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International Petroleum News and Technology / www.ogjonline.com

Trends in Health, Safety, and Environment

Sustainability reports address oil spills and GHG emissions
Mexico's oil output drops but gas production rises
Hercules develops HSE dashboard to safeguard offshore
States expand air permits; some submittals due in January

OIL&GAS JOURNAL®

Dec. 1, 2008
Volume 106.45

TRENDS IN HEALTH, SAFETY, AND ENVIRONMENT

REGULAR FEATURES

COVER

The Mo-Ranch "catwalk" (cover) exemplifies early recycling efforts in the Texas Hill Country. Dan Moran, president of Continental Oil Co., built the 462-ft long bridge around 1940 with junked, 4-in. OD oil field pipe and part of a derrick. In this issue, beginning on p. 22, Oil & Gas Journal reports on current industry efforts in health, safety, and the environment. Companies are using software to streamline HSE management. Hercules Offshore has implemented a new HSE dashboard (p. 39), while BP and Petrotechnics used a software-supported process to identify best practices in the Gulf of Mexico (p. 42). In some US states, standards for air-quality permits are changing (p. 48), and the EPA reports that US refiners have reduced hazardous air emissions (p. 50). Along pipeline ROWs, on site biologists assist as "biomonitors" during construction (p. 58). Photo by Nina M. Rach.

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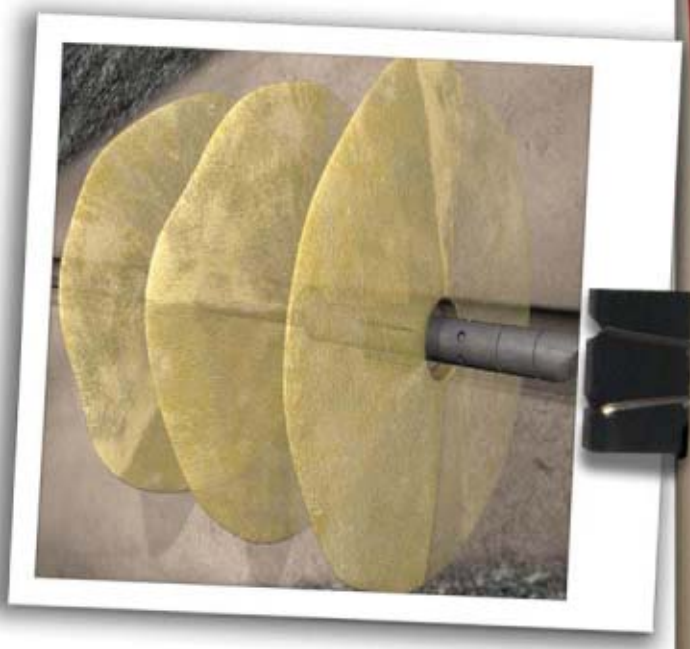
CobraMax® H service boosts gas production, cuts time and cost on horizontal wells by fracturing with coiled tubing

The Challenge:

British Columbia, Canada—A Canadian operator used Halliburton's **CobraMax® H** service to place multiple fractures in a horizontal well in the Montney shale formation. The treatment was successful and the well produced 160,000 m^3 gas/day (5.6 mmcf/d) which was more than the operator expected. Completing the five fractures took five days and the treatment required three bottomhole assemblies (BHAs). The operator liked the results and requested Halliburton work on speeding up the process because each BHA change required eight hours of coiled tubing operations.



The new CobraMax H system achieves maximum conductivity in the near-wellbore region to overcome flow convergence issues common in horizontal wells.

The Solution:

Halliburton made three improvements that dramatically increased the speed of CobraMax H treatments: an erosion-resistant BHA that could last for an entire operation on a well, an improved sand plug technique to isolate intervals and a new fluid design.

"I now have higher production with increased speed *and* lower cost from CobraMax H — quality, service and price without any tradeoffs."

The Results:

The new CobraMax H system has now been used on dozens of horizontal wells in the Montney play. Seven zones fractured in 40 hours is now routine performance. Completion costs have typically been slashed by more than 40 percent. Safety and reliability have improved. And wells fractured with CobraMax H service are the best performers in the field.

For more information about how CobraMax H service can help reduce the time for multizone frac treatments and make your field more profitable, visit www.halliburton.com/reliability or e-mail stimulation@halliburton.com.

