P portfolio, but the company's objectives are to "deliver new material oil and build a sustained presence." Shell has interest in 10 exploration blocks off Brazil and Dorgant said the company hopes to realize the subsalt potential.

Shell is one of the first independent oil companies to assume sole operatorship, first at Bijupira-Salema, and now at BC-10.

"The progress on BC-10 is exceeding my expectations," Dorgant said, "We've had remarkable schedule control and cost control on Phase 1. Staying on schedule and on budget is the key to maintaining our strategy in Brazil." ✦

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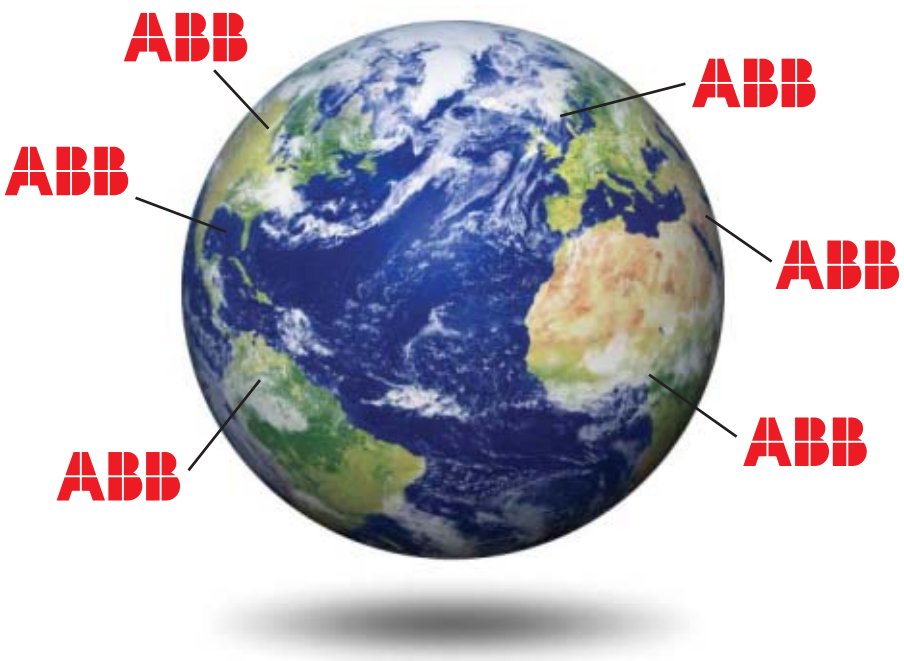

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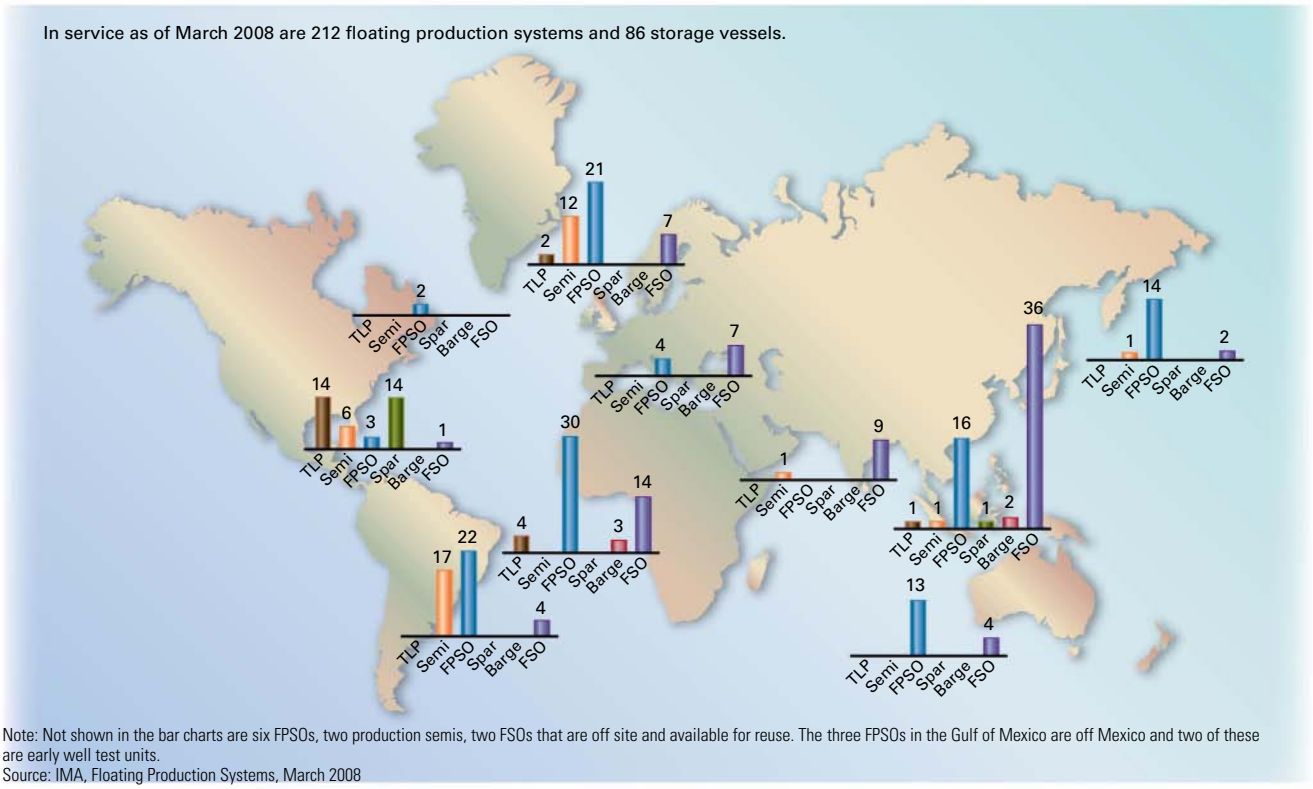
OPERATING PRODUCTION, STORAGE FLOATERS

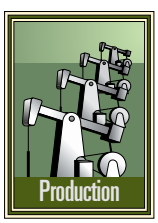
Fig. 1



Note: Not shown in the bar charts are six FPSOs, two production semis, two FSOs that are off site and available for reuse. The three FPSOs in the Gulf of Mexico are off Mexico and two of these are early well test units.
Source: IMA, Floating Production Systems, March 2008

Growth of floating production systems accelerates

James McCaul
International Maritime Associates
Washington, DC



Floating production systems continue to grow in number as the oil and gas industry finds fields that without these systems would not be technically or commercially feasible to develop.

In just over 3 decades, floating production systems have evolved from relatively simple units producing from a single well in 100 m of water to massive facilities capable of handling 250,000 bo/d of production from a complex subsea network of wells in water deeper than 1,000 m.

Floating production technology has enabled such countries as Angola, Nigeria, and Brazil to become major global oil producers and has kept alive production in the North Sea and Gulf of Mexico.

In its latest floating production system update, March 2008, International Maritime Associates (IMA) lists information on the floating production systems and storage vessels currently in service, the backlog orders for these systems, and the many floater projects being planned or studied.

The report continues a series of reports on the floater market that IMA began in the mid 1990s.

Current situation

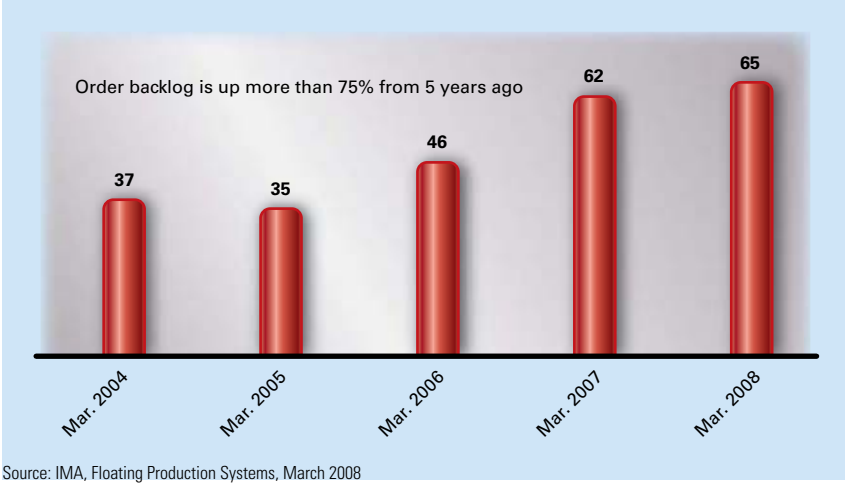
Currently in operations are 212 production floaters or 2½ times the number 10 years ago. The current inventory includes 131 floating production storage and offloading vessels (FPSOs), 40 production semisubmersibles, 21 tension leg platforms (TLPs), 15 production spars, and 5 production barges (Fig. 1).

These systems are on producing fields off West Africa, Northern Europe, US Gulf Coast, Brazil, Southeast Asia, China, Australia, and New Zealand.

Also in operation are 86 floating storage offloading vessels (FSOs) on fields in Southeast Asia, West Africa, and the North Sea.

ORDER BACKLOG

Fig. 2



Source: IMA, Floating Production Systems, March 2008

Production floater orders

The construction backlog of production floaters continues to grow. With 65 units now on order, the current backlog is 40% greater than 2 years ago and 75% greater than 5 years ago (Fig. 2).

The backlog consists of 46 FPSOs, 9 production semis, 1 TLP, 3 spars, 2 floating production units without storage, and 4 floating LNG storage-regasification units.

In addition, the industry is building or converting 10 FSOs.

Shipyards in Asia have developed a strong presence as suppliers of purpose built or converted production floaters. Of the 38 facilities, 20 facilities now involved in fabricating or converting floating production and storage units are in Asia.

Singapore repair yards dominate FPSO conversions.

Yards in Singapore, Malaysia, and Korea build most of the hulls for production semis.

Korean yards have a strong presence in the construction of purpose built, high-end VLCC-size FPSOs.

Chinese yards have established leading position in building cylindrical FPSOs and are increasingly the preferred source for new Suezmax-size FPSOs and FSOs.

Dubai also has become a major site for FPSO conversions.

Production floater price

As the construction backlog has grown, cost pressures from suppliers have caused the price of floating production units to increase dramatically. Pricing pressures are everywhere in the production floater fabrication and conversion sector.

Two recently ordered FPSOs have contracted prices not seen before in the industry. The 160,000 b/d Usan FPSO being built at Hyundai Heavy Industries Co. Ltd. for Total SA has a $1.6 billion engineering-procurement-construction (EPC) contract. Even higher is the price of the 200,000-b/d Pazflor FPSO being built by Daewoo Shipbuilding and Marine Engineering Co. Ltd., also for Total. The Pazflor EPC contract exceeds $2 billion.

These prices are substantially greater than the previous record for the 250,000 b/d Agbami FPSO, which had a $1.2 billion price tag.

Floating production outlook

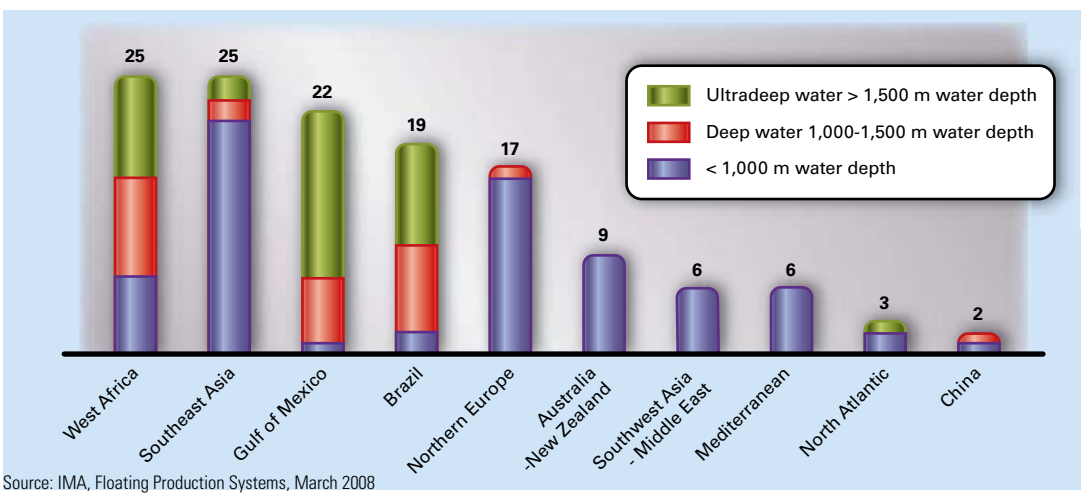
While the growth of floating production has been impressive, the future looks even brighter. IMA sees floating production in an accelerating stage of growth during the next 5-10 years.

The underlying fundamentals driving the sector are strong and indications of a robust future market are easy to spot. Global oil demand is growing at more than 2%/year, oil supply is tight, and threat of supply disruptions overhangs the market.

Oil companies have accepted that high oil prices will continue and have adjusted up-

PLANNED, UNDER STUDY FLOATER PROJECTS

Fig. 3



Source: IMA, Floating Production Systems, March 2008

ward investment oil price assumptions, helping to justify the huge expenditures needed to explore and develop fields in increasingly deeper water.

Rig constraints, which have limited deepwater exploration and development, will ease with the delivery of almost 80 new drillships or drilling semisubmersibles during the next 2-3 years.

A variety of small companies hoping for a quick return from +$100/bbl oil have been drawn into developing marginal fields, including fields where production was shut-in but producible reserves remain.

Speculators, who until recently did not have a big presence in floating production, now have 14 production floaters on order and plan to have the equipment ready to ride the tide of requirements for new systems.

IMA's recent study describes 134 offshore projects in the planning stages that potentially will require floating production systems, with some projects requiring multiple systems (Fig. 3). About 29% of these projects are at the bidding or final design stage and 71% are in the concept development or study phase.

IMA believes there is a very strong likelihood that 50-75% of these projects will actually materialize into equipment fabrication contracts within the next 3-5 years. It also believes another large number of floater projects will undoubtedly surface during the next several years that are not currently on the radar screen.

Order forecast

IMA's 5-year forecast expects 130-158 production floater orders between 2008 and 2013, as well as orders for another 40-50 FSOs. These systems will entail capital expenditures of $65-81 billion.

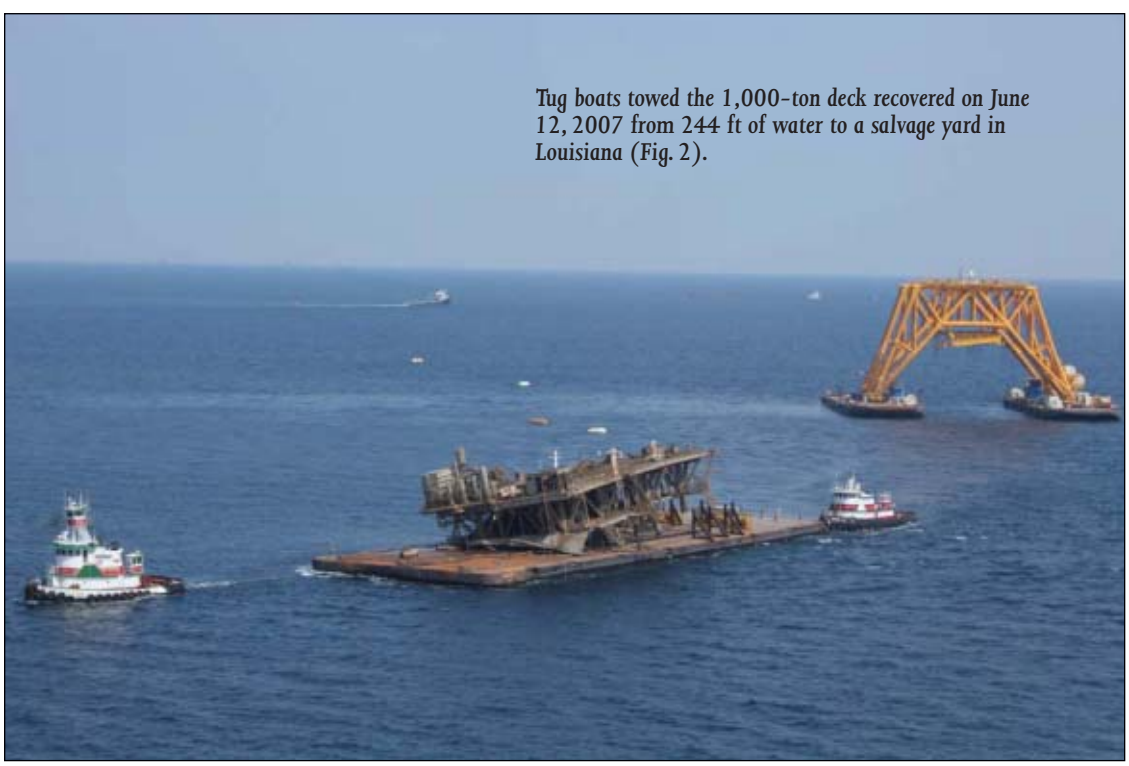
FPSOs will remain the most popular type of production floater, accounting for around 80% of the orders and capital expenditures. ✦

The author

James R. McCaul (imaassoc@msn.com) is president of International Maritime Associates Inc. He established IMA in 1973. Before forming IMA, he was member of the faculty of Webb Institute of Naval Architecture. McCaul holds a PhD in economics from the University of Maryland, an MS in business administration from Pennsylvania State University, and a BS in marine science from the State University of New York.

The lift on Aug. 29, 2007, coincided with the second anniversary of Hurricane Katrina. The list system recovered the 1,500-ton topsides from a 240-ft water depth, 55 miles south of Louisiana (Fig. 1).

Heavy-lift system retrieves hurricane-damaged topsides



Tug boats towed the 1,000-ton deck recovered on June 12, 2007 from 244 ft of water to a salvage yard in Louisiana (Fig. 2).

To date the heavy-lift system, deployed for the first time in June 2007, has recovered six hurricane-toppled platform topsides from the Gulf of Mexico and is contracted to retrieve several more.

Versabuild, an affiliate of Versabar Inc., designed, built and operates the lift system called "Bottom Feeder."

Versabuild says each of the eight-leg topsides retrieved to date was in a single lift with peak lift weights of up to 1,600 tons. The decks were then set on cargo barges and scrapped ashore. This approach compared to small-piece

removal, results in reduced personnel exposure offshore and is extremely cost-effective, according to Versabuild.

Figs. 1 and 2 show two of the recovered topsides.

Hurricane damage

The recent Ivan, Katrina, and Rita hurricanes in the Gulf of Mexico caused considerable structural damage to a number of shelf platforms. In some cases, the platforms suffered near total collapse with the topsides decks coming to rest as a single piece on the seabed adjacent to the platform substructure.

Regulatory guidelines provide several options for these topsides. One option is to reef the topsides in-place; however, Versabuild says many operators are planning to recovery from the seabed and remove the storm damaged topsides to shore.

Retrieval process

Versabuild describes the retrieval steps with its heavy-lift system as:

- Prepare each deck of the topsides for lift prior to the arrival of the lift system.
- Install prefabricated rigging assemblies and lower them to the deck structure. These are tied into the main truss row frames. Six to eight are required to complete a single deck recovery.
- With the lift system on location, set the eight-point mooring and position the system above the deck to be recovered.
- Lower the four lift blocks and deck rigging into the water with assistance from a remotely operated vehicle (ROV).
- Commence lift after confirming the state of all hook assemblies.
- Lift deck to the surface and lower it onto an awaiting, armored, cargo barge for transportation to shore and subsequent disposal.
- Capture any hydrocarbons or liquids flowing from the deck during the lifting process between the two system barges with a boom, allowing for removal and containment prior to bringing the cargo barge into the lift system. Also the armored deck barges have pollution containment and recovery systems to permit any potential hydrocarbon tainted liquids to be stored prior to the tow to shore.

Versabuild said the hookup assisted with the ROV assist takes about 4 hr and the lift itself 1-1½ hr.

It notes that recovery of the first four decks was completed during 21 days and durations from commencing the initial hookup to deck to the cargo barge leaving the site with the recovered deck on board was less than 12 hr.

The next two decks were recovered during 10 day in September with a similar time from hookup to sail away, Versabuild says.

Lift system

The lift system has two rigid space-frame truss structures spanning from hinged supports on the center lines of two regular deck transport barges, 250 ft by 72 ft in size. Versabuild says the pattern of support hinges decouples the heave, pitch, and roll motions of the support barges from the lift structures.

It says the structural design allows the system to remain stable under transit and lifting conditions and dynamic loads generated from wave action that can be expected when lifting structures both under water and through the water surface.

Versabuild validated the system in a series of scale model tests at the offshore model basin in Escondido, Calif.

This system is designed to lift structures as single units from the seabed in water depths up to 400 ft. The system has a rated lifting capacity of 4,000 tons. Versabuild notes that the four independent lift blocks allow for controlled lift operations of the large unbalanced structures for which accurate weight data are unavailable. These structures may rest on the seabed at varying degrees out-of-level and in some instances may be upside down.