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OGJ Newsletter

Dec. 1, 2008

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General Interest — Quick Takes

Hydraulic fracturing foe gains clout in House

The powerful US House Committee on Energy and Commerce has a new leader who has consistently opposed operations crucial to the production of natural gas from unconventional reservoirs.

Henry A. Waxman (D-Calif.) succeeded in a bid, launched the day after the Nov. 4 general election, to unseat John Dingell (D-Mich.), chairman since 1981 and the longest-serving member of Congress.

Waxman, a supporter of aggressive environmental causes, is a persistent foe of hydraulic fracturing, a completion technique applied to wells drilled into low-permeability reservoirs such as shales and coalbeds (OGJ, Nov. 17, 2008, p. 20).

In the last session of Congress, Waxman was chairman of the House Committee on Oversight and Government Reform. In a hearing of that committee he called hydraulic fracturing "a dangerous practice."

He has criticized a provision of the Energy Policy Act of 2005 that exempted hydraulic fracturing from federal regulation under the Safe Drinking Water Act.

The completion method, which producers have used for nearly 60 years, is regulated at the state level.

A more immediate issue before the energy committee in the next session of Congress, however, will be climate change.

A bill drafted by Dingell and Rep. Dick Boucher (D-Va.) and published in October sets reduction targets for greenhouse gas emissions in line with those espoused by President-Elect Barack Obama.

But the draft has drawn criticism from environmental groups because of accommodations it makes to the auto and coal industries, which are important to Dingell and Boucher.

France outlines new renewable energies program

France's Environment and Energy Minister Jean-Louis Borloo offered a "national plan for renewable energies" on Nov. 17. The plan sets aside, for the time being, any assessment of the European Union's biofuels draft directive to bring the share of biofuels in transport to 10% by 2020.

The plan aims to bring to 23% the share of renewables in the energy mix by 2020. This corresponds to 20 million tonnes of oil equivalent and involves 50 different measures to develop biomass, wind, geothermal, hydro, sea energies, and especially solar energy, which is targeted to jump to 5,400 Mw in 2020 from 13 Mw in 2007—all of which is to take place in an environmentally safe way. To help achieve these targets, a €1 billion fund will be set up during 2009-11, and the tax credits will be extended to 2012.

Jean-Louis Borloo explained that the "change of model and the change of scale" is intended to go from an essentially carbon-based model to a totally decarbonized model "where each home, each company, and each community will become its own energy producer."

Russia, Venezuela to form 'strategic oil alliance'

Venezuelan President Hugo Chavez plans to enter into a strategic alliance with Russia aimed at developing his country's oil industry, according to a senior government minister.

"It will be a strategic alliance between Petroleos de Venezuela SA (PDVSA) and an oil consortium of all the Russian firms, state and private, a large industrial conglomerate not just for production, but also for the entire matter of refining and industrialization," said Venezuela Energy Minister Rafael Ramirez.

A strategic cooperation agreement was to be signed on Nov. 26 during Russian President Dmitriy Medvedev's visit to Caracas, Ramirez said, noting that Moscow also is pursuing a policy "of greater cooperation" with the Organization of Petroleum Exporting Countries.

In November, Rosneft Chief Executive Officer Sergei Bogdanchikov said five of Russia's largest oil and gas firms each have taken a 20% stake in the national consortium formed to develop heavy oil fields in Venezuela's Orinoco River basin.

The consortium was registered on Oct. 8, Bogdanchikov said. In addition to Rosneft, the Russian group is comprised of Gazprom, Lukoil, TNK-BP, and Surgutneftegaz. PDVSA will have the controlling stake in the larger consortium announced by Ramirez, and the companies will complete formalities by next spring.

Russian Deputy Prime Minister Igor Sechin explained the rationale for the consortium with Venezuela.

"The consortium derives from practical considerations: crude produced at certain Venezuelan blocs is heavy, and it is necessary to build refineries capable of making commercial oil," Sechin said. "Such refineries are rather expensive ($6-6.5 billion), and that is too much for one company." ✦

Exploration & Development — Quick Takes

Petrobras confirms two light oil finds

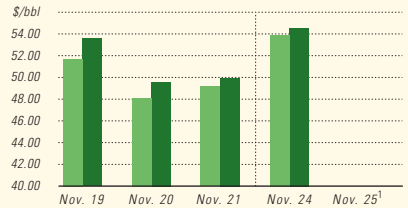
Petroleo Brasileiro SA (Petrobras) reported the completion of drilling of two wells in the presalt layer off Espirito Santo state.