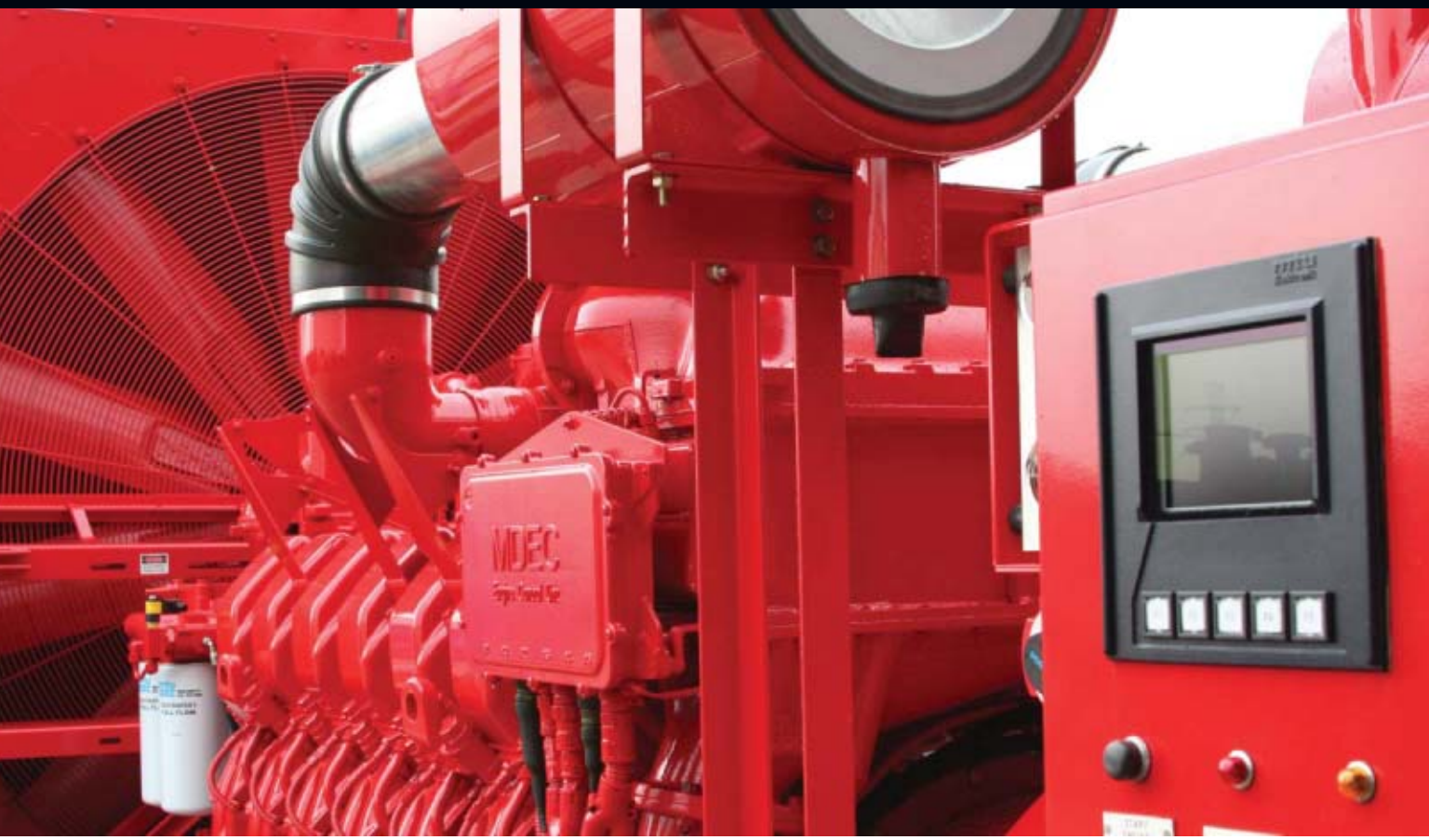
Each lift block has a 1,000-ton rated lift capacity and the blocks have a 45 ft by 80 ft spacing for flexibility to distribute lift loads and accommodate an out of level structure with an unknown lift weight and center of gravity.

The blocks operate in synchronous mode or independently.

Versabuild notes that the 3D space frame of the structure also provides out-of-plane or side-load capacity, allowing for structures that initially lift out of level to be lifted and releveled during the lifting process without the need to rerig. It adds that the pattern of support hinges also dampens the effect of skewed-loading, reducing the possibility of overloading one lift point during lifting operations.

The clearance between the support barges is about 110 ft at the water line, which allows a 400 ft by 100 ft barge, which hauls away the topsides, to be maneuvered between the support barges. ✦

Power Generation For The Oilfield



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FOURTH-QUARTER 2007
FIRST QUARTER 2008

Improved US production blunts cold weather effects

Dan Lippe
Petral Worldwide Inc.
Houston

Winter 2007-08 in the US was colder than any winter since 2002-03 and total heating degree days in the Northeast and upper Midwest were nearly equal to their 30-year averages. Despite the colder weather, US propane markets experienced no price spikes or distribution system problems. Improvement in domestic production during fourth-quarter 2007 helped offset the impact of colder weather and stronger demand in the residential-commercial sector of the US retail propane market.

Feedstock demand for propane during first-quarter 2008 was also somewhat weaker than expected. This factor also helped offset the impact of the inventory deficit and colder weather.

Feedstock demand for propane is an important balancing element for the overall propane market in North America. When colder weather pushes sales and consumption in the retail markets steadily higher, ethylene producers in the Gulf Coast have substantial capability to reduce their consumption and effectively offset some or all of the impact of a colder than normal winter. Historically, most of the seasonal decline in ethylene feedstock demand has occurred during fourth quarter. Frequently, feedstock demand for propane rebounds during first quarter.

Feedstock demand

During fourth-quarter 2007, US feedstock demand for propane tracked the typical seasonal pattern and declined by 32,000 b/d vs. consumption during third-quarter 2007. Feedstock demand averaged 298,000 b/d during fourth-quarter 2007 and was 21,000 b/d (1.9 million bbl) lower than during fourth-quarter 2006. Propane's share of fresh feed averaged 18% during fourth-quarter 2007 vs. 19.6% during third-quarter 2007. Propane's share of fresh feed during fourth-quarter 2007 was also 1% lower than the average for 2004-06.

Contrary to typical seasonal patterns, however, feedstock demand for propane remained weak in January and February 2008, averaging 295,000 b/d. Propane's share of fresh feed remained at 18% during January-February 2008.

The year-to-year decline in feedstock demand totaled 4.4 million bbl during first-quarter 2008 and 6.4 million bbl for the full winter heating season. The persistent weakness in feedstock demand during the winter heating season offset about 50% of the year-to-year inventory deficit at the beginning of the winter heating season.

The emerging economic recession has already affected housing starts and consumer confidence fell sharply during first-quarter 2008. The downturn in housing and consumer spending is likely to reduce demand for ethylene during 2008. Ethylene producers will operate at 85-88% of capacity and total demand for fresh feed will average 1.65-1.70 million b/d.

Until March, ethylene production had been forecast to increase by about 1 billion lb compared with output during 2007. Feedstock demand for propane will reach 340,000-350,000 b/d during second and third-quarter 2008 and propane's share of fresh feed will average 20-21%.

Fig. 1 illustrates historic trends in ethylene feedstock demand for propane.

Retail demand

Winter 2007-08 was colder than the previous winter in every month except February and degree day totals were almost equal to the 30-year average. For November through March, total heating degree days in the Northeast-Middle

Propane's use as a space-heating fuel in residential-commercial reaches its seasonal peak each year during fourth and first quarters. Residential-commercial propane demand begins to increase during September-October and usually reaches peak demand during December-January.

Atlantic region were 6.5% higher than in 2006-07 but were 3% below the 30-year average and 1% below the 10-year average. In the upper Midwest during November through March, heating degree days were 7.3% higher than in 2006-07, 0.4% higher than the 30-year average and 6.2% higher than the 10-year average.

Petral estimates that total retail propane sales averaged 835,000-845,000 b/d in fourth-quarter 2007, or 45,000-55,000 b/d higher than in fourth-quarter 2006. We estimate that total retail propane sales increased to 1.18-1.20 million b/d in first-quarter 2008, or 40,000-60,000 b/d higher than in first-quarter 2007.

Total demand during the winter heating season totaled 185 million bbl, or about 10.5 million bbl more than during the previous winter. Estimates for retail demand during the winter heating season are based on variations in heating degree days vs. the previous year.

Propane supply

Profit margins for propane recovery from gas processing plants were at record high levels in all producing regions during fourth-quarter 2007. Although natural gas prices (and hence recovery costs) increased more than propane prices, profit margins during first-quarter 2008 remained strong.

For refineries, propane prices averaged $16-17/MMbtu, or $10-11/MMbtu higher than natural gas prices during fourth-quarter 2007. Refineries had no incentive to burn propane instead of natural gas during the winter heating season. Hence, US propane production during fourth-quarter 2007 represented the industry's full recovery capability.

Data from the US Energy Information Administration (EIA) indicate that total domestic production from gas plants and net propane production from refineries averaged 852,000 b/d, or 44,000 b/d (4 million bbl) higher than year-earlier production volumes. Petral estimates domestic production averaged 835,000-845,000 b/d during first-quarter 2008

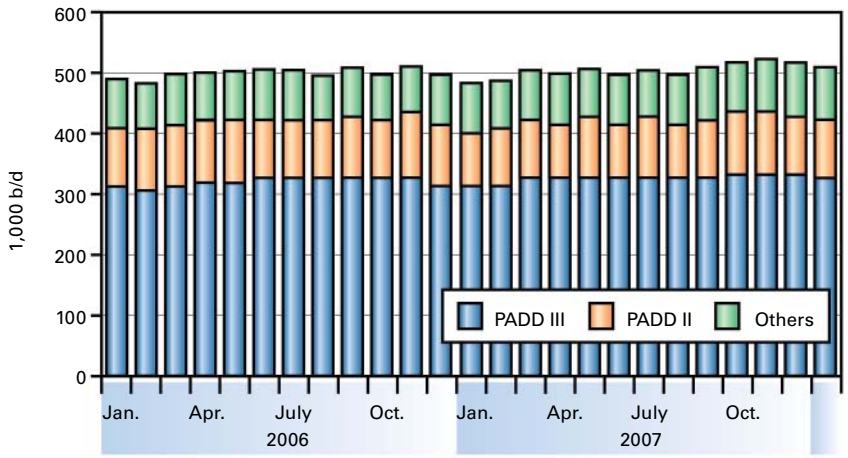
For winter 2007-08, domestic propane production totaled about 155 million bbl, or 7 million bbl more than during the previous winter heating season.

Gas plants

EIA statistics show that gas plant propane production averaged 520,000 b/d for fourth-quarter 2007 and was 16,000 b/d higher than year-earlier volumes. Gas plant production during fourth-quarter 2007 was also 16,000 b/d higher than during third-quarter 2007. The year-to-year increase in gas plant production, while modest, was the equivalent of an additional 1.5 mil-

US GAS-PLANT PROPANE PRODUCTION

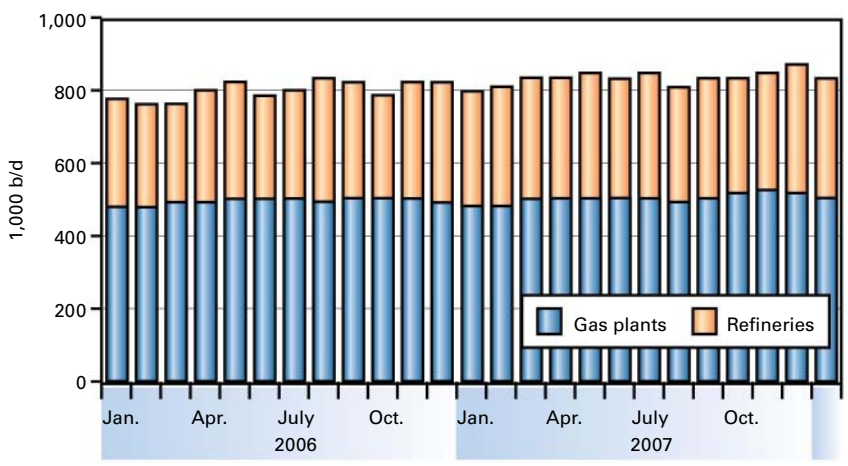
Fig. 1



Source: US Energy Information Administration

TOTAL US PROPANE PRODUCTION

Fig. 2



Source: US Energy Information Administration

ETHYLENE FEEDSTOCK DEMAND FOR PROPANE

Table 1

Month	Feedstock consumption, 1,000 b/d	Portion of fresh feed, %
October 2007	314.6	19.0
November	277.8	16.7
December	300.8	18.0
January 2008	292.9	17.2
February	296.6	18.7
March*	335.0	20.0

*Forecast.
Source: Petral Worldwide Olefin Plant Survey

lion bbl of inventory.

Petral expects gas plant production to have averaged 510,000-520,000 b/d in first-quarter 2008. EIA reported 509,000 b/d for January 2007. Production is likely to average 510,000-520,000 b/d again in second-quarter 2008.

Fig. 2 shows trends in propane production from gas plants.

US PROPANE INVENTORIES

Table 2

Month	PADD 2	PADD 3	Other regions	US total
	Million bbl			
July 2007	20.3	23.2	6.21	49.7
August	22.1	25.3	7.41	54.8
September	23.5	27.5	7.37	58.3
October	23.3	29.7	7.97	61.0
November	21.7	30.3	7.79	59.7
December	19.5	25.7	6.92	52.1
January 2008	13.4	20.8	5.22	39.4
February*	8.6	16.1	4.2	28.9
March*	7.5	14.0	3.4	23.9

*Based on weekly survey estimates.

Consistent with the seasonal increase in retail propane sales, propane imports from Canada typically increase to peak seasonal volumes of 150,000-175,000 b/d during fourth quarter and 170,000-190,000 b/d during first quarter. Additionally, propane imports from outside North America usually decline sharply during fourth quarter. Imports from international sources typically remain at seasonally minimum levels during first quarter.

Refineries

In fourth-quarter 2007, propane production from refineries (net of propylene for propylene chemicals markets) averaged 332,000 b/d, an increase of 4,000 b/d from net refinery supply in third-quarter 2007 and an increase of 28,000 b/d compared with year-earlier volumes, according to EIA statistics.

The year-to-year increase in refinery propane production was the equivalent of 2.6 million bbl of additional propane in storage on Nov. 1, 2007. The combined year-to-year increase in domestic production totaled 4.1 million bbl and effectively reduced the inventory deficit to about 5 million bbl.

Net refinery propane production during fourth-quarter 2007 was at its lowest level in October 2007 and averaged 317,000 b/d. Production was higher during November and December and averaged 353,000 b/d in December 2007, or 36,000 b/d higher than year-earlier volumes. Net refinery propane production in December 2007 was the highest since December 2004, but refinery production remained 30,000-40,000 b/d below the levels of 1999, 2000, and 2003.

Petral expects propane from refineries to have averaged 325,000-335,000 b/d in first-quarter 2008 and 320,000-330,000 b/d in second and third quarters 2008.

Fig. 3 shows trends in total propane production (gas plants and refineries).

Enterprise Products Partners LP's silica gel gas plant sits next to the company's newly opened Pioneer natural gas processing plant in Sublette County, Wyo. Pioneer began operations in February 2008 and will eventually process about 525 MMcfd from the Enterprise-operated Jonah gas gathering system and extracting about 25,000 b/d NGL. The plant is designed to process up to 750 MMcfd and extract as much as 30,000 b/d. Enterprise will continue to operate the silica gel gas plant as backup, it said, as was needed in late March when a gas leak and fire closed the Pioneer plant for several days. Photo from Enterprise.

Imports

Data from the US Census Bureau's Foreign Trade Division show propane imports from Canada increased in fourth-quarter 2007, consistent with the seasonal pattern. Imports from Canada averaged only 139,000 b/d in fourth-quarter 2007, however, or 24,000 b/d lower than year-earlier volumes and 33,000 b/d below the average for 2000-05. Petral estimates that propane imports from Canada increased to 170,000-180,000 b/d in first-quarter 2008.

Consistent with seasonal supply trends, international imports averaged 59,000 b/d during fourth-quarter 2007, as reported by the Foreign Trade Division. International imports were 4,000 b/d more than year-earlier volumes and were 9,000 b/d above the average for fourth quarters of 2003 and 2004. Petral estimates that international propane imports averaged 35,000-45,000 b/d during first-quarter 2008. Eleven of 12 international cargoes moved into the US through East Coast import terminals.

Overall inventory trends

During 2000-06, Nov. 1 normally marked the beginning of the inventory liquidation season for the US. Occasionally, however, propane inventories didn't reach their seasonal peak until mid to late November. In fourth-quarter 2007, however, propane inventory in primary storage reached its seasonal peak right on schedule, during the last week of October.

Propane inventory in primary storage reached a peak of 61.0 million bbl at the end of the last week of October,

according to the EIA's inventory statistics in its Petroleum Supply Monthly. For North America, inventories reached a seasonal peak of 73.7 million bbl at the end of October, or 12.4 million bbl lower than the inventory peak in 2006 and 9 million bbl lower than the average peak for 2004-06.

Typically, inventories decline by 12-15 million bbl at the end of December from their seasonal peak. A late flurry of waterborne imports, however, partially offset normal withdrawals of inventory from storage. As a result, at the end of December, inventories were only 8.8 million bbl below the seasonal peak.

During a typical winter, propane markets pull 40-44 million bbl of inventory from primary storage. During 2000-06, withdrawals of propane from primary storage totaled less than 40 million bbl only once (2002) and withdrawals averaged 42.4 million bbl (excluding 2002). With an inventory deficit of 9-12 million bbl at the beginning of the winter heating season, propane marketers reasonably expected inventories to fall to a new record low at the end of March 2008.

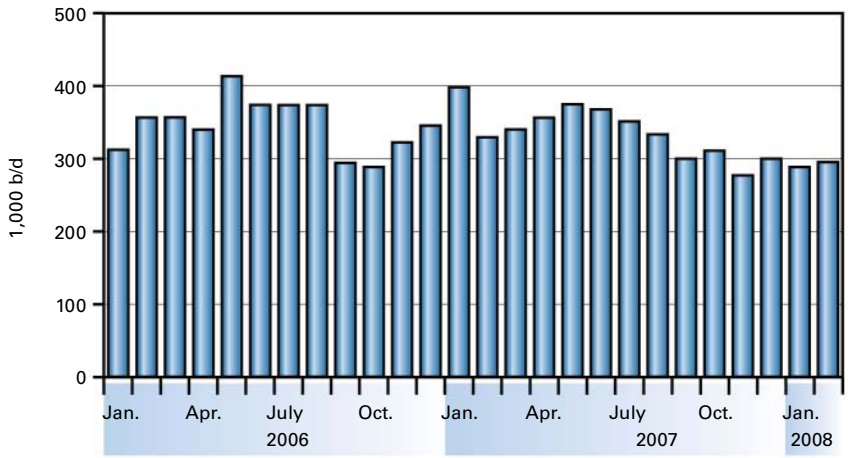
This year, total heating degree days (combined for the Northeast, Middle Atlantic, and Upper Midwest) for the winter were almost equal to the 30-year average. The combination, however, of weak feedstock demand November-February and increased domestic production helped offset stronger retail demand. As a result, the cumulative withdrawal from primary storage totaled about 38.0-40.0 million bbl, based on EIA's weekly inventory reports. Inventory in primary storage in the US declined to a minimum of 23.0-24.0 million bbl at the end of March 2008.

Purity propane in primary inventory in Canada totaled 10.1 million bbl on Sept. 1, 2007, or 1.4 million bbl less than year-earlier volumes but equal to the 5-year average. Based on statistics from Canada's National Energy Board, companies withdrew 7.5-8.0 million bbl of propane from primary storage during the winter heating season and pulled inventories of purity propane to a seasonal low of 2.0-2.4 million bbl at the end of March 2008. Purity propane inventories in Canada were 0.8-1.0 million bbl higher than year-earlier levels at the end of March.

Fig. 4 shows trends in propane inventory.

US ETHYLENE FEEDSTOCK DEMAND FOR PROPANE

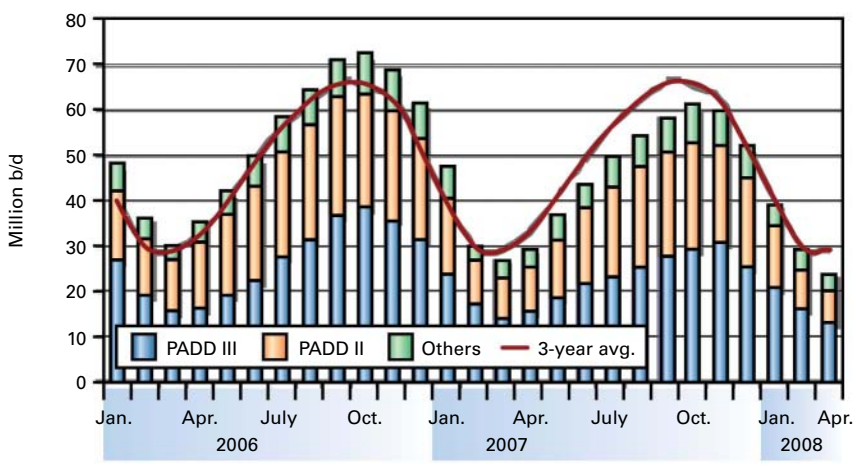
Fig. 3



Source: Petral Worldwide Inc., Houston

US PROPANE INVENTORY

Fig. 4



Source: US Energy Information Administration

Regional inventory trends

Propane inventory in primary storage in Petroleum Administration for Defense District (PADD) II peaked during the first week of October and totaled 23.6 million bbl or about 0.4 million bbl below the average for 2002-06. By the end of January 2008, inventory in primary storage in PADD II declined to 13.4 million bbl and was 2.4 million bbl lower than the 5-year average.

(PADD II consists of Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Ohio, Oklahoma, Tennessee, and Wisconsin.)

By the end of February 2008, however, EIA's weekly report showed that inventories in PADD II declined to 8.0-8.5 million bbl, or about 3 million bbl below the 5-year average. Inventories in PADD II continued to decline, falling to a seasonal minimum of

7.5-8.0 million bbl in late March 2008 and were 3.0-3.5 million bbl below average.