The wells proved discovery of 30° gravity oil in the Parque das Baleias area.

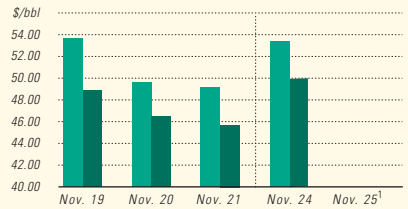
Officials estimated the recoverable volume of the light oil reservoirs beneath the Baleia Franca, Baleia Azul, and Jubarte heavy oil fields, at 1.5-2 billion boe.

Industry Scoreboard

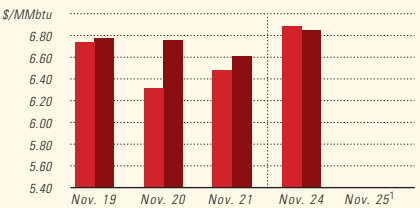
IPE BRENT / NYMEX LIGHT SWEET CRUDE



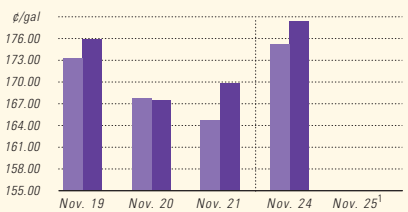
WTI CUSHING / BRENT SPOT



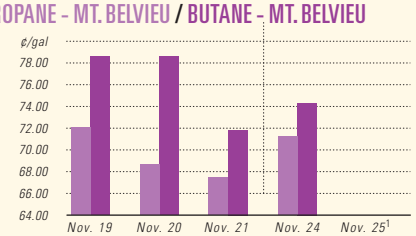
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



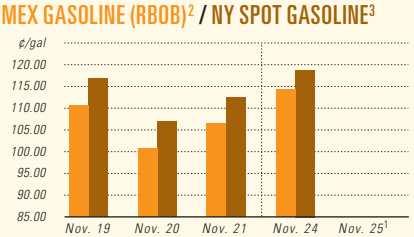
IPE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



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



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

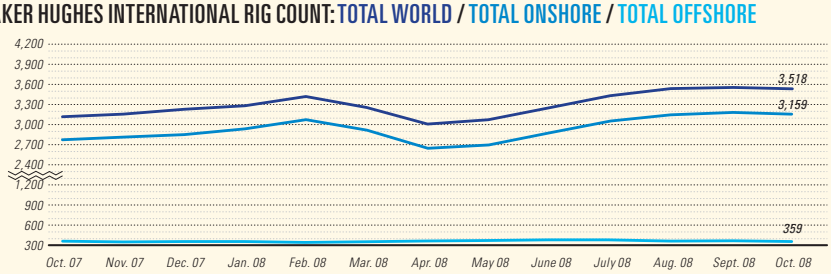
US INDUSTRY SCOREBOARD — 12/1

Latest week 11/14	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	9,029	9,233	–2.2	9,011	9,292	–3.0
Distillate	4,012	4,149	–3.3	3,953	4,203	–5.9
Jet fuel	1,291	1,620	–20.3	1,526	1,626	–6.2
Residual	420	692	–39.3	586	726	–19.3
Other products	4,324	4,810	–10.1	4,626	4,818	–4.0
TOTAL DEMAND	19,076	20,504	–7.0	19,512	20,684	–5.7
Supply, 1,000 b/d						
Crude production	4,820	5,031	–4.2	4,946	5,068	–2.4
NGL production[2]	2,367	2,551	–7.2	2,264	2,394	–5.4
Crude imports	9,921	9,850	0.7	9,792	10,044	–2.5
Product imports	2,863	3,191	–10.3	3,146	3,490	–9.9
Other supply[3]	1,279	981	30.4	1,368	1,031	32.7
TOTAL SUPPLY	21,250	21,604	–1.6	21,516	22,027	–2.3
Refining, 1,000 b/d						
Crude runs to stills	14,652	15,042	–2.6	14,652	15,152	–3.3
Input to crude stills	14,902	15,373	–3.1	14,902	15,441	–3.5
% utilization	84.9	88.2	—	84.9	88.5	—