Propane inventory in primary storage in PADD III (Alabama, Arkansas, Louisiana, Mississippi, New Mexico, and Texas) reached its peak at the end of November 2007 (about 2 months later than in PADD II) and totaled 31.1 million bbl. Inventory in PADD III was about 3.1 million bbl below the 5-year average.

By the end of January 2008, inventory in primary storage in PADD II declined to only 20.8 million bbl and was equal to the 5-year average. Withdrawals of inventory remained at typical levels during February and March, and inventories fell to a seasonal low of 12.8-13.2 million bbl at the end of March 2008.

At this level, inventories in PADD III were about 2.0 million bbl below the 5-year average.

Pricing, economics

In most market situations, trends in crude oil prices and ethylene feedstock-parity values are the dominant influences on propane prices. Winter 2007-08 was no exception—until February 2008.

At the beginning of the heating season, propane prices in Mont Belvieu averaged 143.1¢/gal in October 2007 and were 20% higher than the July average of 119.1¢/gal. During the period of rising spot prices, propane's ratio vs. West Texas Intermediate increased to 70.0% in October 2007 vs. 67.5% in July 2007.

These comparisons indicate that emerging concerns about propane inventories for the winter heating season added to the general increase in WTI prices during third-quarter 2007.

WTI prices continued to increase during November and December 2007. Propane prices kept pace with rising crude oil prices and increased to 156¢/gal in November but slipped to 153.2¢/gal in December. During November and December, however, WTI ratios were consistently 69-70%.

Petral notes that US propane inventories declined by only 8.8 million bbl during November and December or 4.4 million bbl less than the average November-December decline in inventories during 2000-06. As the inventory outlook improved, concerns about "running out of propane" diminished sharply. Spot propane prices in Mont Belvieu declined by about 1¢/gal in January 2008 and the WTI ratio slipped to 68%.

In February 2008, however, spot prices declined by 8¢/gal even though WTI prices increased by $2.42/bbl. The propane-WTI ratio fell to 62.7%. The improvement in ethane production during fourth-quarter 2007, combined with a temporary decline in feedstock demand for ethane, prompted a sharp decline in spot ethane prices.

Since ethylene feedstock-value relationships generally resume being the dominant influence on spot propane prices during the first quarter, the collapse in ethane prices in early February precipitated the unexpected decline in propane prices. Although WTI prices jumped to $105/bbl average for March and were as high as $110/bbl during the month, spot prices for propane lagged the crude price rally.

As a result, the WTI ratio weakened further and averaged only 58.7%. The propane-WTI ratio has not been this weak since summer 1991.

Parity values

In view of the ethylene industry's capability to adjust its consumption of propane within a month or two, propane's prices vs. its ethylene feedstock value is the true measure of the strength or weakness in spot prices in Mont Belvieu. During fourth-quarter 2007, spot prices in Mont Belvieu averaged 150.8¢/gal, but propane's feedstock-parity value averaged only 145.8¢/gal. By this measure, propane prices were 5.0¢/gal higher than their average feedstock-parity values.

Furthermore, propane's premium vs. feedstock-parity values increased by 0.6¢/gal vs. third-quarter 2007. These comparisons are a reliable indication of the relative strength in propane prices during fourth-quarter 2007.

During January 2008, spot prices averaged 150.6¢/gal but feedstock-parity values averaged 152.1¢/gal. The market was working to unwind the relative strength in propane prices to provide the economic incentives needed to support the expected increase in feedstock demand.

In February, however, prices slipped to 142¢/gal but feedstock-parity values slipped to 144.7¢/gal and the economic incentive for propane widened to 2.3¢/gal. Spot prices rallied in March and averaged 147.3¢/gal, but feedstock-parity values jumped to 156¢/gal (primarily due to higher prices for natural gaso-

The author

Daniel L. Lippe (danlippe@petral.com) is president of Petral-Worldwide Inc., Houston. He founded Petral Consulting Co. in 1988 and cofounded Petral Worldwide in 1993. He has expertise in economic analysis of a broad spectrum of petroleum products including crude oil and refined products, natural gas, natural gas liquids, other ethylene feedstocks, and primary petrochemicals. Lippe began his professional career in 1974 with Diamond Shamrock Chemical Co., moved into professional consulting in 1979, and has served petroleum, midstream, and petrochemical industry clients since that time. He holds a BS (1974) in chemical engineering from Texas A&M University and an MBA (1981) from Houston Baptist University. He is an active member of the Gas Processors Association, serving on the NGL Market Information Committee and currently serving as vice-chairman of the committee.

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line) and the economic incentive for propane widened to 8.7¢/gal.

Spring, summer prices

WTI prices will average $100-110/bbl during second and third quarters 2008. Spot ethane prices, however, are likely to remain relatively weak and continue to undermine propane's value in at least 40% of the ethylene feedstock market.

Spot propane prices in Mont Belvieu will increase to 155-160¢/gal for second-quarter 2008 and 165-175¢/gal for third-quarter 2008. Feedstock-parity values, however, will increase to 165-170¢/gal during second quarter and 175-185¢/gal in third-quarter 2008. The economic incentive to crack propane will average 7-10¢/gal. The propane/WTI ratio will average 63 65% during second and third-quarter 2008. ✦

NELSON-FARRAR COST INDEXES

Refinery construction (1946 Basis)
(Explained on p.145 of the Dec. 30, 1985, issue)

	1962	1980	2005	2006	2007	Jan. 2007	Dec. 2007	Jan. 2008
Pumps, compressors, etc.	222.5	777.3	1,685.5	1,758.2	1,844.4	1,799.2	1,867.3	1,893.7
Electrical machinery	189.5	394.7	513.6	520.2	517.3	527.7	513.2	510.9
Internal-comb. engines	183.4	512.6	931.1	959.7	974.6	969.5	978.3	985.3
Instruments	214.8	587.3	1,108.0	1,166.0	1,267.9	1,239.9	1,293.8	1,299.2
Heat exchangers	183.6	618.7	1,072.3	1,162.7	1,342.2	1,179.4	1,374.7	1,374.7
Misc. equip. average	198.8	578.1	1,062.1	1,113.3	1,189.3	1,143.2	1,205.5	1,212.8
Materials component	205.9	629.2	1,179.8	1,273.5	1,364.8	1,310.0	1,369.1	1,405.0
Labor component	258.8	951.9	2,411.6	2,497.8	2,601.4	2,558.6	2,661.3	2,662.0
Refinery (Inflation) Index	237.6	822.8	1,918.8	2,008.1	2,106.7	2,059.1	2,144.4	2,159.2

Refinery operating (1956 Basis)
(Explained on p.145 of the Dec. 30, 1985, issue)

	1962	1980	2005	2006	2007	Jan. 2007	Dec. 2007	Jan. 2008
Fuel cost	100.9	810.5	1,360.2	1,569.0	1,530.7	1,386.2	1,671.6	1,671.3
Labor cost	93.9	200.5	201.9	204.2	215.8	218.1	208.8	214.4
Wages	123.9	439.9	1,007.4	1,015.4	1,042.8	1,065.6	1,030.6	1,023.0
Productivity	131.8	226.3	501.1	497.5	483.4	488.5	493.7	477.2
Invest., maint., etc.	121.7	324.8	716.0	743.7	777.4	759.8	791.3	796.7
Chemical costs	96.7	229.2	310.5	365.4	385.9	363.4	413.5	423.7
Operating indexes								
Refinery	103.7	312.7	542.1	579.0	596.5	574.7	615.2	620.6
*Process units**	103.6	457.5	787.2	870.7	872.6	816.6	924.6	928.1

**Add separate index(es) for chemicals, if any are used. See current Quarterly Costimating, first issue, months of January, April, July, and October.*

These indexes are published in the first issue of each month. They are compiled by Gary Farrar, Journal Contributing Editor.

Indexes of selected individual items of equipment and materials are also published on the Costimating page in the first issue of the months of January, April, July, and October.

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Medgaz pipelay begins; S-lay, J-lay split duties

Christopher E. Smith
Pipeline Editor

Medgaz will begin offshore pipelay of the 210 km, Algerian-European natural gas pipeline bearing its name in May 2008, using a combination of S-lay and J-lay techniques.

Saipem SpA's Castoro Sei semisubmersible pipelay vessel arrived in Almeria, Spain, in early March and has been welding and prefabricating joints of the 12 m, 24-in OD pipe since (Fig. 1). The Castoro Sei will lay the shallow-water portion of the pipeline (down to 550 m) first from Almeria and then from Algeria, using the S-lay method, with the work expected to take 4 months.

The dynamically positioned semisubmersible SSDV Saipem 7000 will complete deepwater pipelay (down to 2,160 m) during third-quarter 2008. DLB Crawler will perform the above-water tie-in off the Algerian coast.

This article describes the methods and technologies applied to each step of the Medgaz project, including Medgaz's investigation into using S-lay in large-diameter ultradeepwater applications.

Background

Spanish gas consumption reached 33.4 billion cu m in 2006, up from 20.8 billion cu m in 2002.[1] By 2011, demand will exceed 44 billion cu m/year. Spain depends on imports for 99.6% of its gas, of which 65% is LNG and 35% pipeline gas. LNG typically costs more than pipeline gas due to liquefaction, sea transportation, and regasification expenses.

Extensive studies by independent energy consultants show that the Medgaz pipeline will be the lowest long-run marginal cost supply option (excluding producing-country royalties) for future gas supplies to Spain (OGJ, Aug. 21, 2006, p. 57).

The Medgaz pipeline will carry 8 billion cu m/year between Beni Saf, Algeria, and Almeria. The €900 million project—with stakeholders Sonatrach (36%), Cepsa (20%), Iberdrola (20%), Endesa (12%), and Gaz de France (12%)—is to enter service in 2009.

Mitsui and Sumitomo began pipe manufacture in Japan in February 2007, with coating done by Bredero Shaw at its Kuantan, Malaysia, plant starting in June of the same year. The pipe is API Grade X70, with 0.9-1.2-in. WT. The thicker-walled pipe will cross at the greatest depths.

Groundbreaking and trenching at Beni Saf and Almeria started in July and September 2007, respectively. Pipe began arriving in Almeria in October 2007, with the final shipment arriving in February 2008 (Fig. 2).

The Castoro Sei measures 152 × 70.5 m and has a depth to main deck of 29.8 m. It uses 12 25-ton anchors and four azimuthal variable-pitch thrusters with 37 tons thrust. Three 110-ton capacity pipe tensioners work with a 300-ton abandonment-retrieval winch and two 60-ton capacity gantry deck-mounted fully revolving cranes.

Route selection

C&C Technologies completed some of the marine surveys defining Medgaz'

Saipem's Castoro Sei arrived at Almeria, Spain, in early March and has since been prefabricating 12 m, 24-in. OD joints into longer lengths for installation as the shallower sections (maximum depth, 550 m) of the Medgaz pipeline. The vessel will begin pipelay from the Spanish coast in May 2008 and then move into position off the Algerian coast for similar operations. Medgaz expects work to be complete within 4 months (Fig. 1).

route, using its Odin Finder and Rig Supporter vessels. C&C also used its C-Surveyor I autonomous underwater vehicle, carrying out 50-hr missions at depths 40 m above the seabed.

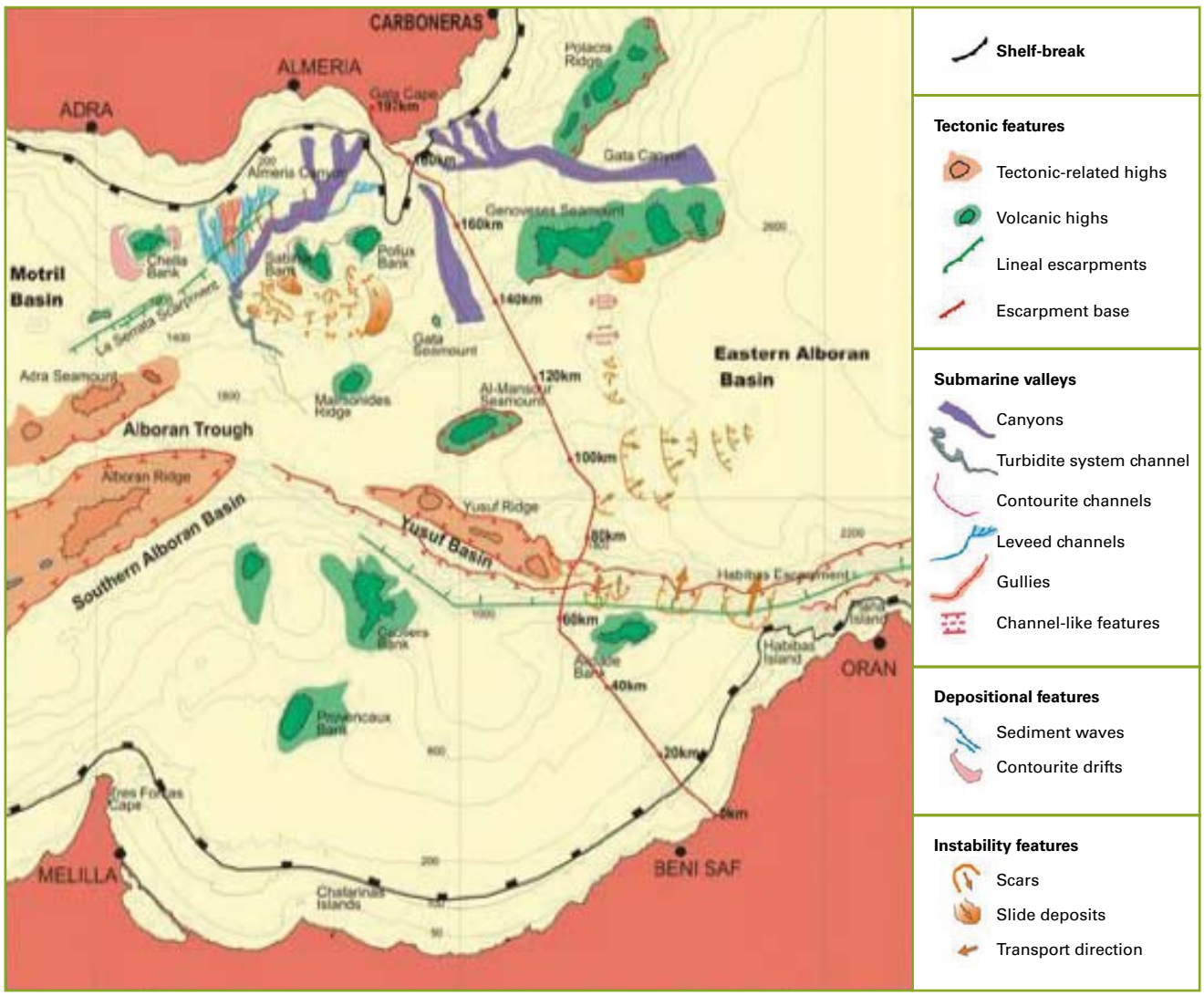
Medgaz engineers supervised the surveys, with route selection guided by the following objectives:

- Minimization of environmental impact.
- Protection of marine flora and fauna.
- Avoidance of natural obstacles.
- Low geological, geotechnical risks.
- Minimal number of cable crossings.
- Ensuring the ability to use both

Pipes for the Medgaz pipeline (12 m long, 24-in. OD) arrived in Almeria, Spain, October 2007-February 2008. This photo shows only a portion of the pipe accumulated during that time before loading on the Castoro Sei for prefabrication (Fig. 2).

MEDGAZ ROUTE

Fig. 3



J-lay and S-lay construction.

- Minimization of free-span lengths.

Medgaz' offshore route measures 198.3 km, 49% at water depths greater than 1,000 m. It includes 19 curvature points and five places where the line will cross telecommunications cables, all below 1,000 m (Fig. 3). It also crosses the Yusuf fault and the steep slopes of the Habibas escarpment (71-77 km along its route), but 95% of the route has slopes less than 4° (OGJ, May 23, 2005, p. 59).

Pipe coating

Bredero Shaw applied both internal and external coatings to the Medgaz pipe joints. Flow efficiency coating consisted of a thin-film epoxy applied inside the pipe, reducing friction and turbulence and helping reduce both pipe diameter and power requirements.

Bredero applied a three-layer polypropylene anticorrosion coating to the outside of the pipes; a layer of fusion-bonded epoxy, followed by an extruded copolymer adhesive, and an outer layer of extruded polypropylene. The inner FBE layer provides resistance to cathodic disbondment, reducing cathodic protection costs.

The outer polypropylene layer normally protects the pipe during transportation and installation, as well as providing added installed resistance to shear forces, chemicals, and abrasive soil conditions. For Medgaz, however, Bredero applied an additional reinforced concrete weight coating, providing both negative buoyancy and mechanical protection. Besides the cage reinforcement applied to the outside of the coated pipe, the concrete itself mixed iron ore aggregate, cement, sand or granite aggregate, and water.

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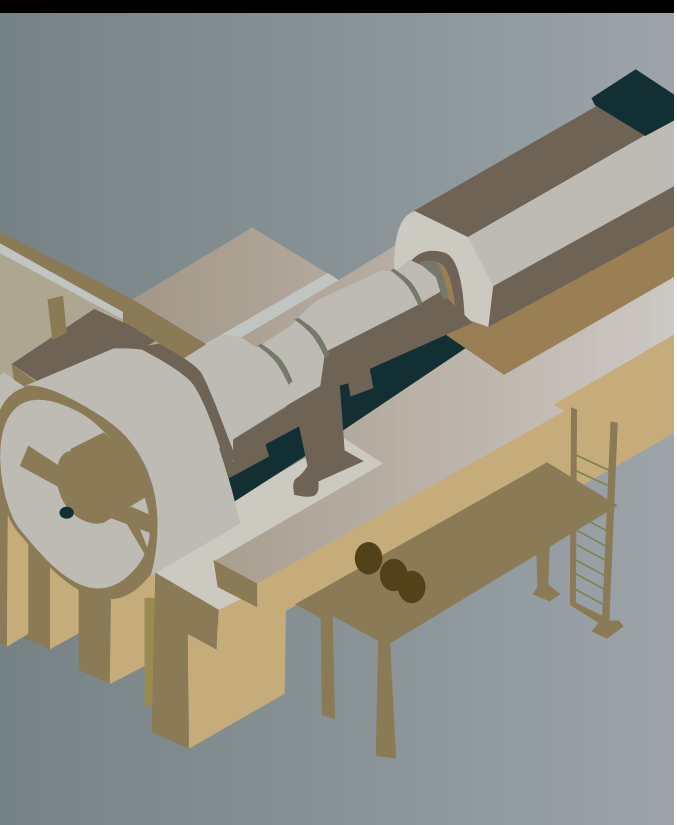

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Pipelay

In 2004, Medgaz became concerned that the limited availability of J-lay vessels capable of deepwater pipelay might disrupt the project's schedule, pushing start-up past 2009. The J-lay method, with the pipe leaving the vessel from a near-vertical orientation, places its only substantial stress during pipeline installation near the touchdown point in the sag bend, making it the method used in deepwater applications.

The S-lay method, by contrast, places initial installation stress on the pipe in the overbend region near the stinger, which is then compounded by the combined bending and external pressure experienced at the sag bend (Fig. 3).

Concerns that this combination of strains placed on high-grade, thick-walled, large diameter pipeline in a deepwater environment could lead to local buckling and reduced collapse strength have so far prevented it being used in such applications.

Medgaz commissioned C-FER Technologies to explore the possibility of an extension of the deepwater S-lay method from small-diameter pipelines to large, and to X70 grade pipe from previously used X65 material. Medgaz and C-FER were particularly interested in the effects on heavy section buckle arrestors of exposure to the S-lay overbend's high bending loads.

Results suggested that S-lay could be successfully used for ultradeepwater pipelay of the sort encompassed by Medgaz, demonstrating that the line's proposed pipe-buckle arrestor connection design would not cause premature buckling as the pipe crosses the stinger, nor would high bending strains at the overbend influence the pipe's collapse strength.[2]

Medgaz ultimately booked both the Castoro Sei (S-lay) and the S7000 (J-lay) for installation work on the pipeline, but added flexibility to their selection process by investigating the limits of S-lay vessels in deepwater, large-diameter pipelay.

Integrity management

Medgaz has developed its own integrated CAD-GIS system for integrity management. The integrated system will combine all GIS spatial data, CAD design information, pipe procurement and tracking data, maintenance data, and pipeline survey data into a single source, which will then be able to capture and present different views of data acquired during any phase of the project.

Medgaz anticipates that the integrated system will avoid some of the problems associated with traditional systems; disjointed survey and CAD information, the need to manually correlate data at all stages; a resulting poor collaboration between survey, engineering, construction, and repair-maintenance functions; and a lack of project data flow between various applications (OGJ, Aug. 21, 2006, p. 57).

Power

Three Rolls-Royce RB211-6761 DLE gas turbine packages will power Medgaz. The 44,000-hp dry low emissions units will provide the front-end gas boosting from Beni Saf. Seven RB211 units at two compressor stations perform a similar role on the GME pipeline (between Algeria and Spain, via Morocco), which exits North Africa near Tangier before going under the Straits of Gibraltar and into Spain on the outskirts of Tarifa. GME entered service in 1996.