Latest week 11/14	Latest week	Previous week[1]	Change	Same week year ago[1]	Change	Change, %
Stocks, 1,000 bbl						
Crude oil	313,548	311,949	1,599	313,605	–57	0.0
Motor gasoline	198,634	198,095	539	195,190	3,444	1.8
Distillate	126,880	128,351	–1,471	131,005	–4,125	–3.1
Jet fuel–kerosine	38,127	36,835	1,292	38,830	–703	–1.8
Residual	39,085	38,976	109	39,097	–12	0.0
Stock cover (days)[4]			Change, %		Change, %	
Crude	21.4	21.3	0.5	21.0	1.9	
Motor gasoline	22.0	21.9	0.5	21.0	4.8	
Distillate	31.6	32.2	–1.9	29.9	5.7	
Propane	49.5	48.5	2.1	48.7	1.6	
Futures prices[5] **11/21**			Change		Change	%
Light sweet crude ($/bbl)	52.50	58.64	–6.14	93.68	–41.18	–44.0
Natural gas, $/MMbtu	6.52	6.60	–0.08	7.89	–1.37	–17.4

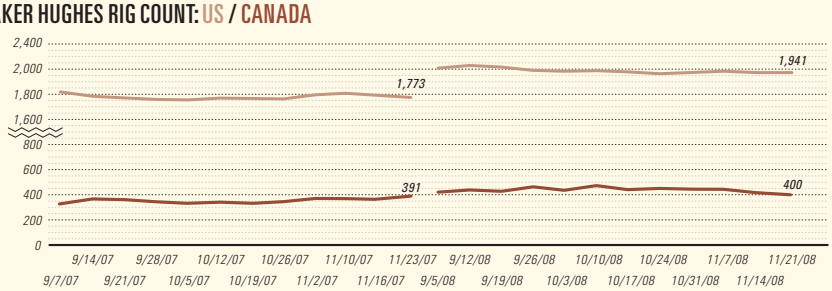
[1]Based on revised figures. [2]Includes adjustments for fuel ethanol and motor gasoline blending components. [3]Includes other hydrocarbons and alcohol, refinery processing gain, and unaccounted for crude oil. [4]Stocks divided by average daily product supplied for the prior 4 weeks. [5]Weekly average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

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



Note: Monthly average count

BAKER HUGHES RIG COUNT: US / CANADA



Note: End of week average count

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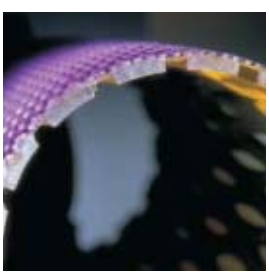

ESS systems can dramatically reduce costs and increase productivity by up to 70 percent.

Our comprehensive systems, including inflow control technology, and service expertise provide a clear decision path to the right solution.

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The 6-BFR-1-ESS and 6-BAZ-1DB-ESS wells were drilled 80 km offshore and 5 and 6 km, respectively, to the north and south of another discovery well 1-ESS-103A in the presalt section under the Jubarte field.

The reservoirs of the two latest wells are under a layer of salt as thick as 700 m and at 1,348-1,426 m from the water line. The reservoirs are 4,200-4,800 m subsea and have oil-bearing porous thicknesses of 190 and 300 m.

So far, six wells have been drilled in the Espirito Santo presalt layer, all successful. With these discoveries the total estimated volume of oil in the Parque das Baleias area, including reservoirs above and below the salt layer, already amounts to 3.5 billion boe.

Ecopetrol farms into Eni's gulf assets

Colombia's state-owned Ecopetrol will acquire a 20-25% stake in Eni SPA's exploration portfolio in the Gulf of Mexico. It will pay more than $220 million to cover Eni's drilling costs for five wells by Dec. 31, 2012.

Eni described the partnership as a "strategic agreement" that would help it to better manage and diversify its exploration risk.

The company has lease interests in 408 blocks within the gulf, 70% of which are in deep water. Last year it had an 80% exploration success rate and has a daily equity production of more than 100,000 boe.

Both companies also signed a memorandum of understanding to evaluate other farm-in opportunities for Ecopetrol from Eni's exploration portfolio. Ecopetrol will also offer Eni access to opportunities in Colombia and other South American countries.

Research sought on unconventional gas

Research Partnership to Secure Energy for America (RPSEA), Sugar Land, Tex., has requested industry proposals for projects on gas shales, coalbed methane water management, and tight sands.

The full text of the RFPs is on the RPSEA web site. The proposals are due Jan. 12, 2009, for projects to start around April 2009.

The focus of the gas shales proposal is on the challenges associated with development of the shale resource from the Permian basin through the Fort Worth basin and in southern Appalachian shale gas basins.

Concepts may include characterization of parameters that differentiate high-performing wells and development of methods to assess production potential, model production results, delineate the fracture system, develop extra-extended lateral drilling techniques, develop steerable hydraulic fracs, and a host of other concepts.

Another request is for development of tools, techniques, and methods to greatly reduce the cost and environmental impact of CBM and shale gas development through more effective management of water used and produced in drilling, completion, stimulation, and production.

The tight sands solicitation seeks proposals for development of tools, techniques, and methods to increase commercial production and ultimate recovery from established tight gas sand formations and accelerate development of emerging and frontier tight gas plays. This work is to be focused on the Rocky Mountain region.

Australia awards offshore E&P permits

Australia has awarded 13 offshore exploration permits in its 2007 release scheme, and the successful companies have pledged a total expenditure of $500 million (Aus.) in exploration investment over the next 6 years, despite the global economic crisis.

The permits lie off Western Australia and Northern Territory, and four of them have been designated frontier areas, which means the successful companies are entitled to a more-favorable tax rate.

Woodside Petroleum was awarded three permits (WA-415-P, WA-416-P, and WA-417-P) in the little-explored offshore Canning basin which lies inshore of the Browse basin region.

Returning independents Hunt Oil and Murphy Australia, along with local company Nexus Energy, won the four Browse basin permits on offer. Hunt received WA-413-P and WA-414-P, while Murphy secured WA-429-P and Nexus scored WA-424-P.

Small Perth-based explorer Finder Exploration won the sole permit on offer in the Carnarvon basin, WA-418-P.

Newcomer Essar Exploration & Production of India won two permits (NT/P77 and NT/P78) in the Northern Territory area of the Bonaparte basin, while Melbourne-based Albers Group companies added to its existing tally of Bonaparte permits with three more in the Western Australian area (WA-420-P, WA-421-P, and WA-422-P).

A total of 24 bids was received for the 13 permits on offer. ✦

Drilling & Production — *Quick Takes*

Arrow to develop CSM project in China

Arrow Energy Ltd., Brisbane, has extended its operations in China by signing a heads of agreement with Bin Chang Mining Group to develop coal seam methane (CSM) in Shaanxi Province.

Arrow and Bin Chang will begin a pilot well drilling program to assess the potential surface mine degassing and CSM production in an area that covers 360 sq km within Bin Chang's coal mining licenses.

The region has a good coal resource data base, according to Arrow, and it has been explored using closely spaced core holes that have defined a coal resource of 6,000 billion tonnes of coal. The estimated in-place CSM resource exceeds 1 tcf.

Arrow says the program will have dual benefits of gas production and improved mine safety.

Bin Chang will cover program costs, and Arrow will design and operate the work, using technology it developed in Australia. It will be Arrow's first CSM drilling project in China and the first program to use Arrow's surface to in-seam horizontal well technology for mine drainage.

If commercial volumes of gas are produced in the pilot program, the two parties will enter into a formal joint venture to develop CSM over the entire license area. The pilot program is expected to be completed by mid-2009.

Arrow also has been awarded a CSM business development license for its earlier joint venture with the Urumqi Geological Exploration Development Co. of the Xinjiang Geological Survey.

The license, the first of its type granted by the Xinjiang provincial government, provides access to the CSM opportunities in the coal mining areas of the province.

Nexus cancels Crux FPSO order

Nexus Energy Ltd., Melbourne, and its joint venture partner Osaka Gas Co. Ltd. of Japan have terminated a memorandum of understanding with Vanguard Oil & Gas International and Viking Shipping for the supply of a floating production, storage, and offloading vessel for the Crux liquids project in the Browse basin off Western Australia.