The Medgaz turbines will each power high-efficiency Dresser-Rand Datum barrel gas compressors. The compressor station's inlet pressure will be 45 barg (about 650 psig), with a maximum 200 barg outlet pressure. Arrival pressure in Spain will measure 82 barg. ✦

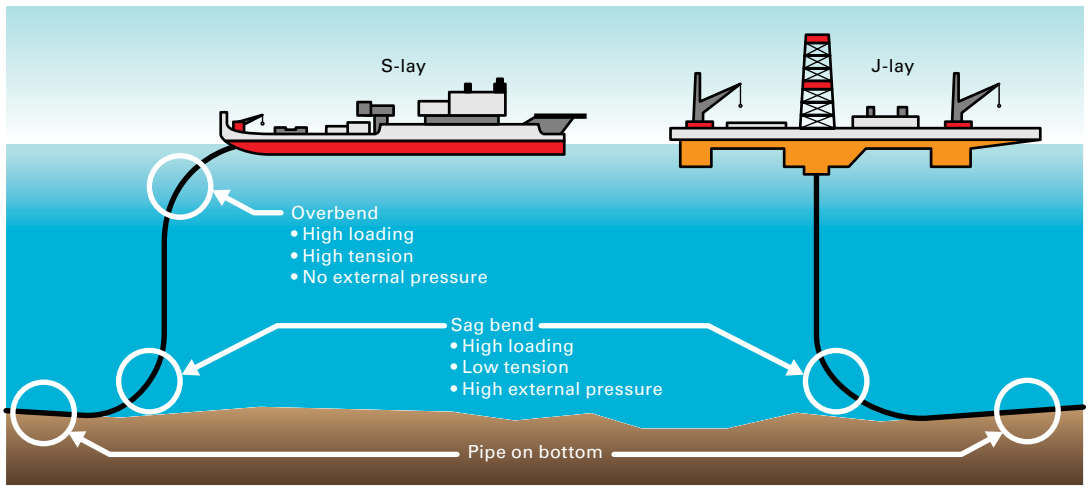
References

1. BP Statistical Review of World Energy 2007.

2. DeGeer, D., Timms, C., Wolodko, J., Yarmuch, M., Preston, R., and MacKinnon, D., "Local Buckling Assessments for the Medgaz Pipeline," OMAE 2007, San Diego, June 10-15, 2007.

OFFSHORE PIPELAY METHODS

Fig. 4



Equipment/Software/Literature

New tool designed for ethanol leak detection

Here's the new 2020ComboPRO for ethanol leak detection in fuel ethanol plants.

The tool helps in compliance with air quality operating permit requirements of the US Environmental Protection Agency's new source performance standards (NSPS) Subpart VV. The portable and easy to operate instrument's photoionization detection technology measures ethanol leaks accurately and quickly, the company says. The tool's large digital display prompts the operator through basic operations, and critical data are displayed in less than 3 sec. Its measurement range is 0.1-10,000 ppm, and audible and visual alarms alert the operator when predefined limits are exceeded. The 2020ComboPRO meets and exceeds the requirements of NSPS Subpart VV specific to EPA Method 21 for fugitive emissions, also known as leak detection and repair. And the tool is also rated intrinsically safe for explosive environments.

Source: **Photovac Inc.,** 300 Second Ave., Waltham, MA 02451-1166.

New feature incorporated into flextop computers

This manufacturer of high-performance, portable computers has incorporated Santa Clara, Calif.-based Intel Corp.'s Harpertown L5420 Xeon 45nm Quad Core processor into NextDimension flextop computers.

As many as two Harpertown Quad Core processors are offered for the following computer models:

• The NextDimension Pro and Pro HD, the NextDimension Evo, Evo HD (shown at right), and the Vigor Pro SD. The new low wattage version of the processor provides an increased clock speed of 2.5 GHz and 12 MB cache, which helps enhance performance by caching bits of data and code in the chip itself while performing other tasks simultaneously at a rapid rate.

The company says users will benefit from Intel's 45nm 820 million transistors placed into the Intel Xeon processor 5400 series, an increase over the previous generation Intel Xeon processor 5300 series, which featured 582 million transistors.

More transistors means more capability, performance, and energy efficiency from enhancements that include expanded power management capabilities. These features are designed to reduce virtualization overhead, and 47 new Intel SSE4 instructions can help improve the performance of media and high-performance computing applications, which are common among NextComputing users, the firm points out.

Source: **NextComputing,** 4 Townsend West, Unit 17, Nashua, NH 03063.

Services/Suppliers

Aker Kvaerner ASA,

Oslo, has changed its name to Aker Solutions ASA. The company will is now listed under the new ticker "AKSO." In addition, Aker Solutions has consolidated its Maintenance, Modification, and Operations and Field Development business areas into a new business area, Energy Development & Services, effective from first quarter 2008. The reorganization sets off a process that will decide the company's new structure, business streams, and new management. The new model is expected to be fully operational effective January 1, 2009.

Aker Solutions is a leading global provider of engineering and construction services, technology products, and integrated solutions to the oil and gas, refining and chemicals, mining and metals, and power generation industries.

Merichem Chemicals & Refinery Services LLC,

Houston, has promoted R. Scott Alvis to manager of corporate marketing. He has more than 20 years experience in sales to the process industries, including refining, gas processing, and chemicals manufacturing.

Alvis

Merichem Chemicals & Refinery Services, a wholly owned subsidiary of Merichem Co., provides a diversified portfolio of products and services for petroleum refining, gas processing, chemical and petrochemical, pulp and paper, and wood treatment and preservatives industries, as well as an expansive offering of process technologies for the treatment of hydrocarbon streams.

T-3 Energy Services Inc.,

Houston, entered into a know-how license and technical services agreement with Aswan International Engineering Co. LLC, a member of the Al Shirawi Group. Aswan is located in Dubai and provides various services that include manufacturing, repair, and remanufacturing of oil field products used by its customers operating in the Persian Gulf and elsewhere in the Middle East. Under the terms of the agreement, Aswan will obtain from T-3 Energy technical know-how in order to repair, manufacture, and remanufacture T-3 Energy's licensed products in the UAE. In addition, the agreement provides Aswan the ability to resupply T-3 Energy's licensed products to the combined customer base located throughout the Middle East, including but not limited to Dubai, UAE, Oman, Qatar, Bahrain, and Kuwait. The licensed products include substantially all of T-3 Energy's products. The initial term of the agreement is for 5 years. The agreement solidifies a manufacturing and aftermarket presence for T-3 Energy products in the Middle East.

T-3 Energy provides a broad range of oil field products and services mainly related to drilling and completion, workovers, and production and transportation of oil and gas.

Imports of crude and products

	Districts 1-4		District 5		Total US		
	4-18 2008	4-11 2008	4-18 2008	4-11 2008	4-18 2008	4-11 2008	*4-20 2007
	1,000 b/d						
Total motor gasoline	988	946	18	4	1,006	950	1,164
Mo. gas. blending comp.	591	682	18	—	609	682	571
Distillate	259	204	2	56	261	260	310
Residual	501	298	107	18	608	316	437
Jet fuel-kerosine	82	175	96	143	178	318	297
Propane-propylene	232	147	22	12	254	159	201
Other	551	477	153	–12	704	465	698
Total products	**3,204**	**2,929**	**416**	**221**	**3,620**	**3,150**	**3,678**
Total crude	**8,840**	**7,966**	**1,201**	**913**	**10,041**	**8,879**	**10,035**
Total imports	**12,044**	**10,895**	**1,617**	**1,134**	**13,661**	**12,029**	**13,713**

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

Purvin & Gertz LNG netbacks—Apr. 25, 2008

Receiving terminal	Liquefaction plant					
	Algeria	Malaysia	Nigeria	Austr. NW Shelf	Qatar	Trinidad
	$/MMbtu					
Barcelona	8.51	6.16	7.57	6.04	6.85	7.48
Everett	8.72	7.13	8.32	6.48	7.06	9.05
Isle of Grain	10.49	8.01	10.32	7.88	8.70	9.76
Lake Charles	7.92	5.69	7.67	5.89	6.26	8.63
Sodegaura	7.15	8.42	6.63	8.43	7.68	5.64
Zeebrugge	8.92	5.60	7.20	5.54	6.29	7.20

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	15,810	55,622	30,767	9,388	29,226	13,314	2,278
PADD 2	64,366	49,262	17,083	7,287	28,771	1,342	9,622
PADD 3	167,482	72,643	33,897	11,730	30,667	18,229	14,294
PADD 4	13,702	5,794	1,702	515	3,203	251	[1]733
PADD 5	54,721	29,251	21,724	9,363	12,835	6,279	—
Apr. 18, 2008	**316,081**	**212,572**	**105,173**	**38,283**	**104,702**	**39,415**	**26,927**
Apr. 11, 2008	**313,660**	**215,751**	**107,795**	**39,709**	**106,079**	**38,339**	**25,416**
Apr. 20, 2007[2]	**334,479**	**194,214**	**89,538**	**40,449**	**117,332**	**41,266**	**25,877**

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

Refinery report—Apr. 18, 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	1,241	1,306	1,785	116	404	146	62
PADD 2	3,289	3,258	2,275	208	909	48	198
PADD 3	7,477	7,308	3,076	664	2,128	367	652
PADD 4	593	577	290	29	186	13	[1]136
PADD 5	2,458	2,378	1,441	412	489	197	—
Apr. 18, 2008	**15,058**	**14,827**	**8,867**	**1,429**	**4,116**	**771**	**1,048**
Apr. 11, 2008	**14,316**	**14,236**	**8,841**	**1,403**	**4,029**	**646**	**1,002**
Apr. 20, 2007[2]	**15,324**	**15,086**	**8,536**	**1,273**	**4,117**	**638**	**1,076**
	17,588 operable capacity		**85.6% utilization rate**				

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

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

OGJ crack spread

	*4-25-08	*4-27-07	Change	Change, %
	$/bbl			
SPOT PRICES				
Product value	129.07	86.71	42.36	48.9
Brent crude	115.04	67.31	47.73	70.9
Crack spread	14.04	19.40	–5.36	–27.6
FUTURES MARKET PRICES				
One month				
Product value	131.69	88.86	42.83	48.2
Light sweet crude	117.95	65.57	52.38	79.9
Crack spread	13.74	23.29	–9.55	–41.0
Six month				
Product value	126.64	82.10	44.54	54.3
Light sweet crude	114.34	69.35	44.99	64.9
Crack spread	12.30	12.75	–0.44	–3.5

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

PACE REFINING MARGINS

	Feb. 2008	Mar. 2008	Apr. 2008	Apr. 2007	Change 2008 vs. 2007	Change, % 2008 vs. 2007
	$/bbl					
US Gulf Coast						
West Texas Sour	11.78	12.55	15.47	23.70	–8.22	–34.7
Composite US Gulf Refinery	12.28	14.75	15.86	22.37	–6.51	–29.1
Arabian Light	9.17	10.90	11.89	23.59	–11.70	–49.6
Bonny Light	4.04	6.21	8.13	13.55	–5.41	–40.0
US PADD II						
Chicago (WTI)	5.02	9.05	12.85	25.47	–12.62	–49.5
US East Coast						
NY Harbor (Arab Med)	8.20	7.32	11.58	17.40	–5.82	–33.5
East Coast Comp-RFG	7.73	10.04	15.63	16.49	–0.87	–5.3
US West Coast						
Los Angeles (ANS)	12.69	13.54	15.58	30.05	–14.47	–48.2
NW Europe						
Rotterdam (Brent)	1.46	1.88	3.64	3.33	0.31	9.3
Mediterranean						
Italy (Urals)	4.32	6.62	7.40	8.09	–0.69	–8.6
Far East						
Singapore (Dubai)	6.72	9.07	9.06	8.15	0.92	11.2

Source: Jacobs Consultancy Inc.
Data available in OGJ Online Research Center.

US NATURAL GAS BALANCE DEMAND/SUPPLY SCOREBOARD

	Jan. 2008	Dec. 2007	Jan. 2007	Jan. 2008-2007 change	Total YTD 2008	Total YTD 2007	YTD 2008-2007 change
	bcf						
DEMAND							
Consumption	2,613	2,393	2,456	157	2,613	2,393	220
Addition to storage	68	64	56	12	68	56	12
Exports	78	93	70	8	78	70	8
Canada	50	64	41	9	550	41	9
Mexico	25	25	24	1	25	24	1
LNG	3	4	5	–2	3	5	–2
Total demand	**2,759**	**2,550**	**2,582**	**177**	**2,759**	**2,519**	**240**
SUPPLY							
Production (dry gas)	1,695	1,713	1,590	105	1,695	1,713	–16
Supplemental gas	2	4	6	–4	2	6	–4
Storage withdrawal	892	633	740	152	892	740	152
Imports	380	394	394	–14	380	394	–14
Canada	352	369	337	15	352	337	15
Mexico	NA	4	4	–4	NA	4	–4
LNG	28	21	53	–25	28	53	–25
Total supply	**2,969**	**2,744**	**2,730**	**239**	**2,969**	**2,853**	**116**

NATURAL GAS IN UNDERGROUND STORAGE

	Jan. 2008	Dec. 2007	Nov. 2007	Jan. 2007	Change
	bcf				
Base gas	4,232	4,234	4,238	4,215	17
Working gas	2,055	2,879	3,456	2,379	–324
Total gas	**6,287**	**7,113**	**7,694**	**6,594**	**–307**

Source: DOE Monthly Energy Review.
Data available in OGJ Online Research Center.

NOTE: No new data at press time.

WORLDWIDE NGL PRODUCTION

	Jan. 2008	Dec. 2007	1 month average 2008	1 month average 2007	Change vs. previous year Volume	Change vs. previous year %
	1,000 b/d					
Brazil	89	88	89	86	3	3.7
Canada	699	710	699	721	–22	–3.0
Mexico	366	379	366	411	–45	–10.9
United States	1,783	1,823	1,783	1,670	113	6.8
Venezuela	200	200	200	200	—	—
Other Western Hemisphere	209	205	209	211	–2	–0.9
Western Hemisphere	**3,346**	**3,404**	**3,346**	**3,299**	**48**	**1.4**
Norway	302	298	302	315	–13	–4.1
United Kingdom	182	188	182	168	13	8.0
Other Western Europe	10	10	10	10	—	–1.2
Western Europe	**494**	**496**	**494**	**494**	**—**	**0.1**
Russia	421	423	421	422	–1	–0.2
Other FSU	150	160	150	160	–10	–6.3
Other Eastern Europe	16	15	16	16	—	–2.9
Eastern Europe	**587**	**598**	**587**	**598**	**–11**	**–1.9**
Algeria	350	349	350	341	9	2.6
Egypt	70	70	70	70	—	—
Libya	80	80	80	80	—	—
Other Africa	135	128	135	127	8	6.7
Africa	**635**	**627**	**635**	**618**	**17**	**2.8**
Saudi Arabia	1,427	1,427	1,427	1,427	—	—
United Arab Emirates	250	250	250	250	—	—
Other Middle East	870	870	870	870	—	—
Middle East	**2,547**	**2,547**	**2,547**	**2,547**	**—**	**—**
Australia	57	65	57	78	–22	–27.7
China	180	180	180	180	—	—
India	—	—	—	38	–38	–100.0
Other Asia-Pacific	181	173	181	184	–3	–1.5
Asia-Pacific	**418**	**417**	**418**	**480**	**–62**	**–13.0**
TOTAL WORLD	**8,027**	**8,090**	**8,027**	**8,035**	**–8**	**–0.1**

Totals may not add due to rounding.
Source: Oil & Gas Journal.
Data available in OGJ Online Research Center.

OXYGENATES

	Feb. 2008	Jan. 2008	Change	YTD 2008	YTD 2007	Change
	1,000 bbl					
Fuel ethanol						
Production	15,025	15,818	–793	30,843	22,416	8,427
Stocks	10,465	10,674	–209	1,465	8,749	1,716
MTBE						
Production	1,419	1,731	–312	3,150	3,618	–468
Stocks	1,642	1,342	300	1,642	1,792	–150

Source: DOE Petroleum Supply Monthly.
Data available in OGJ Online Research Center.

US HEATING DEGREE-DAYS

	Mar. 2008	Mar. 2007	Normal	2008 % change from normal	Total degree days July 1 through Mar. 31 2008	Total degree days July 1 through Mar. 31 2007	Total degree days July 1 through Mar. 31 Normal	% change from normal
New England	923	949	913	1.1	5,478	5,411	5,715	–4.1
Middle Atlantic	780	826	827	–5.7	4,720	4,782	5,191	–9.1
East North Central	948	727	864	9.7	5,610	5,434	5,733	–2.1
West North Central	931	675	858	8.5	6,078	5,686	6,055	0.4
South Atlantic	296	303	373	–20.6	2,254	2,392	2,621	–14.0
East South Central	454	293	452	0.4	3,050	3,095	3,324	–8.2
West South Central	295	165	263	12.2	2,013	2,071	2,187	–8.0
Mountain	629	491	633	–0.6	4,347	4,302	4,491	–3.2
Pacific	420	308	416	1.0	2,748	2,507	2,687	2.3
US average*	**595**	**500**	**593**	**0.3**	**3,803**	**3,748**	**4,004**	**–5.0**

*Excludes Alaska and Hawaii.
Source: DOE Monthly Energy Review.
Data available in OGJ Online Research Center.

Statistics

OGJ GASOLINE PRICES

	Price ex tax 4-23-08	Pump price* 4-23-08	Pump price 4-25-07
	¢/gal		
(Approx. prices for self-service unleaded gasoline)			
Atlanta	316.8	356.5	274.6
Baltimore	301.5	343.4	280.5
Boston	296.5	338.4	270.6
Buffalo	300.1	360.2	286.7
Miami	315.3	365.6	293.6
Newark	296.3	329.2	259.7
New York	284.8	344.9	278.7
Norfolk	292.9	330.5	271.5
Philadelphia	296.9	347.6	284.7
Pittsburgh	294.3	345.0	274.7
Wash., DC	314.9	353.3	288.4
PAD I avg.	300.9	346.8	271.2
Chicago	334.0	384.9	308.5
Cleveland	296.3	342.7	274.6
Des Moines	299.6	340.0	270.6
Detroit	301.3	350.5	277.6
Indianapolis	304.5	349.5	279.6
Kansas City	297.5	333.5	264.6
Louisville	322.3	359.2	281.5
Memphis	299.1	338.9	269.6
Milwaukee	308.8	360.1	288.5
Minn.-St. Paul	299.1	339.5	269.7
Oklahoma City	299.0	334.4	265.6
Omaha	296.1	342.5	275.6
St. Louis	307.8	343.8	271.5
Tulsa	294.5	329.9	267.6
Wichita	290.3	333.7	269.6
PAD II avg.	303.3	345.5	267.2
Albuquerque	302.3	338.7	276.5
Birmingham	306.1	344.8	270.6
Dallas-Fort Worth	305.8	344.2	275.5
Houston	303.3	341.7	271.5
Little Rock	302.6	342.8	268.6
New Orleans	302.3	340.7	268.6
San Antonio	295.1	333.5	258.6
PAD III avg.	302.5	340.9	261.0
Cheyenne	298.4	330.8	259.6
Denver	316.1	256.6	270.9
Salt Lake City	298.9	341.8	264.7
PAD IV avg.	304.5	343.0	260.8
Los Angeles	323.8	382.3	325.7
Phoenix	296.2	333.6	287.6
Portland	319.6	362.9	303.7
San Diego	333.0	391.5	335.7
San Francisco	341.7	400.2	349.8
Seattle	319.3	371.7	311.6
PAD V avg.	322.3	373.7	319.0
Week's avg.	**305.4**	**348.9**	**280.9**
Mar. avg.	**276.1**	**319.7**	**278.3**
Feb. avg.	**259.5**	**303.1**	**254.0**
2008 to date	**271.5**	**315.0**	—
2007 to date	**199.3**	**242.9**	—

*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

	4-18-08 ¢/gal		4-18-08 ¢/gal
Spot market product prices			
Motor gasoline (Conventional-regular)		Heating oil No. 2	
New York Harbor	288.63	New York Harbor	331.70
Gulf Coast	230.66	Gulf Coast	324.70
Los Angeles	305.63	Gas oil	
Amsterdam-Rotterdam-Antwerp (ARA)	NA	ARA	340.90
Singapore	287.69	Singapore	337.69
Motor gasoline (Reformulated-regular)		Residual fuel oil	
New York Harbor	298.38	New York Harbor	196.00
Gulf Coast	311.88	Gulf Coast	197.93
Los Angeles	314.13	Los Angeles	209.19
		ARA	221.97
		Singapore	202.12

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

BAKER HUGHES RIG COUNT

	4-25-08	4-27-07
Alabama	6	3
Alaska	7	6
Arkansas	42	43
California	37	33
Land	35	32
Offshore	2	1
Colorado	125	109
Florida	0	0
Illinois	0	0
Indiana	2	2
Kansas	11	13
Kentucky	9	8
Louisiana	152	183
N. Land	53	60
S. Inland waters	24	28
S. Land	20	32
Offshore	55	63
Maryland	1	0
Michigan	0	2
Mississippi	11	18
Montana	10	21
Nebraska	0	0
New Mexico	81	74
New York	7	6
North Dakota	62	34
Ohio	12	13
Oklahoma	214	177
Pennsylvania	20	14
South Dakota	2	2
Texas	883	823
Offshore	9	9
Inland waters	1	2
Dist. 1	25	19
Dist. 2	36	31
Dist. 3	58	55
Dist. 4	91	91
Dist. 5	189	168
Dist. 6	115	118
Dist. 7B	30	44
Dist. 7C	68	65
Dist. 8	131	109
Dist. 8A	25	26
Dist. 9	35	34
Dist. 10	70	52
Utah	42	43
West Virginia	24	32
Wyoming	66	79
Others—AZ-1; NV-3; OR-1; TN-5; VA-6	16	9
Total US	**1,842**	**1,747**
Total Canada	**88**	**81**
Grand total	**1,930**	**1,828**
Oil rigs	360	283
Gas rigs	1,473	1,460
Total offshore	67	73
Total cum. avg. YTD	**1,784**	**1,738**

Rotary rigs from spudding in to total depth.
Definitions, see OGJ Sept. 18, 2006, p. 42.

Source: Baker Hughes Inc.
Data available in OGJ Online Research Center.