Nexus says the JV was unable to proceed to a final investment decision with Viking as the FPSO provider and will now negotiate an alternative offer from another provider for the project. The company said this would increase confidence that delivery of first liquids from Crux would be achieved by mid-2011. There was no indication of the problem surrounding the Viking deal which was originally signed in 2007.

Nexus (with 85% of Crux development and Osaka Gas 15%) has further incentive to complete the liquids project on time because it also has a $40 million deal to sell Crux gas to Shell Australia (OGJ, July 10, 2006, p. 27). That deal stipulated that Shell has the right to all Crux gas and any remaining liquids in the field after 2020.

Crux has an estimated 75.2 million bbl of recoverable condensate. Nexus says that even if oil falls to $40/bbl, the field is still economic.

Nevertheless the company is suffering the strain of the current world economic crisis. This was evident from comments by Chairman Michael Fowler at the Nexus annual general meeting last week when he said that the company is open to a takeover in order to maximize shareholder value.

Fowler said that during the company's Crux asset sale process, it received expressions of interest at the corporate level, as well as some offers of strategic alliances.

"The board will evaluate any serious proposals," he said. He said the objective is to maximize value to all shareholders, and currently the board believes this will best be achieved through an asset sale process, which underlies the value of Nexus' asset base.

"However, it may be that the best outcome, in terms of shareholder value, proves to be a sale of the company or some other corporate-level transaction," Fowler added.

Nexus began a global sales process for its Crux AC/P23 exploration permit in October after Mitsui E7P Australia withdrew from an earlier intention of buying a 25% stake because of poor global market conditions.

Saskatchewan THAI demonstration test slated

Petrobank Energy & Resources Ltd. and True Energy Trust, both of Calgary, announced plans to demonstrate the effectiveness of toe-to-heel air injection (THAI) to recover conventional heavy oil from a +10-m thick Mannville channel reservoir in Kerrobert field, Saskatchewan. The initial test will involve two wells.

THAI is an in situ combustion process, patented by Petrobank, that combines a horizontal producing well with a vertical air-injection well placed at the toe.

Since 2006, Petrobank in its Whitesands project has been testing the THAI process in the Athabasca oil sands of Alberta under a variety of operating conditions. ✦

Processing — *Quick Takes*

Total, Aramco delay Jubail refinery project

Total SA said the award of construction tenders for its $10 billion Jubail refinery joint venture with Saudi Aramco has been delayed because of uncertainties in global financial markets.

The partners, Aramco 62.5% and Total 37.5%, previously said tenders to build the 400,000 b/d facility would be awarded in first-quarter 2009. The French firm said the award of construction contracts would be set back by at least 3 months.

Recently, in a related development, Aramco said it cancelled a contract awarded in July to Saipem subsidiary Snamprogetti for development of Manifa oil field offshore (OGJ Online, Nov. 19, 2008).

Oil from Manifa was intended for the Jubail refinery, according to Jean-Jacques Mosconi, Total's senior vice-president for strategy and development.

In June, Mosconi told the European Fuels Conference that the Jubail refinery would process Arab Heavy and a new grade from Manifa oil field, which was scheduled to begin production in 2011.

"About 70-80% of Manifa will go to Jubail," Mosconi told the conference delegates, adding that distillate products produced at the complex refinery would be exported, mostly to Europe, while some would be shipped to Asia.

The decision to delay the Jubail refinery follows an earlier announcement by Aramco and ConocoPhillips to delay the bidding process for construction of a similar 400,000 b/d refinery at Yanbu (OGJ, Nov. 17, 2008, p. 29).

China, Costa Rica develop joint refinery plans

Costa Rica's Refinadora Costarricense de Petroleo (Recope) and China National Petroleum Corp. (CNPC) are jointly considering plans for the construction of a refinery in the Central American country.

CNPC and Recope will conduct a feasibility study for the facility, which would be able to process 200,000 b/d, or about eight times the capacity of Costa Rica's existing facility at Puerto Moin on the Caribbean.

The announcement followed an earlier one by Recope Pres. Jose Leon Desanti, who said CNPC would help Costa Rica boost the capacity of its existing Puerto Moin refinery to 60,000 b/d from 25,000 b/d by 2013.

The two announcements build on earlier initiatives agreed by the two countries.