SMITH RIG COUNT

Proposed depth, ft	Rig count	4-25-08 Percent footage*	Rig count	4-27-07 Percent footage*
0-2,500	70	5.7	55	5.4
2,501-5,000	111	48.6	105	52.3
5,001-7,500	213	17.3	216	18.0
7,501-10,000	420	3.0	421	2.6
10,001-12,500	472	4.0	435	3.9
12,501-15,000	279	—	264	0.7
15,001-17,500	127	—	109	0.9
17,501-20,000	72	—	73	—
20,001-over	35	—	33	—
Total	**1,799**	**7.0**	**1,711**	**7.4**
INLAND	30		37	
LAND	1,714		1,613	
OFFSHORE	55		61	

*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]4-25-08	[2]4-27-07
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	16	20
Alaska	716	745
California	654	668
Colorado	44	66
Florida	5	6
Illinois	25	26
Kansas	94	98
Louisiana	1,357	1,333
Michigan	14	17
Mississippi	52	48
Montana	93	86
New Mexico	163	164
North Dakota	115	118
Oklahoma	171	169
Texas	1,343	1,343
Utah	45	50
Wyoming	144	146
All others	62	70
Total	**5,113**	**5,173**

[1]OGJ estimate. [2]Revised.

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

US CRUDE PRICES

$/bbl*	4-25-08
Alaska-North Slope 27°	88.35
South Louisiana Sweet	120.50
California-Kern River 13°	105.95
Lost Hills 30°	114.30
Wyoming Sweet	110.02
East Texas Sweet	114.50
West Texas Sour 34°	107.50
West Texas Intermediate	115.00
Oklahoma Sweet	115.00
Texas Upper Gulf Coast	111.50
Michigan Sour	108.00
Kansas Common	114.00
North Dakota Sweet	111.25

*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]	4-18-08
United Kingdom-Brent 38°	111.44
Russia-Urals 32°	106.50
Saudi Light 34°	107.31
Dubai Fateh 32°	103.63
Algeria Saharan 44°	112.18
Nigeria-Bonny Light 37°	113.60
Indonesia-Minas 34°	109.33
Venezuela-Tia Juana Light 31°	107.04
Mexico-Isthmus 33°	106.93
OPEC basket	108.57
Total OPEC[2]	107.12
Total non-OPEC[2]	107.48
Total world[2]	107.28
US imports[3]	105.27

[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]

	4-18-08	4-11-08	4-18-07	Change, %
	bcf			
Producing region	506	503	644	–21.4
Consuming region east	598	582	664	–9.9
Consuming region west	181	176	251	–27.9
Total US	**1,285**	**1,261**	**1,559**	**–17.6**
	Jan. 08	**Jan. 07**	**Change, %**	
Total US[2]	**2,055**	**2,379**	**–13.6**	

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

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Energy politics warps analysis of oil markets

Deception in service to energy politics is standard practice in the US Congress.

In the latest abomination, six senators from the Joint Economic Committee twisted facts in order to scold President Bush for not coaxing more oil out of the Organization of Petroleum Exporting Countries.

The senators—Democrats Charles E. Schumer of New York, Byron Dorgan of North Dakota, Bob Casey of Pennsylvania, Mary Landrieu of Louisiana, and Amy Klobuchar of Minnesota plus Independent Bernie Sanders of Vermont—threatened in a letter to Bush to block arms sales to OPEC members that don't "significantly increase daily production of crude oil."

A table in an accompanying press release showed annual average production declined last year for Saudi Arabia, Kuwait, and the UAE.

"We are writing to urge you to demand that OPEC members increase their oil production because they are currently producing well under their capacity," the senators said.

News flash: It already happened.

Last year's crude production by OPEC members began in the middle of a slump that started in mid-2006 when the group became worried about rising global inventories; indeed, important members were limiting supply.

But that practice ended before yearend.

"Key producers since November appear to have loosened the taps once again, allowing stock cover to rise," wrote International Energy Agency in its April Oil Market Report.

Contrary to the senators' assertion, unused OPEC production capacity, excluding politically shaky Indonesia, Iraq, Nigeria, and Venezuela, remains low: 2.3 million b/d.

Saudi Arabia, which controls most of that cushion, might let output rise by a further 300,000 b/d. But then total spare capacity would fall back to 2 million b/d, low enough to keep the market skittish at least until new capacity comes on stream later this year. Once again, lawmakers have communicated a scrambled view of the oil market. The senators deceptively used annual averages to accuse exporters of withholding supply when monthly averages show they're in fact raising output.

And congressional pressure on foreign governments for more oil looks unpersuasive or worse in the context of longstanding US refusal to sanction oil and gas work on most federal land.

(Online Apr. 25, 2008; author's e-mail: bobt@ogjonline.com)

The Editor's Perspective

by Bob Tippee, Editor

Market Journal

by Sam Fletcher, Senior Writer

Distillate demand driving market

Growing demand for middle distillate fuels in Asia and Europe has created a world shortage that can only be resolved by processing more crude to produce these straight-run products. But because additional crude supplies are not forthcoming, the result has been a sharp escalation of crude prices, said analysts at the Centre for Global Energy Studies (CGES), London.

If members of the Organization of Petroleum Exporting Countries increased their total production by 500,000 b/d, world oil prices would begin to retreat, CGES claims. However, the price of OPEC's basket of 13 benchmark crudes averaged $95.27/bbl through late April, with no indication of any interest among cartel members in increasing production and reducing prices.

In its Monthly Oil Report, CGES said: "OPEC's view of a 'fair' price for oil has continued to rise in tandem with actual prices, and there is no sign that the organization intends to take any action whatsoever to try to bring oil prices down. Indeed, the OPEC oil ministers...continue to argue that their actions have had no bearing on oil prices, which, in their view, are being driven higher by a weakening US dollar, geopolitical tensions, non-OPEC production problems, refinery bottlenecks, speculative trading on the futures markets—in fact, just about everything imaginable, with the one glaring exception of their own production policies. OPEC's member-countries consistently produced less oil than the world needed from its residual suppliers in 2007, leading to a massive global stockdraw that averaged 750,000 b/d."

The oil industry began this year with just 67 days' worth of forward stock cover, 5 days less than at the start of 2007, CGES observed. Global oil inventories were drawn down last year "as OPEC first tightened supply to avert falling prices and then failed to boost it again in the face of another year of less-than-expected non-OPEC production," CGES said. The first quarter of 2008 witnessed a further draw of 500,000 b/d, making it the sixth consecutive quarter of falling global oil inventories.

"Worryingly, OPEC once again expects strong growth in non-OPEC output this year, just as it did in 2007," said CGES. OPEC expects non-OPEC output (excluding Ecuador throughout) to increase by 900,000 b/d between 2007 and 2008, compared with the 600,000 b/d forecast by the CGES. This may not seem a huge discrepancy in relation to the 86 million b/d of global oil demand, but, given OPEC's caution since the Jakarta meeting of 1997, the impact of any underestimate of the amount OPEC needs to produce tends to get magnified.

"The world needs OPEC to err on the side of overproduction, not output restraint, if last year's massive stockdraw is to be reversed and oil prices are to be brought down from the heights they have reached in the first months of 2008," said CGES. "At the moment, the organization shows no sign that it recognizes that the world needs more of its oil and that inventories need to be replenished through large-scale restocking. On the contrary, OPEC gives every indication that its pursuit of high oil prices will continue. Faced with what looks like a one-way bet, it is little wonder that financial investors see oil as a safe haven for their funds as the US dollar weakens and yields on more traditional investments disappoint."

Production boost

CGES warned, "If forecasts of robust oil demand growth in 2008 are borne out, OPEC will need to boost its production to prevent oil prices from continuing to rise over the coming months. Even if global oil demand follows the CGES's far more pessimistic forecast, increasing by just 600,000 b/d this year compared with the IEA's [estimate of] 1.3 million b/d, OPEC will still need to maintain output at its current level for the rest of the year just to ease the upward pressure on oil prices and allow global oil inventories to be replenished at a rate similar to the one at which they were drawn down last year."

CGES said market points to watch include:

- US economic growth and the impact of any slowdown in the US on China and the rest of Asia.
- Any widening of the discounts offered by Saudi Arabia for its heavier export grades, signaling higher output.
- Eastbound flows of oil as an indicator of Asian Pacific oil demand.
- US crude and product inventory levels in the second quarter of 2008.
- And the level of global refinery runs during and beyond the turnaround season.

(Online Apr. 28, 2008; author's e-mail: samf@ogjonline.com)

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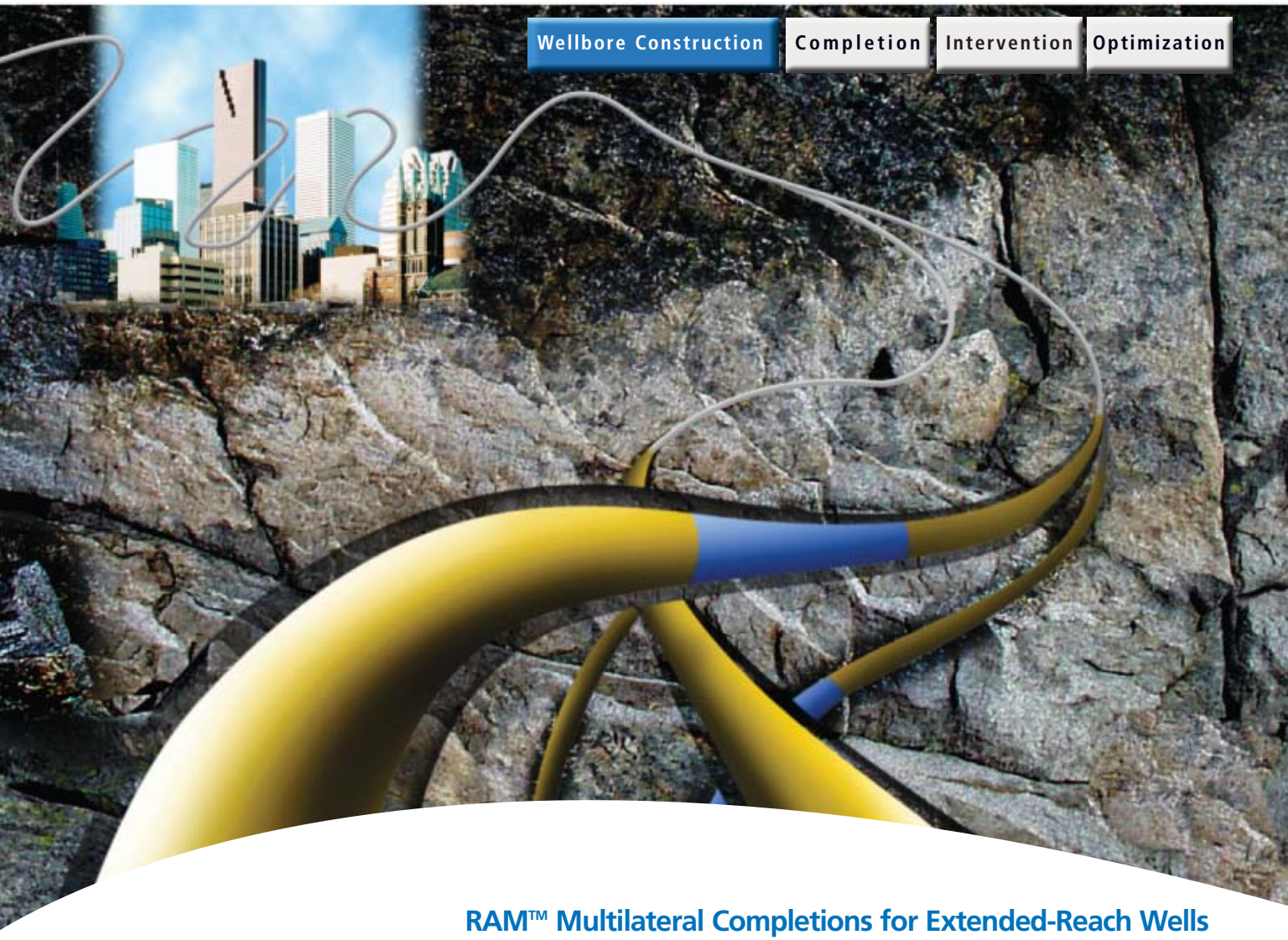

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INSIGHT

SUMMER 2008

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May 5, 2008

Dear Colleague:

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As the premier national trade association for the U.S. oil and natural gas industry, API is well known for promoting and showcasing the contributions of our industry. Through our flagship publication, *API Insight*, we can help you promote your company and tell your story to the people who buy your products, use your services, and want to know more about you.

API Insight lands on the desks of company Chairmen, CEOs, Presidents, Vice Presidents, Directors, Managers and Engineers. These are the very people who have a vested interest in the success of the oil and natural gas industry—the very same people you are trying to reach. Here is your opportunity to connect.

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**ABC Statement (December, 2007)*

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HER BOOTS WERE MADE FOR WORKING

by Robert Dodge

A Day in the Life of Vicoria Grimes

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API IN CHINA | By Robert Dodge

A good business keeps up with its customers. And that is what took API President and CEO Red Cavaney and a delegation of colleagues to Beijing in November 2007.

KEEPING PACE WITH THE WORLD

Their mission: Officially open API's first overseas office. With 80 percent of API's Certification Programs' customers outside the United States, it made sense that the association would go global. And with Chinese oil and natural gas equipment manufacturers seeking to create new liaisons and lines of communication with the U.S. oil and natural gas industry, it made sense that the first overseas office would be in Beijing.

Indeed, Chinese oil and natural gas equipment manufacturers are the fastest growing segment of API certification holders.

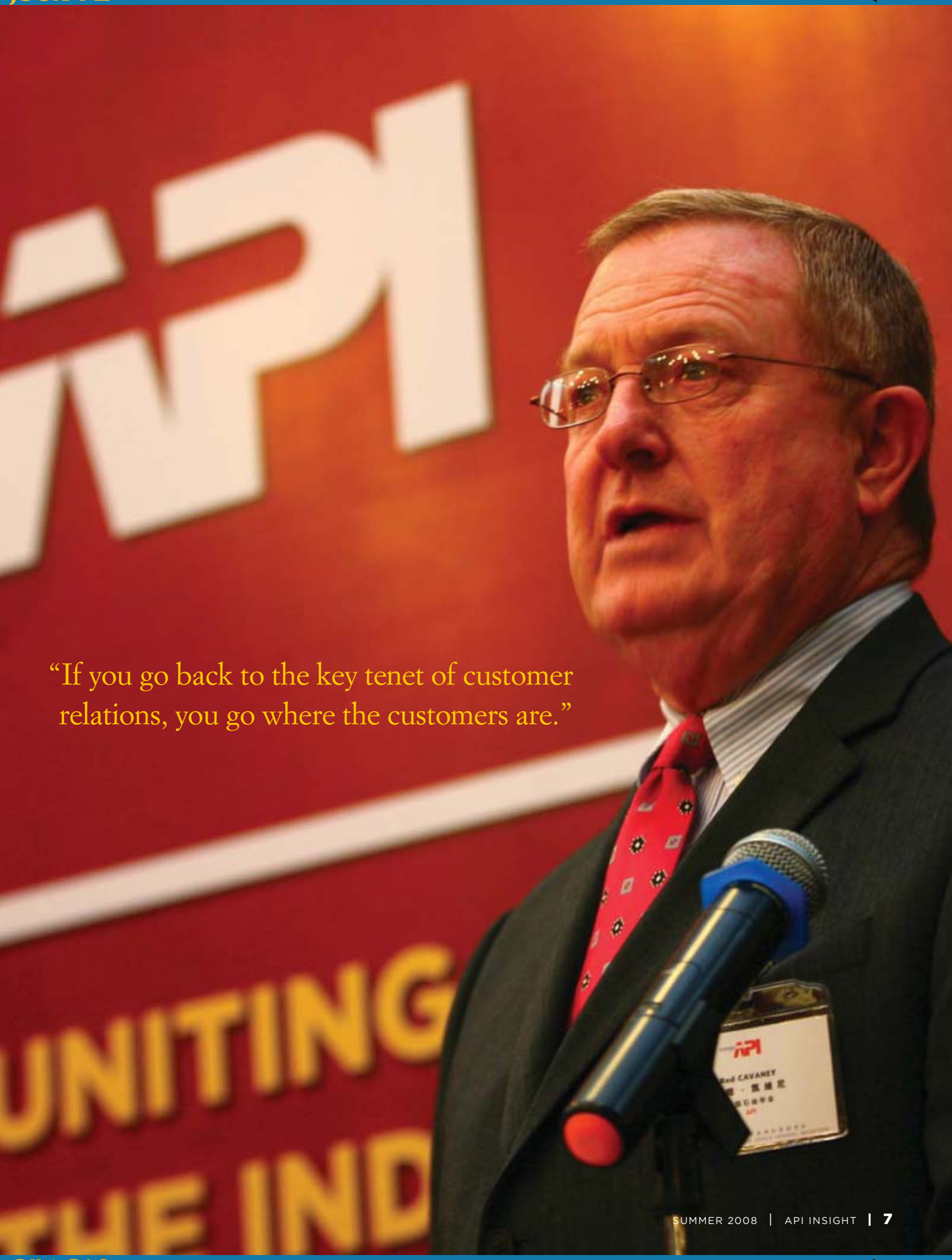
"If you go back to the key tenet of customer relations, you go where the customers are," Cavaney says. "It was very clear two years ago that if current trends continued, China would overtake the United States in terms of certifications."

Certifications in China have been growing at an annual rate of 50 percent and 2007 was no exception. Today, about 800 Chinese companies hold nearly 1,400 certifications—up from just 500 at the end of 2004.

Certifications represent a significant portion of API's self-supporting programs and provide valuable service to the industry that also includes standards, training, education and information. Globally, API has certified nearly 9,000 individuals who hold over 15,000 certifications, as well as 2,500 manufacturers who hold 4,000 licenses.

And now, those companies are looking for ways to create new education and communication links with the United States.

"Our customer volume and expected long-term growth in China led us to establish our first international office in



"If you go back to the key tenet of customer relations, you go where the customers are."

Beijing," says John Modine, Director of API's Certification Programs. "The office provides the kind of education and communications liaison sought by the Chinese."

Modine says that the business and political culture of China requires an organization to have an office with a senior representative to make those connections. The office lends substance and the credibility needed to meet with senior executives at Chinese oil and natural gas companies, as well as top government officials.

"Now we have standing. It's like tacit approval," Modine says. "And now that we have established a presence, we can set up meetings with high-level government and oil company officials."

Cavaney and a small group of senior API officials made the best of several days in Beijing, meeting with business executives and government officials and conducting a number of interviews with key blue chip media. The visit ended with a media briefing and a reception to officially open API's first overseas office.

Opening an office overseas was a big step for API, but Cavaney was operating on familiar ground. In fact, last year's trip was a capstone of career experiences that have taken Cavaney to China many times.

During the mid-1960s, Cavaney made several trips to Hong Kong during his three tours of combat duty in Vietnam, but the seeds for this career-long association with China were planted in 1969 when he received a call from some old college buddies with a very appealing invitation. His former classmates were working on President Richard Nixon's White House staff, and they wanted Cavaney to drive down to San Clemente, CA where they had been sent to prepare the home that was to become Nixon's Western White House.

As a young White House aide, Cavaney worked on the advance team that planned President Nixon's historic trip to China in 1972. Later, he headed the White House Advance Office for President Gerald Ford and made several trips to China in planning Ford's trip to Japan and China. And once in the private sector, Cavaney's travel there continued with numerous business trips.

All of these experiences put him in an excellent position to recognize the need for API to establish a Beijing outpost, as well as offer some comparisons of today's fast-growing China with the less developed infrastructure and more rigid political environment he first encountered early in his career.

"I recall in the earliest period that most of the roads were hard-packed dirt, suitable for bicycles, which were the primary mode of transport," Cavaney says. "No skyscrapers could be seen. Everything was very rudimentary, yet functional. Most of the heating was done with charcoal. Most homes burned it for cooking and warmth. If you were outside for an hour, charcoal ashes would, invariably, stick to your shirt collar and cuffs."

When Cavaney became head of the advance team for President Ford, he not only did the pre-advance planning but also traveled with President Ford on Air Force One, including the 1975 trip to China. One memento from that era serves as a graphic reminder of how far things have come in China.

"We did not have a U.S. Ambassador to China yet, but we did have a Charge d' Affaires," Cavaney says. "The most senior U.S. diplomat in China happened to be George Herbert Walker Bush, later to become our 41st President. To this day, I keep a framed, personalized note that he hand-typed on a portable, manual typewriter."

Indeed, China has changed since then. Its economy routinely grows at double-digit rates, expanding 11.4 percent in 2007. And while many trading partners in the West would like to see China make greater democratic reforms, the government is scrambling to meet the growing expectations of a massive population eager to acquire the benefits of middle-class affluence.

"And," Cavaney says, "visual evidence of such is seemingly everywhere. The fact that they have grown so quickly, the scope and the pace astonishes me. The fact that you now have 40-, 50- and 60-story skyscrapers almost as common as mice in a wheat field is rather extraordinary. And, I was also impressed that some of the technology they deploy for the man on the street could more than hold its own in the U.S. consumer market."

Such rapid growth requires energy. And with China having very little of its own oil and natural gas reserves, it needed to quickly develop energy companies capable of competing with the global giants of the industry to tap reserves beyond its borders.

In fact, China's energy consumption has nearly doubled in the last ten years at a time when its production has been flat, according to data compiled by the Energy Information Administration. China consumed 7.7 million barrels of oil a day during 2007, up from 3.9 million in 1997.

A large portion of that growth came from imports: According to the EIA, China imported 3.4 million barrels of oil each day in 2006, up from 631,000 a decade ago.