In November 2007, Costa Rican President Oscar Arias, returning from a state visit to China, said CNPC was analyzing the possibility of establishing a refinery in Costa Rica in order to sell fuel to Central America and the Caribbean.

According to Arias, the $6 billion refinery project is indepen-

dent of another one the Chinese had to revamp the Moin facility to enable it to process fuels required for domestic needs.

As part of the Moin development, Recope announced plans in February to expand its storage capacity by 550,000 bbl to 3.95 million bbl by 2011.

Recope said the $15 million project will see installation of two 25,000 bbl tanks at the Moin refinery, as well as a 200,000 bbl light crude tank and a 100,000 bbl diesel tank.

The project also covers work on two 50,000 bbl diesel tanks for the state refiner's Barranco distribution facility, while a 100,000 bbl diesel tank will be built for the El Alto de Ochomogo distribution plant.

Plans also call for existing tanks at the La Garita site to be converted to hold jet fuel instead of gasoline.

Oil Search eyeing PNG petrochemicals

Papua New Guinea company Oil Search Ltd., Sydney, has signed a memorandum of understanding with the Papua New Guinea government and Japanese entities Itochu Corp. and Mitsubishi Gas Chemical Co. to carry out a feasibility study into development of a petrochemical project in Papua New Guinea.

Under the agreement Oil Search and the two Japanese companies will work together and coordinate with the government to investigate the development of a petrochemical industry and its associated benefits to all concerned based on current economic conditions.

Oil Search's managing director said the companies want to better understand the commercialization options that exist for gas in Papua New Guinea, and that includes further LNG trains, petrochemicals, and other gas-based domestic and export industries.

"This new study will satisfy a core initiative announced last July following the signing of the domestic gas MOU with the Papua New Guinea government," he added.

Oil Search has a 34.1% interest in the ExxonMobil-operated, two-train, 6.3-million-tonne/year PNG LNG project that will source gas from fields in which Oil Search has a stake.

The new MOU covers gas from the company's non-Papua New Guinea LNG gas resources. ✦

Transportation — *Quick Takes*

First Tangguh LNG exports to be on schedule

Indonesian officials, quickly reversing earlier statements, said the first LNG exports from the BP PLC-led Tangguh project will be shipped in February 2009 as scheduled.

Raden Priyono, head of the upstream oil and gas regulatory body BPMigas, said the project is being completed on schedule and denied earlier reports that the shipment would be delayed from first-quarter 2009.

Previously, a BPMigas official said the $5 billion Tangguh LNG project would be delayed until second-quarter 2009.

"It will come on stream in the second quarter of next year," BPMigas deputy chief Djoko Harsono told reporters on the sidelines of the Gasex conference, without giving a reason for the delay.

Earlier reports indicated that Indonesia would not delay shipments of Tangguh LNG to CNOOC's Fujian terminal in China, despite an ongoing price renegotiation with Beijing. The shipments are scheduled to begin in first-quarter 2009.

"We must respect the contract," said Energy and Mineral Resources Minister Purnomo Yusgiantoro. "We are continuing negotiations, but as the negotiation has yet to reach an agreement, we must follow the contract," he said (OGJ Online, Oct. 30, 2008).

Dolphin Energy begins supplying gas to Oman

Abu Dhabi's Dolphin Energy, as part of a 25-year gas sales agreement (GSA) signed in 2005, has begun supplying Qatari natural gas to Oman via pipeline.

"This is a historic moment for Dolphin Energy; it is equally significant for three nations [which] have embraced and supported the Dolphin Gas Project from the very beginning," said Dolphin Chief Executive Ahmed Ali Al Sayegh, referring to Qatar, the UAE, and Oman.

The gas is produced from Dolphin's production wells off Qatar, processed at the Ras Laffan gas plant, and shipped through a 48-in., 3.2 bcfd capacity pipeline to the UAE emirate of Abu Dhabi.

From Abu Dhabi, the gas is shipped along Dolphin's Eastern Gas Distribution System to Al Ain in Fujairah, where the line connects to a new Omani pipeline at the Oman border. Oman will be receiving 200 MMscfd of gas under the terms of its GSA with Dolphin.

In addition to Oman, other long-term customers for Dolphin gas from Qatar include Abu Dhabi Water & Electricity Authority, Union Water & Electricity Authority, and Dubai Supply Authority. Each has signed a 25-year gas supply agreement with Dolphin Energy.