Cavaney pointed out that China recognized the benefits of API's presence. "They needed to address concerns about the quality of some Chinese goods and supplies, and so they are getting a respected name to validate top quality products and services when earned," Cavaney says. "At a very high level, we were well received, which stands as further affirmation that the Chinese oil and natural gas industry supports API's presence and recognizes the benefits that we can bring by having people directly in place."

REACHING NEW HEIGHTS IN DEEPWATER DRILLING

Take the tallest building in the United States, the 1,730-foot Sears Tower in Chicago, and stack it on top of itself six times, and you begin to understand the achievement of the nation's oil and natural gas industry when it began drilling to 10,000 feet. That's almost two miles below the ocean's surface.

"But it's far more than just water depth that presented a challenge to the industry as it moved toward drilling in deepwater areas of the Gulf of Mexico," explains Doug Morris, API's Group Director of Upstream and Industry Operations. The Gulf can be a hostile environment, with storms and hurricanes, strong ocean currents, powerful subsea currents at various depths and thick layers of salt which often interfere with traditional seismic technologies. And that's not all. "At these depths, we must deal with a corrosive ocean environment and pressures of 4,500 psi [pounds per square inch] on the seafloor," says Morris. "Deep formations are often

located more than 25,000 feet below the seafloor. And high temperatures and high pressure formations often exceed 400°F and 15,000 psi.

"These are major challenges that require 'outside of the box' thinking," adds Morris. "And this is something that our industry engineers are very good at. There are many examples of major engineering feats that have allowed the industry to reach down deeper and deeper into the Gulf."

to be connected beneath the water to a single platform.

"These systems, both above and below the water line, are truly modern engineering marvels," Morris says.

"The scope of the industry's achievement is staggering when viewed over the past two or three decades," says Tim Sampson, API's Senior Advisor for Drilling and Production Operations. "Who would have thought

Gulf of Mexico was overcoming the "weight issue," says Charlie Williams, Shell Oil Company's Chief Scientist of Well Engineering and Production Technology. "The deeper and deeper you go, the bigger and bigger the drilling riser and other equipment needed to develop and produce from the well becomes."

Rigs previously were designed to drill in shallower waters and were not able to accommodate heavier weights.

"These systems, both above and below the water line, are truly modern engineering marvels."

The prize explains the drive to go deep: The government estimates there may be 56 billion barrels of oil under the Gulf of Mexico. And every one of those barrels is important at a time when the nation is trying to fortify its energy security. To be sure, offshore areas have been a major supplier of oil and natural gas to America for half a century. But now, about 30 percent of the oil and 23 percent of the natural gas produced domestically comes from offshore, and most of that is from the Gulf.

"The majority of this production is now coming from areas in more than 1,000 feet of water," Morris says. "Seven of the top 20 oil fields in the U.S. are now located in deepwater areas. There have been at least 100 deepwater discoveries and 21 of them have been in water depths greater than 7,500 feet.

"As the push into deeper waters has grown," he says, "the industry has continued to respond with an array of exciting, new approaches. Among those are tension-leg platform spars, which are floating platforms or rigs tethered by conventional mooring lines, and subsea systems, which allow one or several wells

20 or 30 years ago that we'd be at 10,000 feet? Nobody. At that time, 1,000 feet of water was considered extremely deep—a spectacular achievement. Now, we're producing in 9,000 feet of water and have drilled wells in more than 10,000 feet."

Getting there was not easy. While the process of drilling in deep waters is not so different from drilling in shallow waters—both require rigs or platforms to house personnel and equipment to drill the wells—significant advances in technology were necessary. In the early days of offshore drilling, all oil platforms rested on the seabed; but as exploration moved to deep waters and more distant locations, floating production systems came into use. As production moved into even deeper waters, equipment became bigger, and soon massive floating platforms with onboard processing facilities and storage, sometimes spanning the equivalent of two or three city blocks, took the place of smaller fixed platforms. And that was only the beginning.

Probably the single greatest obstacle to moving into the deeper waters of the

"Generally, the bigger they are, the more they weigh," explains Williams. A lot of technical work was applied to reduce the weight of the equipment required to drill and explore for hydrocarbons at these extreme depths, such as using aluminum, alternate alloys and improved floatation.

"Advances in buoyancy technology and riser tensioners, which stabilize the riser [the mechanism that pumps the oil from the seabed back to the surface] from the movement of the rig or the ship, have been made and successfully implemented to meet the challenging load requirements required to drill in the ultra deepwater environments," says Williams.

Williams points to other recent advances, including slim hole technology, also known as "micro hole drilling," which uses smaller diameter holes and is a breakthrough in cost-saving methods. Another recent cutting-edge technology is monodiameter casing, which employs pipe that is the same diameter from the ocean bottom to the surface, unlike conventional casing that telescopes to a narrow diameter

at the wellhead. The single diameter saves costs in a variety of ways and has a smaller environmental footprint.

"These technologies have enhanced our ability to successfully explore and produce hydrocarbons in these extreme environments," says Williams.

Williams also takes great pride in a technological breakthrough that solved the "shallow water flow" problem that had thwarted deepwater development efforts. Shallow water flow refers to streams of salt water located just beyond the ocean bottom that often flow into the well bore and make it extremely difficult to drill. By developing special fluids to contain the flows and new drilling procedures, the industry was able to overcome "one of the biggest obstacles preventing producers from moving off the shelf and into deeper waters," Williams states.

"Another obstacle to deepwater development is more prosaic—the enormous costs associated with drilling wells two miles under the sea," says Sampson. "Amid strong crude oil prices, competition has intensified among producers to rent rigs and other equipment and find qualified workers, causing prices to skyrocket. Equipment and labor to drill a well can cost in the hundreds of millions of dollars, while the cost to build and deploy a cutting-edge deepsea platform is often in excess of $1 billion," says Sampson. For that reason, discoveries need to be "pretty significant" to persuade a production company to move forward with development. "What may be considered a good find in 1,000 feet of water might be completely dismissed at 10,000 feet," he says.

As technology continues to advance, the issue of needing big deposits to make a project economically viable may change. Increasing numbers of subsea wells are being completed close to existing deepwater and ultra deepwater infrastructure, allowing companies to access the smaller accumulations that otherwise might have been left alone. But this raises a whole new set of cost issues. "When you use tension leg platforms, you have direct access to the well in case you need to make a repair. But when you are using a subsea system and need to make a repair, you need to bring back the huge drilling rigs, which can be very expensive and complicated," explains Shell's Charlie Williams. Technological advances in subsea systems could bring operating costs down, allowing the industry to add smaller and smaller fields to the production stream.

"The ultimate goal may be to place all the wellheads and other facilities on the ocean floor rather than on the surface," says API's Doug Morris. For instance, Morris says a North Sea facility recently installed subsea separation and booster pumps, underwater systems that separate gas and oil and give the crude the added pressure it needs to move from the well to the platform.

"Assuming that we can improve on reliability and address issues such as control and power systems," Morris says, "it might be possible to totally eliminate the production facilities on the surface and rely on subsurface production facilities for transmission of fluids all the way to land." Those advances require time, patience and investment, but companies appear to have decided to allocate the research and development money needed to press forward with deepwater development because they see opportunities in the Gulf of Mexico.

"Twenty years ago, there were doubts about the resource potential of the deepwater area," Morris explains. "We now realize that it represents one of our best sources of new domestic energy resources. The trend in the Gulf has been that the more we drill, the more we find—so this number could increase over time. We know that these resources are there—it is just a matter of developing the technologies to reach them."

Shell's Williams adds that before the industry was able to tap oil and gas in the deep waters, output from the U.S. Gulf of Mexico was declining as the closer-to-shore shelf areas aged and depleted. "We needed the deepwater to sustain the rate of production in the Gulf. Improvements in technology

allowing us to get out there were absolutely critical to our ability to keep up production," he says.

And new technology could keep the Gulf of Mexico a major U.S. producing area for years to come. But moving into even deeper waters than 10,000 feet likely will not be part of the equation. "In the Gulf of Mexico, there's really no need to go any deeper," Williams observes. "While there is some debate over how deep the Gulf of Mexico is, the general consensus is 12,000 to 14,000 feet deep. All the new rigs coming out are 12,000 feet capable. We've really reached the limit on what we need to do in the Gulf of Mexico when it comes to depths, but there are still lots of opportunities for other types of advancements, which also can help increase production."

Scientists and engineers are continuing to work on ways to improve ultra-extended-reach and difficult-direction-well technology to make it easier to access deposits farther away using a single rig. "There's also been a huge amount of activity to improve recovery from the Gulf of Mexico," says Williams, noting new technologies could be applied to existing wells to get as much oil and gas as possible. A technological breakthrough that allows even better seismic imaging of oil and natural gas deposits below thick salt accumulations that litter the Gulf of Mexico also could open another avenue for producers. "There's a belief out there that there are some really good opportunities below these salt beds," he adds. Strengthening the capabilities of mooring systems, utilizing dynamically positioned rigs and developing systems to pump mud returns back from wells also could pay dividends.

The oil and natural gas industry is banking on at least some of the technologies coming online to improve the economics of future deepwater drilling. In July 2007, companies bid more than $5.2 billion in a federal lease sale in the Central Gulf, with some 40 percent of the bids on leases that were in more than 5,000 feet of water.

"There has been a whole lot of excitement about these technologies for use in the Gulf of Mexico and elsewhere," says Williams, noting that the technology will be applied worldwide. "There are plenty of deepwater areas, including the West Coast of Africa and even the Mediterranean and Western Pacific. All the technology we've developed for deepwater Gulf of Mexico has already been exported to other areas, and as advances continue, we'll continue to apply our new knowledge and technology."

THE NEW API CREDIT EXCHANGE | By Cathy Landry

WHERE ECO-FRIENDLY MEETS USER FRIENDLY

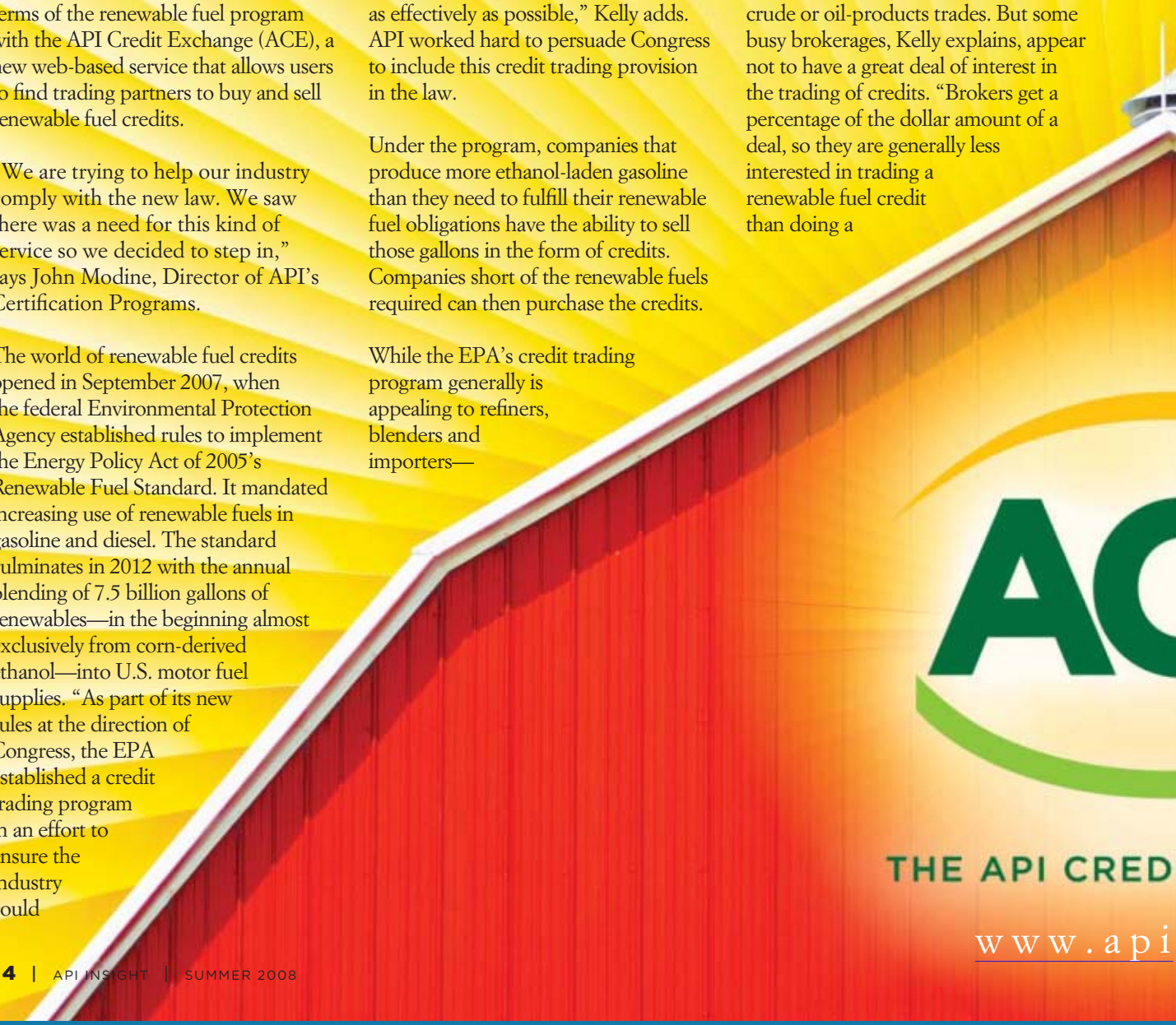
A 2005 federal law requiring increasingly higher amounts of ethanol and other renewable fuels be blended into the nation's motor fuel supply has left many refiners, blenders and importers scratching their heads and wondering how they will comply. API is hoping to make it easier for its member companies and others in the industry to meet the terms of the renewable fuel program with the API Credit Exchange (ACE), a new web-based service that allows users to find trading partners to buy and sell renewable fuel credits.

"We are trying to help our industry comply with the new law. We saw there was a need for this kind of service so we decided to step in," says John Modine, Director of API's Certification Programs.

The world of renewable fuel credits opened in September 2007, when the federal Environmental Protection Agency established rules to implement the Energy Policy Act of 2005's Renewable Fuel Standard. It mandated increasing use of renewable fuels in gasoline and diesel. The standard culminates in 2012 with the annual blending of 7.5 billion gallons of renewables—in the beginning almost exclusively from corn-derived ethanol—into U.S. motor fuel supplies. "As part of its new rules at the direction of Congress, the EPA established a credit trading program in an effort to ensure the industry could comply with the 2005 Renewable Fuel Standards and still have the flexibility to meet America's energy needs," notes Patrick Kelly, an API Downstream Associate. "The trading scheme is designed to provide the flexibility needed to make certain that ethanol and other renewable fuels are integrated into the nation's gasoline pool as quickly and as effectively as possible," Kelly adds. API worked hard to persuade Congress to include this credit trading provision in the law.

Under the program, companies that produce more ethanol-laden gasoline than they need to fulfill their renewable fuel obligations have the ability to sell those gallons in the form of credits. Companies short of the renewable fuels required can then purchase the credits.

While the EPA's credit trading program generally is appealing to refiners, blenders and importers—the so-called obligated parties—some fear it would be complicated and costly if traders were forced to get on the phone with dozens of companies seeking to find out who may be in the market to buy or sell credits. Currently, many of the obligated parties find potential credit counterparts through traditional trading avenues, like brokers who manage their crude or oil-products trades. But some busy brokerages, Kelly explains, appear not to have a great deal of interest in the trading of credits. "Brokers get a percentage of the dollar amount of a deal, so they are generally less interested in trading a renewable fuel credit than doing a



crude oil transaction on which they can make a lot more money," Kelly says. Moreover, smaller companies that must meet the renewable requirements "might not have the contact list" necessary to find potential trading partners because they are not routinely involved in trading activities, he adds.

API recognized a void existed, and decided to step in and help. "We realized that the industry might need some assistance," Modine says. "What we came up with was a service that allows parties wanting to buy or sell credits to post their needs on an easy-to-use bulletin board system. Our goal is to help the industry meet their obligations under the new [renewable fuels] law in a simple and straightforward way."

In March, API Certification Programs launched the API Credit Exchange, a secure, web-based system that allows market participants to easily identify potential buyers and sellers of credits. Subscribers can provide a bid/ask price as a starting point for negotiations, or they can choose not to enter a price. They also can make their names and information available to all subscribers, allowing potential counterparties to contact them directly. Moreover, they can opt to keep their positions confidential, whereby the system will notify them when a prospective counterpart has expressed interest in a trade. "ACE users can feel confident that API will protect confidential business information," Modine says. He notes that API has a "proven track record in doing so," and vast experience with providing industry statistics and certification programs, which often include managing and shielding sensitive company information.

While actual credit trading is done between parties off-system, the ACE service gives subscribers access to an online database, which allows them to track their trades and create data reports ready for submission to the EPA. Summary reports, which could assist subscribers with federal and state filing requirements, also are available through the ACE system. "The latest industry news is also posted on the site, giving subscribers a one-stop clearinghouse to meet credit trading needs," Modine says. Subscribers are charged an annual fee to use the ACE system.

In addition to its credit trading service, API will provide workshops and support services to help obligated parties familiarize themselves with the Renewable Fuel Standard regulations and assist them with compliance efforts. "We want the industry to know they have help if they need it," Modine says. "They need to comply with these rules because it's the law, and we want to give them the tools and the information to make compliance as seamless as possible."

Renewable fuel credit trading services are likely to be more and more in demand in coming years as the use of ethanol and other renewables continues to grow, particularly with the higher mandate passed by Congress in December 2007[1]. Advanced biofuels—like cellulosic ethanol, which is made from switchgrass, corn husks, wood chips and other nonfood agricultural products—also will be increasingly required, although most of the fuels are not yet available in commercial quantities. "Under the EPA program, a gallon of advanced biofuels will be given more credits than a simple gallon of corn-derived ethanol, and the ACE system intends to calculate credit values for advanced biofuels automatically, taking the guesswork out of the process," Kelly says.

For more information about the EPA renewable fuel regulations, contact API Downstream Associate Patrick Kelly at 202-682-8192 or email him at kellyp@api.org. For information on the ACE system or to subscribe to the service, contact Keyo Didier at 202-682-8320 or email him at didier@api.org.

[1] *In December 2007, Congress passed a law dramatically increasing the mandate to use renewable fuels, requiring that 36 billion gallons of renewables be blended into gasoline supplies by 2022.*

A DAY IN THE LIFE OF VICTORIA GRIMES | By Robert Dodge

HER BOOTS WERE MADE

When Victoria Settles Grimes was a young waitress in California's San Joaquin Valley, she never imagined that one day she would wear a pair of oil industry work boots that would imprint in such far-flung places as California, Colorado, the Gulf of Mexico, Texas and Alaska.

But after 31 years in the oil and natural gas industry, Grimes has kicked up quite a bit of dust.

That's because Grimes, 55, who describes herself as a California farm girl, got a chance to pursue her dreams in the oil business and never looked back. She's been both a worker and trailblazer for Shell Oil Company, first digging ditches as a roustabout, later being the first woman to command a Gulf of Mexico platform and more recently splitting her time between recruiting Native Alaskan villagers to work in the industry and supporting a 22-boat fleet poised to drill off the state's coast in the chilly Beaufort Sea.

"When my daughter was a first-grader, she used to say, 'Mom, please don't leave your boots on the front porch'," recalls Grimes, explaining that her children did not want their friends to know their mother wore boots to work.

Today, Grimes is a SIMOPS coordinator, which means she is an expert at managing complex simultaneous operations. She continues to work for Shell in Alaska and lives in Anchorage. And now, her grown children are proud that their mom, who is also the granmother of 17, wears work boots—and they admire her recruiting work for Shell, which is aimed at convincing young women to consider careers in the oil and gas industry.

"When I go to the colleges, I specifically talk to the women," Grimes says. "I tell them, 'This is a great career. There are many opportunities for you.' There is a stereotype that the typical oilfield worker is this big, burly guy who has more brawn than brain, and that is just not true anymore."

Wherever she goes, Victoria Grimes' boots leave a big impression.

FOR WORKING

Grimes counts herself among the first career women who started tearing down those old stereotypes. Her career started in 1976 in the San Joaquin Valley when she was eager to move on from her waitress jobs at Fong Chinese Food and the El Rancho Mexican restaurants to land one of the $12-an-hour positions in the oil industry. "That was a fortune in those days," she recalls.

She was hired on as a roustabout and on her first day of work, Grimes found herself digging a three-by-four-by-six foot trench in 112-degree heat. "I had blisters on both hands and both feet," Grimes says. "But I was keeping up with the boys.

I was a farm girl, and anything they could do, I could do better." Grimes built a reputation as a hard worker and was given new opportunities, including working on a well-pulling hoist. There, she learned about the importance of safety—the hard way: "I put my hand someplace where it should not have been. I broke two fingers. I was so afraid they were going to fire me."

But after her recovery, she was welcomed back to work. From there, she worked at an electric-generation facility and as a well tester and tank farm gauger. And then in 1982, she became a foreman, working in a variety of water and gas plants. "Shell is fantastic about training," Grimes says. "They want you to have all the tools that you need to be a good supervisor and operator."

By 1992, Grimes was on her way to the Gulf Coast, first working in Houston as a contractor auditor and efficiency expert. The jobs gave her a good window on the nuts and bolts of the company, reviewing the contracts with small vendors and trying to understand how Shell could spend its money more efficiently. And that led to her first offshore assignment, setting up and launching the new Mars platform.

Mars is a large floating oil and natural gas platform, anchored to the seafloor by 12 tendons. Grimes joined the team that finished up all the documentation to launch Mars and then she followed the platform to do the start-up work and eventually deploy the craft from Corpus Christi. Once out in the Gulf, Grimes was a process associate, who reported directly to the Mars foreman.

"It took us quite a bit of time to start a platform that big," recalls Grimes, describing the process before the platform was deployed about 130 miles southeast of New Orleans. "A small team including myself took the time to crawl all over that platform. With that much equipment, everything had to be set up for production before we left Corpus Christi."

But Mars proved to be a mere stepping stone. Grimes was given her own command in late 2003, becoming the first female foreman in the Gulf. She took command of two platforms about 160 miles southwest of New Orleans: Bullwinkle, a large fixed-leg facility with about 100 workers, and Boxer, a much smaller one located about six miles away. Grimes knew she was breaking new ground the first day she flew by helicopter to Bullwinkle.

"I was there waiting for the helicopter with six guys who were going out with me," she says. "One asked me, 'What are you going to do? Are you going to cook for us?'"

Grimes politely told him she was not a cook.

"Are you going to be making beds, doing laundry?" her new employee asked.

"I smiled at him, and then I told him: 'I'm the new foreman for Bullwinkle.'"

"So you're the boss?" he said, asking the obvious. As his friends burst out laughing, Grimes responded: "Yep, I guess I am."

No harm was done, says Grimes, laughing about the exchange. In fact, she speaks fondly of her days on the platform and the family atmosphere of the crew who worked for 14 days and then would have the next 14 days off. "You eat, drink and sleep together. You're one big family," she says.

On a typical day, Grimes says she was up at 5:00 a.m., and would have breakfast before attending a safety planning meeting. That was followed by a review of the platform's scorecard, a record-keeping device to keep track of production, costs, chemical usage and other measures.

One asked me, "What are you going to do? Are you going to cook for us?"

"If we overspent, we would look at what we could rearrange in the schedule. We always tried to stay a step ahead," says Grimes. "And we shared it with the crew so they knew our status each day so they could help build the plan."

The morning meetings were followed by a flurry of daily activity: Inspections of the various jobs underway on the platform, helicopters coming and going, more meetings about upcoming jobs, phone calls to the mainland and supply boats arriving.

"After dinner, I would catch-up on phone calls and emails and then go to bed around 10 or 11 p.m.," Grimes says.

But it was not all work. "We had a big screen television, and we'd all gather around for popcorn and football," she says. "And on the Mars platform, a lot of workers played musical instruments so there was often a Friday evening sing-a-long."

"One of the best things I liked was the beautiful sunsets and sunrises. And the sea life was amazing—dolphins, manta rays and lots of sharks," Grimes says.

Grimes was noticing something else among her workers—an observation that was also made by her superiors: The average age of the industry's workforce was rising and the retirement of the 76-million Baby Boom generation was going to hit the oil and natural gas industry hard.

"I brought it up and asked, 'What are we going to do when all these "gray beards" are gone?' says Grimes. "Shell managers decided we needed to get a lot more young people on board, educate them and get them prepared to carry the company forward."

Indeed, the average age of the industry workforce is 54, and with many eligible to retire at age 55, experts believe at least 50 percent of the current workforce will be retiring during the next five to ten years.

From the Mars platform, Grimes was transferred to New Orleans where she was one of an initial two-person team that designed Shell's initial plan to reach out to college students. "We built the program from just about scratch," she says. In the end, they designed an internship program for students that included a three-month working experience on a platform and a three-year structured training program—an experience she is now promoting with Native Alaskans.

"It's kind of like a dating experience for them and us," says Grimes, explaining the students are getting a chance to see if an industry career is compatible. "They can see if that kind of experience, work and schedule is right for their lives. They do real work, taking readings, gathering samples and conducting tests."

Now, Grimes is based in Anchorage and essentially has two jobs where she rotates between winter and summer. During the summer months, she works in a marine support group that is poised to begin drilling in the Beaufort Sea. Last summer, that 22-boat fleet—which included a tanker, seismic boats and drilling rigs—maintained positions in the sea, hoping a federal appeals court in San Francisco would clear environmental objections and allow the company to proceed with plans to

drill four exploratory wells. But the court blocked the plan, saying it would take more time to consider claims by environmental and native groups that drilling could hurt the environment. Shell says it has met all requirements and can safeguard the Beaufort Sea and North Slope from harm.

Keeping the ships and boats at the ready throughout the summer was a monumental task. Grimes' team kept a daily logistical operation running that allowed the boats to remain deployed. They organized aircraft and boats to orchestrate shift changes and deliver food, as well as respond if a crew member was sick or injured.

"We have to make sure they have the resources they need," she says. "There are a lot of moving parts, and you have to be aware of what everybody else is doing. This is a brand new project, and we're painting on a blank canvas. We have a lot of experience, but Alaska is a very special place in terms of climate, culture, resource availability and logistics."

After the court ruling and the onset of winter, Grimes shifted to her other job—visiting Native Alaskan villages to recruit workers. It is a continuation of the work she started for Shell to replace retiring Baby Boomers. She tells the prospective students about the programs designed for oilfield production and scholarships that are available from Shell and the oil and natural gas industry. But her work in Alaska has another dimension: She also is a goodwill ambassador for the company among Native Alaskans at the same time she is recruiting workers to fulfill Shell's long-term plans to produce in the Arctic Ocean. She also continues to keep a toe in the Gulf of Mexico business. At Christmas, she flew to New Orleans to manage one of the two huge Christmas Gifts for Local Children efforts around Houma and Venice, Louisiana. A little over $23,000 was raised by the offshore platforms to buy gifts for almost 200 children.

On a recent Friday, Grimes was at her desk at 5:00 a.m. preparing to fly to Point Hope, a small village near Nome where the temperature that morning was 20-degrees below zero. A high school basketball tournament was about to begin.

"We have a big project that we are building up in Alaska, and we want Alaskans to be proud to work for Shell," Grimes says. "We spend a lot of time at the universities, but we also want to make sure that the remote villagers learn about us and know that we care as much about the environment as they do." Grimes was looking forward to putting on her trusty boots and heading out to make a pitch to the students shaped by three decades of working in the oil patch.

API DATA | By Karen Matusic BY KAREN MATUSIC

THE ENERGY WORLD IS POWERED BY NUMBERS

Statistics are the oil and natural gas industry's lexicon—the language by which we measure our performance, support our policy positions and gauge our country's future energy needs. As the national trade association of the U.S. oil and natural gas industry, API is a leading source of the industry's data and information.

The energy world is built on a foundation of statistics; therefore, reliable and timely supply and demand data is crucial for sound economic and energy policy-making. In a market as volatile as the energy market, accurate data serves as a crucial reality check. It is vital to head off unexpected supply shortfalls and ensure that there is enough production capacity to meet future demand growth. Global energy security is not achievable without it.

U.S. energy statistics—those of both API and the U.S. Department of Energy's Energy Information Administration (EIA)—are relied upon worldwide by both the International Energy Agency, representing most of the world's biggest energy consuming nations, and OPEC, representing the major oil exporters, major ratings agencies, and economic forecasters as well as consumers and businesses both in the United States and abroad.

"API's weekly survey of U.S. oil supply data is essential to industry analysts, state and federal government officials and the public for a number of reasons," says John Cook, Director of the Petroleum Division at EIA. "The API survey provides access to micro-level data key to API studies of refining conditions. Given significant uncertainty, in part stemming from substantial week-to-week variation in oil imports and inventory movements, the API data, when coupled with similar EIA statistics, provide a useful range within which actual demand and supply components lie in high likelihood."

Given the thin cushion of global spare production capacity and relentless demand growth, it is not surprising that crude oil prices have scaled record heights this year. Reporters from both small and large media outlets are getting as well versed in industry data lingo as seasoned statisticians. It is not unusual to see the terms heating degree days, refinery utilization, or even 3-2-1 crack spreads crop up on the pages of *USA Today* or your hometown newspaper these days. As public awareness of the complex oil and natural gas industry grows, so does the nation's ability to set sound and meaningful energy policy that will help Americans meet our energy challenges.

"From a financial market perspective, the global energy market is a data-poor market. That being said, thanks to the EIA and API data, the U.S. has the best fundamental data in the world, and our market relies heavily on it," says Katherine Spector, head of global energy research at JP Morgan Chase Bank.

As Director of API's Statistics Department, Hazem Arafa leads a team of three statisticians, three economists and three analysts as they develop and manage databases on a variety of industry operations that go beyond the weekly and monthly supply and demand reports that are carefully analyzed by the world's oil traders and analysts.

"Our goal is to collect industry data and disseminate information," says Arafa. "We don't just cover how much the industry spent to drill wells or to save the environment, we also cover the where and the why."

Through the Monthly Statistical Report and the Weekly Statistical Bulletin, API aims to provide timely preliminary data on inventories, refinery activity, and production of major products and imports, at a national and regional level. The survey, which API has been doing in some form for nearly 80 years, is based on voluntary reporting from companies typically accounting for 80 to 90 percent of U.S. industry volumes for the most important figures. Input from companies who are not API members also are included in surveys in order to provide a comprehensive snapshot of U.S. supply and demand.

Ron Planting, API's Manager of Statistical Information and Analysis, and his team compile data from nearly 500 reports from respondents every week, covering refineries, blenders, bulk terminals, pipelines, holders of crude oil inventories and importers across the U.S. But the group spends most of its time going over the submitted data both manually and with specialized software, looking for unusual values, inconsistent relationships, missing reports and other things that can affect the quality of the data.

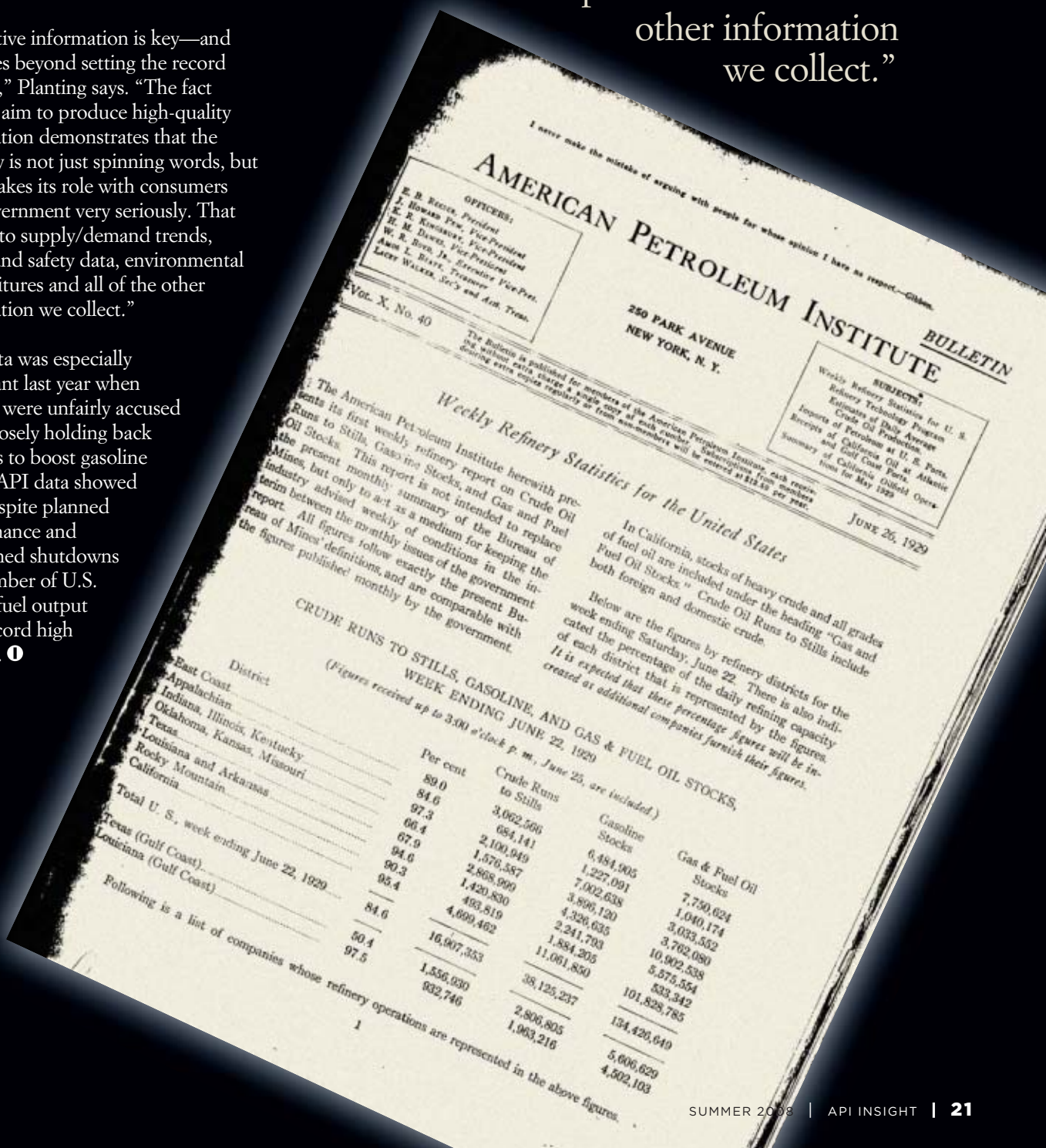
"We seek corrections or explanations from respondents for unusual submissions, and always reserve the right not to use data that cannot be verified," Planting explains. "We also have statistical procedures to estimate for non-respondents in order that our published results represent the entire U.S. industry."

Planting is also one of the most called-upon API spokespersons when gasoline prices rise.

"Objective information is key—and that goes beyond setting the record straight," Planting says. "The fact that we aim to produce high-quality information demonstrates that the industry is not just spinning words, but rather takes its role with consumers and government very seriously. That applies to supply/demand trends, health and safety data, environmental expenditures and all of the other information we collect."

This data was especially important last year when refiners were unfairly accused of purposely holding back supplies to boost gasoline prices. API data showed that, despite planned maintenance and unplanned shutdowns at a number of U.S. plants, fuel output set a record high in 2007.

"The fact that we aim to produce high-quality information demonstrates that the industry is not just spinning words, but rather takes its role with consumers and government very seriously. That applies to supply/demand trends, health and safety data, environmental expenditures and all of the other information we collect."



I never make the mistake of arguing with people for whose opinion I have no respect.—Gibbon.

AMERICAN PETROLEUM INSTITUTE BULLETIN

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Vol. X, No. 40

SUBJECTS:
Weekly Refinery Statistics for U. S.
Refinery Technology Program
Estimates of Daily Average Crude Oil Production.
Imports of Petroleum at U. S. Ports.
Receipts of California Oil at Atlantic and Gulf Coast Ports.
Summary of California Oilfield Operations for May 1929

JUNE 26, 1929

Weekly Refinery Statistics for the United States

The American Petroleum Institute herewith presents its first weekly refinery report on Crude Oil Runs to Stills, Gasoline Stocks, and Gas and Fuel Oil Stocks. This report is not intended to replace the present monthly summary of the Bureau of Mines, but only to act as a medium for keeping the industry advised weekly of conditions in the interim between the monthly issues of the government report. All figures follow exactly the present Bureau of Mines' definitions, and are comparable with the figures published monthly by the government.

In California, stocks of heavy crude and all grades of fuel oil are included under the heading "Gas and Fuel Oil Stocks." Crude Oil Runs to Stills include both foreign and domestic crude.

Below are the figures by refinery districts for the week ending Saturday, June 22. There is also indicated the percentage of the daily refining capacity of each district that is represented by the figures. It is expected that these percentage figures will be increased at additional companies furnish their figures.

CRUDE RUNS TO STILLS, GASOLINE, AND GAS & FUEL OIL STOCKS,
WEEK ENDING JUNE 22, 1929
(Figures received up to 3:00 o'clock p. m., June 25, are included.)

District	Per cent	Crude Runs to Stills	Gasoline Stocks	Gas & Fuel Oil Stocks
East Coast	89.0	3,062,500	6,484,905	7,750,624
Appalachian	84.6	684,141	1,227,091	1,040,174
Indiana, Illinois, Kentucky	97.3	2,100,949	7,002,638	3,033,552
Oklahoma, Kansas, Missouri	66.4	1,576,587	3,896,120	3,702,080
Texas	67.9	2,868,999	4,326,635	10,902,538
Louisiana and Arkansas	94.6	1,420,830	2,241,703	5,575,554
Rocky Mountain	90.3	493,819	1,884,205	533,342
California	95.4	4,699,462	11,061,850	101,828,785
Total U. S., week ending June 22, 1929	84.6	16,907,353	38,125,237	134,426,649
Texas (Gulf Coast)	50.4	1,556,930	2,806,805	5,606,629
Louisiana (Gulf Coast)	97.5	932,746	1,963,216	4,502,103

Following is a list of companies whose refinery operations are represented in the above figures.

1


API

LOOKING FORWARD | By Madelyn Thornton

PREPARING FUTURE ENGINEERS THE API WAY

Imagine the surprise of recently minted college graduates who show up for their first job and discover that after four years of study they lack the practical knowledge needed to start work in the industry. And imagine the dismay of their new employer.

API management thought this scenario was playing out at the nation's oil and natural gas companies far too often. What was missing? They were surprised to learn at the Offshore Technology Conference and SPE Annual Technical Conference and Exhibition that many of the undergraduate and graduate engineering students headed for careers in the oil and natural gas industry had never seen an API standard. API believes petroleum engineering students should not only recognize API standards, but be aware of their practical use in and importance to the worldwide oil and gas industry.

Bill Eustes, an engineering professor at the Colorado School of Mines, agrees: "Access to these standards is huge for our students. The ability to print and distribute applicable sections of a standard makes the material more cohesive."

Discussions at various industry conferences, as well as with engineering professors, led to the launch of the API Engineering Partnership in 2004. Under the program, IHS, API's primary standards distribution, and API make the standards accessible to students by offering complimentary, internet-accessible subscriptions to the complete set of API standards to engineering schools.

Engineering professors enthusiastically embraced the program. As it turns out, many had been hoping for such a donation effort for some time. Participants in the program now include Texas A&M, University of Texas, Louisiana State University and the Colorado School of Mines, to name a few.

"The inclusion of the standards doesn't so much change the curriculum as enhance it," Eustes says. "By consistently implementing API standards into the material, students have a strong starting point for what they do and are able to see the practical application of what they learn from their textbooks."

For instance, he used the example of API Bulletin 5C3, *Formulas and Calculations for Casing, Tubing, Drill Pipe and Line Properties* in a classroom discussion. Students were able to see proof of the calculation rather than just examples from the text.

The API program also helps colleges and universities in earning and maintaining their accreditation status. The Engineering Accreditation Commission recognizes the importance of including industry standards in the curriculum. In its criteria, the Commission requires that engineering programs must prepare students for "engineering practice through the curriculum, culminating in a major design experience based on the knowledge and skills acquired in earlier coursework and incorporating engineering standards."

The size and complexity of the oil and natural gas industry perpetuate a wide range of jobs and fields, all of which are touched by API standards. API publishes approximately 500 technical standards, which contain pertinent engineering and operating practices.

The API Engineering Partnership is unique in that API is the only standards developing organization that offers its complete collection of documents to college and university engineering programs. The program ensures that students become comfortable not only with the information provided, but also with API. This aids in laying the foundation for a positive relationship with API, which will hopefully continue into the students' professional careers. As the petroleum industry develops and adapts to an ever-changing economic, political, and technological environment, API takes its position as a vital participant in the task of preparing new engineers for upcoming career and industry challenges.

Future oil and gas industry engineers will be referring to API standards virtually every day of their careers. the API Engineering Partnership is a win-win situation for everyone when they can learn from the very same standards they'll be using throughout their working lives.

LEGISLATIVE OUTLOOK | By Jim Ford

IS THE INDUSTRY IN FOR ANOTHER WILD RIDE IN CONGRESS?

Strap yourself in. This may be a bumpy ride.

When the 110th Congress began its first session last year, the oil and natural gas industry readied itself for a contentious time: The new Democratic majority had vowed during the 2006 campaign season to retaliate against the industry for what were characterized as unconscionably high prices and profits.

After last year's vigorous debate, policymakers decided against proposals that would have caused economic harm. Indeed, the first session of the 110th Congress ended with no major damaging legislation signed into law. But 2008 is underway with a revival of the majority leadership's efforts, and many of the punitive measures thwarted last year are expected to come around again this year.

During 2007, the House and Senate tried to enact a variety of proposals that would have hurt the industry, including proposals to increase industry taxes by $8 billion to $31 billion; bar companies with certain deepwater Outer Continental Shelf leases from bidding on future lease sales; repeal existing incentives and erect new barriers to domestic exploration and production; give the federal government draconian authority to combat oil and petroleum product "price gouging;" subject OPEC nations to U.S. antitrust laws, and quintuple the federal biofuels mandate without providing a mechanism to protect against supply shortfalls.

But when the final energy policy legislation was sent to President Bush for his signature in December 2007, all but the renewable fuels mandate had been eliminated. And it included an industry-supported mechanism allowing waivers of the biofuels mandate.

What happened to produce this turn-around? For starters, API undertook an aggressive educational effort to demonstrate how the proposals would hurt consumers and the economy. And a robust public debate—that included API, its member companies and allies—helped convince Congress and the Executive Branch that ill-advised energy policy initiatives likely would hit energy supplies, the economy and the average voter in unacceptable ways.

But the debate is not over. The economic and political environment promise more proposals from lawmakers that would impose new regulations and taxes on the industry.

In fact, the gavel beginning the second session of Congress had barely fallen when calls to hit the industry were heard. And this year's frothy economic and political mix helps explain why: Oil, natural gas and motor-fuel prices continue to rise. Industry profits remain healthy, and, without context, drew renewed allegations of greed and gouging. Weakness in the economy worsens. The presidential—and congressional—election contest is in high gear, and candidates of every stripe find the industry to be a convenient scapegoat for any and every ill.

The House already has approved a bill imposing more than $17 billion in industry tax increases. The Senate was considering how it would respond. Elsewhere on Capitol Hill, draconian climate change legislation and tough security requirements for refineries and chemical facilities were both being drafted. The Department of the Interior was telling Congress that the Treasury stood to lose $35 billion if royalties are not collected on deepwater Outer Continental Shelf leases.

At the other end of Pennsylvania Avenue, regulations were being written to implement the new biofuel standards, and costly new requirements to control ground-level ozone pollution were in the offing. Beyond the Beltway, Senators Hillary Clinton and Barack Obama pledged to impose tens of billions in taxes on the oil and gas industry in return for being elected president, while the Republican nominee Senator John McCain campaigned for energy independence and "break[ing] the dominance of oil in our transportation sector."

Here is a detailed look at the public policy initiatives in Washington that have the industry's attention:

TAXES

A lot of lawmakers on Capitol Hill look at the industry and see a set of very deep pockets. The Democratic leadership sees the industry's prosperity flowing from the world market price of oil, and that prosperity consequently is unearned and undeserved. This attitude holds that oil companies do not need any tax breaks and Congress should use the money to finance worthier parts of the economy. It also ignores the link between investment and reliable energy supplies.

And some critics forget this is an industry that employs 1.9 million Americans in high-paying jobs; delivers the reliable supplies of oil, natural gas and refined products that keep the economy running; already pays hundreds of billions of dollars in taxes and invests more than that in conventional and advanced energy development every year.

The White House has threatened a presidential veto of the $17 billion-plus House tax bill. Congress would find it very difficult to override a veto. Even so, the expectation is that Congress will continue to propose tax increases on the industry—whether they are the same limitations on manufacturing and foreign income treatment that have failed before, or windfall profits taxes or taxes to finance the federal "superfund" for hazardous waste cleanups. And our full-scale efforts to educate the public and policymakers on the very real downsides of such policy will continue.

GLOBAL CLIMATE CHANGE

With the Senate poised to consider a "cap and trade" bill by the middle of the year, API and its member companies are engaged in the emerging debate over mandatory greenhouse gas control legislation. A bill approved by the Senate Environment and Public Works Committee late last year would impose severe requirements on the oil and natural gas industry. It would make the industry accountable for deep reductions in greenhouse gas emissions associated with the production and consumption of oil, natural gas and

refined products. And there would be no means of ensuring changes in consumer behavior that could produce the cuts.

The industry would have to spend tens of billions of dollars to purchase "allocations" to account for the required cuts, driving up the cost of domestic exploration, production and refining. This in turn would encourage producers to move those activities and jobs to countries facing no mandatory requirements. The idea is particularly ironic in light of the recently enacted energy law, with its 36-billion-gallon biofuels mandate and increased automobile fuel efficiency requirements.

Taken together, the auto fuel efficiency and biofuel mandates enacted last year would reduce greenhouse gas emissions from transportation by hundreds of millions of tons. Even so, the oil and natural gas industry would still shoulder most of the new burden proposed in the Senate's cap-and-trade legislation. The House has yet to act on climate legislation, but the Energy and Commerce Committee is expected to produce a bill sometime this year; if the Senate approves its measure that could spur House floor action. It remains unlikely a climate bill will make its way to the president in 2008—and if it does, it would face a veto. But the climate change debate will continue. The leading presidential contenders support mandatory control legislation and are expected to work with the next Congress to enact a bill.

ACCESS

Rep. Nick Rahall (D-WV), chairman of the House Natural Resources Committee, has expressed interest in revisiting several anti-access proposals that failed last year.

The first proposal that may be picked up from the cutting room floor would force the rewriting of so-called deepwater royalty relief Outer Continental Shelf leases. At stake are a series of leases written under the Deep Water Royalty Relief Act, which provided limited exemptions from royalty payments to companies producing oil and natural gas from federal leases in the deepwater Gulf of Mexico. The limits on royalty relief are included in leases case-by-case and have included volume caps as well as price thresholds.

Designed to encourage exploration and production, the program's value is seen in its results: Since 1996, deepwater natural gas output is up 407 percent and crude oil is up 386 percent.

The controversy over the program arises from deepwater leases issued in 1998 and 1999 that contained no price thresholds. The Congressional Budget Office (CBO) estimated that this would cost the Treasury $10 billion in foregone royalties over 25 years. Since the leases were issued, a federal trial court ruled that the law does not allow for price thresholds on any deepwater royalty relief lease. If that decision is upheld, the CBO estimates the hit to the Treasury would be $60 billion over 25 years.

Attempts last year by congressional critics of the program to force leaseholders to insert price thresholds into their contracts ran into constitutional concerns. Similar proposals this year likely would draw a veto threat from the White House.

PRICE GOUGING

With crude oil prices hovering above $100 per barrel, and the summer driving season ahead, some in Congress may seek to revive federal price gouging legislation. Relatively stable prices and a veto threat by the president prompted Congress to ultimately remove a price gouging provision from last year's energy bill. No specific proposal has been offered this year. But price gouging legislation would make a politically attractive topic during any congressional recess that coincides with heavy travel periods—as well as for presidential candidates in coming months.

CHEMICAL SECURITY

In 2006, the President signed a law imposing the first federal anti-terrorism security requirements on industry facilities, including refineries that handle specified chemical substances.

THE DEBATE IS **NOT OVER**

The new law—which was four years in the making—requires facilities to file with the Department of Homeland Security detailed plans for protecting against terrorist attacks. The law bars public disclosure of the sensitive security plans and implies that states may not impose more stringent requirements.

Environmental and "right-to-know" public interest groups objected to these provisions. They also took issue with the lack of requirements to adopt "inherently safer" production processes and feedstock, mandates that would impose new processes or materials that are deemed less dangerous but not necessarily more secure.

Inherently safer practices were sought by environmental groups after years of failing to institute similar provisions in the name of eco-protection. The new Democratic majority was listening. The House Homeland Security Committee was expected to approve a bill in early March that would mandate inherently safer technology and let states set even tougher requirements.

API has been joined by a large number of other interests, including manufacturers and agricultural producers, in filing objections to the legislation. It is unclear when the House might take floor action on the legislation, and the Senate Homeland Security Committee has not announced plans of its own.

A little bit of knowledge goes a long way. Just ask Kelton Mallery.

OPENING DOORS TO NEW CAREERS

"Everything I learned in the program, I do on the job."

A little bit of knowledge goes a long way. That's the whole idea behind API's Oilfield Training Program, which helps young adults learn critical entry-level skills they need to get started and succeed in their first jobs in the oil and natural gas industry.

Just ask Kelton Mallery. After graduating from the oilfield program in April 2007, he went to work in the maintenance department at Parker Drilling Company. "Everything I learned in the program, I do on the job," he says.

The API Oilfield Training Program opened in 2004 at the Carville Job Corps Academy in Carville, Louisiana in response to concerns of API member companies who noticed they were spending a lot of time and money recruiting and training entry-level workers, only to see many leave. The companies wanted a way to make prospective workers more familiar with the requirements and responsibilities of entry-level positions before they showed up for their first day of work.

"There is a great deal of turnover in entry-level positions in the oilfield, and in our industry this is costly because you cannot send folks into the field without training," says Denise McCourt, API's Director of General Membership and General Relations. "Some people get hired, go through the training and determine they simply don't want to do the work. They find it's too hard, too cold, too hot, or working seven or 14 days in a row is not appealing to them."

McCourt was looking for a job training partner that had a long-term track record of training entry-level applicants, so she contacted Job Corps about creating a program to meet the industry's needs. The Job Corps program was a natural fit because its mission is very similar to the API

oilfield initiative. Administered by the U.S. Department of Labor, the Job Corps teaches young adults the skills they need to become employable and independent, as well as place them in meaningful jobs.

McCourt toured Job Corps facilities and met with several service and supply companies in the Carville area and decided that it would be a great location for the training program because of its proximity to the Gulf Coast.

Finding an instructor was the next step—one that was unexpectedly easy.

"I interviewed for a maintenance position at the Job Corps facility, and during the interview I was asked if I knew anything about the oilfield," says John Taylor III, who recently retired from the petrochemical industry where he managed four service companies that serve the oil and petrochemical industry. He has been teaching API's Oilfield Training Program since its opening.

To design a training curriculum, API created the Job Corps Advisory Council. The council meets regularly to evaluate and make changes to the curriculum to accommodate employers' needs. A recent change to the curriculum was adding a physical training component to better prepare workers for heavy lifting on the job. "Working with the council has been great," Taylor says. "A lot of the companies are very helpful in providing resources and getting the students employed."

Since it opened, 50 workers have graduated from the program and most have been placed with Gulf Coast oilfield service companies. Students are introduced to the basic health, environment and safety requirements of working in the oilfield, including how to lift properly. They also learn about basic pieces of equipment and how they work, as well as receive certification in OSHA basic training, first aid, CPR and marine water survival. Students with a high school diploma or equivalent can finish the program in about four months; those needing to complete high school take about eight months and finish with a General Education Development (GED) diploma.

"For many students who do not have a high school diploma, this program represents a second chance to earn a diploma and learn valuable job skills," says Herb Fritts, director of the training center. Mallery agrees, adding, "The training that I got in the program really helps me in my job. When I started, I knew a lot about the job that I would be doing and already had the necessary skills and certifications."

Mallery learned about the training program from a friend that was in another Job Corps program. "My friend told me about the training he was doing which got me interested," he says. "I grew up south of Lafayette and was interested in working in the oilfield. I spoke to a Job Corps recruiter and decided to enroll in the program."

For Mallery, making the decision to work for Parker was not difficult. "I was really impressed by their training program," he says. "Because of a previous visit, I decided to work for them."

The training program focuses on work-based learning to help identify students' job skills. Students undertake two work-based learning trips while still residing at the training center. During the training program, students meet with a career transition specialist to determine their interest in specific companies and careers. The career transition specialist also checks in with the students up to a year after graduation. "We've tried to set up the program to give the students multiple employment opportunities," Taylor says.

Until recently, only high school students and young adults in the southeast Louisiana region were recruited to the Carville location. But with a grant from the Department of Labor, more prospective students outside the region will be able learn about the training program.

Indeed, the success of the Louisiana program suggests the concept may be expanded to other locations where Job Corps could play an increasing role in helping the industry solve its long-term workforce shortage. Now, there are plans to open another API Oilfield Training Program in Riverton, Wyoming, and the list keeps growing. "Other states are hearing about our program and are asking for more information," Taylor says. "Our latest inquiry came from Alaska."

For more information, contact Herb Fritts, Director, Carville Job Corp Academy, at 225-642-3000, or email him at fritts.herb@jobcorps.org; or contact James Crandall, API Associate at 202-682-8475, email crandallj@api.org.

HOT
OFF THE PRESSES

Since 1924, API has been a cornerstone in establishing and maintaining standards for the worldwide oil and natural gas industry. Here are just a few of the newly published standards available.

For a complete list of publications that will be updated or completed in the coming months, visit **www.api.org/publications.**

EXPLORATION AND PRODUCTION

DERRICKS AND MASTS

SPEC 4F
Specification for Drilling and Well Servicing Structures, 3rd Edition, January 2008

TUBULAR GOODS

SPEC 5L
Specification for Line Pipe, 44th Edition, October 2007

FIBERGLASS AND PLASTIC PIPE

RP 15CLT
Recommended Practice for Composite Lined Steel Tubular Goods, 1st Edition, September 2007

SPEC 15LE
Specification for Polyethylene (PE) Line Pipe, 4th Edition, January 2008

DRILLING AND PRODUCTION OPERATIONS

RP 75L
Guidance Document for the Development of a Safety and Environmental Management System for Onshore Oil and Natural Gas Production Operations and Associated Activities, 1st Edition, November 2007 (Free PDF available at www.api.org)

RP 76
Contractor Safety Management for Oil and Gas Drilling and Production Operations, 2nd Edition, November 2007 (Free PDF available at www.api.org)

PETROLEUM MEASUREMENT

MPMS CHAPTER 10.1
Standard Test Method for Sediment in Crude Oils and Fuel Oils by the Extraction Method, 3rd Edition, November 2007

MPMS CHAPTER 10.2
Standard Test Method for Water in Crude Oil by Distillation, 2nd Edition, November 2007

MPMS CHAPTER 11.2.4/GPA THE VOLUME OF TP-27
Temperature Correction for NGL & LPG- Tables 23E, 24E, 53E, 54E, 59E, 60E, 1st Edition, September 2007

MPMS CHAPTER 11.2.5/GPA TP-15
A Simplified Vapor Pressure Correlation for Commercial NGLs, 1st Edition, September 2007

MPMS CHAPTER 17.10.2
Measurement of Refrigerated and/or Pressurized Cargoes on Board Marine Gas Carriers—Part 2: Liquefied Petroleum and Chemical Gases, 1st Edition, November 2007

TR 2568
Evaporative Loss from the Cleaning of Storage Tanks, 1st Edition, November 2007

MARKETING

AVIATION

API/EI 1550, Handbook on equipment used for the maintenance and delivery of clean aviation fuel, October 2007

PIPELINE

API RP 1130
Computational Pipeline Monitoring for Liquids, 1st Edition, September 2007

RP 1102
Steel Pipelines Crossing Railroads and Highways, 7th Edition, December 2007

REFINING

PIPING COMPONENT STANDARDS

STD 599
Metal Plug Valves—Flanged, Threaded and Welding Ends, 6th Edition, October 2007

MECHANICAL EQUIPMENT STANDARDS

STD 618
Reciprocating Compressors for Petroleum, Chemical, and Gas Industry Services, 5th Edition, December 2007

STORAGE TANKS

STD 620
Design and Construction of Large, Welded, Low-pressure Storage Tanks, 11th Edition, February 2008

SAFETY AND FIRE PROTECTION

PUBL 2207
Preparing Tank Bottoms for Hot Work, 6th Edition, December 2007

RP 2003
Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents, 7th Edition, January 2008

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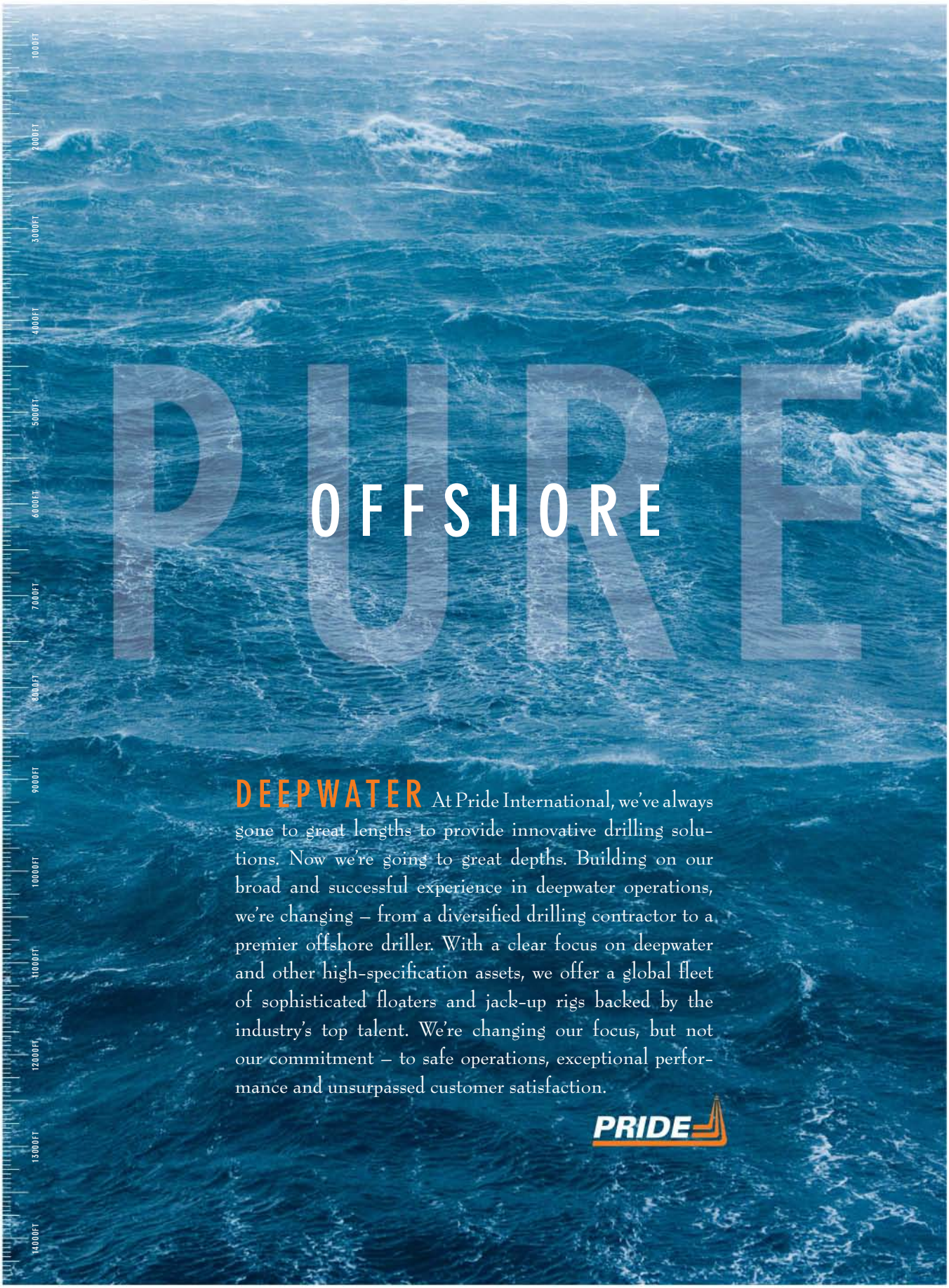
Below is a selection of meetings, conferences, workshops and API University courses. For additional information, please visit www.api.org/meetings or www.api-u.org.

2008 CALENDAR OF MEETINGS AND EVENTS

May 13–14	Workshop on USCG Regulations for Facility Security Officers	Houston, Texas, USA
May 14–15	Workshop on Security Vulnerability Assessments (SVAs)	Houston, Texas, USA
May 14–22	Seminar for Senior Executives in the Energy Industry	Dallas, Texas, USA
May 18–20	API Renewable Fuels Policy Impact Workshop	Houston, Texas, USA
May 20–22	API RP 579 Fitness-for-Service Course	Shaker Heights, Ohio, USA
June 4–5	Overview of API Spec 6A, 19th Edition	Houston, Texas, USA
June 6	Designing Bolted Flanges to API and ASME Requirements	Houston, Texas, USA
June 10–11	API Specification Q1 Course	Houston, Texas, USA
June 10–12	API 520/521 Pressure Relieving Systems Course	Shaker Heights, Ohio, USA
June 23–24	Tanker Conference	San Diego, California, USA
June 23–27	Exploration and Production Standards Conference on Oilfield Equipment and Materials	Calgary, Alberta, Canada
July 8–10	API 580/581 Risk Based Inspection Course	Shaker Heights, Ohio, USA
July 10–11	Overview of API Spec 6A, 19th Edition	Houma, Louisiana, USA
July 29–30	Aboveground Storage Tanks: Introductory Course	Houston, Texas, USA
August 12–14	API 520/521 Pressure Relieving Systems Course	Edmonton, Alberta, Canada
August 13–14	API RP 753 Facility Siting Update—Process Plant Portable Plant Portable Building Hazard Management	Houston, Texas, USA
September 8–9	Overview of API Spec 6A, 19th Edition	Aberdeen, Scotland
September 9–10	API Specification Q1 Course	Houston, Texas, USA
September 9–11	API RP 571 Damage Mechanisms Course	Shaker Heights, Ohio, USA
September 11–12	Workshop on Security Vulnerability Assessments (SVAs)	Washington D.C., USA
September 11–12	API RP 579 Fitness-for-Service Course for Inspectors	Shaker Heights, Ohio, USA
September 26–27	Overview of API Spec 6A, 19th Edition	Houston, Texas, USA
October 6–9	Storage Tank Conference and Safe Tank Entry Workshop	Fort Worth, Texas, USA
October 7–8	Aboveground Storage Tanks: Introductory Course	Freeport, Maine, USA
October 7–8	API Specification Q1 Course	Houston, Texas, USA
October 7–8	Workshop on USCG Regulations for Facility Security Officers	San Francisco, California, USA
October 9–10	Workshop on Security Vulnerability Assessments (SVAs)	San Francisco, California, USA
October 13–17	Fall Committee on Petroleum Measurement Standards Meeting	Long Beach, California, USA
October 14–17	API RP 579 Fitness-for-Service Course	Shaker Heights, Ohio, USA

Many of our meetings and conferences offer excellent sponsorship and exhibit opportunities. Laura Barcaskey of Durable Mecco said of one API conference: "It was a well spent three-days to get better acquainted with the key industry leaders of your industry, and to learn more about the application of our products in the oil industry. As with most industries today markings for traceability is a key topic, and technology is allowing data to be captured in new ways in heavy applications such as down-hole drilling and those subject to harsh environments/processes. We, at Durable Mecco, look forward to strengthening our relationship with the American Petroleum Institute to handle their diverse marking and identification needs."


PURE
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DEEPWATER At Pride International, we've always gone to great lengths to provide innovative drilling solutions. Now we're going to great depths. Building on our broad and successful experience in deepwater operations, we're changing – from a diversified drilling contractor to a premier offshore driller. With a clear focus on deepwater and other high-specification assets, we offer a global fleet of sophisticated floaters and jack-up rigs backed by the industry's top talent. We're changing our focus, but not our commitment – to safe operations, exceptional performance and unsurpassed customer satisfaction.
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