Mubadala Development Co., run by the government of Abu Dhabi, owns 51% of Dolphin, while Total SA and Occidental Petroleum share equally in the remaining 49%.

BGTT lets pre-FEED contracts for marine facilities

BG Trinidad & Tobago (BGTT) has let two contracts valued at $1.2 million to KBR consulting subsidiary Granherne certain pre-FEED (front-end engineering and design) studies.

Under the first pre-FEED study, Granherne will undertake study work for provision of compression to BGTT North Coast Marine Area facilities that deliver gas to Atlantic LNG. The concept phase will examine both offshore and onshore solutions and a final solution will be selected during the pre-FEED phase.

The second study includes reviews of the facilities at BGTT's East Coast Marine Area onshore gas plant at Beachfield, including a review of the arriving offshore pipeline and onshore reception facilities. The study includes design for operational upgrades as well as enhancements to the facility that will help BGTT meet future demand. Work is expected to begin immediately.

In September, BG Group said it intended to obtain initial gas output from its Poinsettia platform in Trinidad and Tobago's North Coast Marine Area by yearend.

The Poinsettia field is anticipated to boost its gas output by 9.91 million cu m/day. In 2007, BG produced 23 million boe of gas in the country. ✦

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.

DECEMBER

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

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

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

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

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

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

USAEE/IAEE North American Conference, New Orleans, (216) 464-2785, (216) 464-2768 (fax), website: www.usaee.org. 3-5.

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

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

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

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

2009

JANUARY

Petrotech International Oil & Gas Conference & Exhibition, New Delhi, +91 11 2436 4055, +91 11 2436 0872 (fax), e-mail: convenor_petrotech@iocl.co.in, website: www.petrotech2009.org/registration.aspx. 11-15.

Expandable Technology Oil & Gas Conference, Abu Dhabi, +44 (0) 1 483 598000, e-mail: sally.marriage@otmnet.com, website: www.expandableforum.com. 14.

Oil & Gas Maintenance Technology Conference

& Exhibition, Manama, (918) 831-9160, (918) 831-9161 (fax), e-mail: attendingOGMT@pennwell.com, website: www.oilandgas-maintenance.com. 19-21.

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

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

World Future Energy Summit, Abu Dhabi, +971 2 444 6011, +971 2 444 3987 (fax), e-mail: sales@turretme.com, website: www.worldfutureenergysummit.com. 19-21.

API Exploration & Production Winter Standards Meeting, San Antonio, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 19-23.

API/AGA Oil and Gas Pipeline Welding Practices Conference, San Antonio, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 21-23.

International Process Analytical Technology Forum (IFPAC), Baltimore, (847) 543-6800, (847) 548-1811 (fax), e-mail: info@ifpacnet.org, website: www.ifpac.com. 25-28.

Global E&P Summit, Madrid, +44 (0)20 7202 7500, +44 (0)20 7202 7600 (fax), e-mail: info@wtgevents.com, website: www.epsummit.com. 26-28.

Offshore West Africa Conference, Abuja, (918) 831-9160, (918) 831-9161 (fax), e-mail: attendOWA@pennwell.com, website: www.offshorewestafrica.com. 27-29.

The European Gas Conference, Vienna, +44 (0) 1242 529 090, +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 27-29.

SIHGAZ International Hydrocarbon & Gas Fair, Hassi Messaoud, + 213 21 21 58 74, + 213 21 21 58 72/76 (fax),e-mail: contact@foirex.com, website: www.sihgaz2009.com. 28-31.

FEBRUARY

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

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

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

Global Petrochemicals Conference & Annual Meeting, Cologne, +44 (0) 1242 529 090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 3-5.

Russia Offshore Annual Meeting, Moscow, +44 (0) 1242 529 090, +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 4-6.

NAPE Expo, Houston, (817) 847-7700, (817) 847-7704 (fax), e-mail: info@napeexpo.com, website: www.napeonline.com. 5-6.

Pipeline Pigging & Integrity Management Conference, Houston, (713) 521-5929, (713) 521-9255 (fax), e-mail: clarion@clarion.org, website: www.clarion.org. 9-12.

CERA Week, Houston, (617) 966-5992, e-mail: info@cera.com, website: www.cera.com. 9-13.

SPE Unconventional Fields Conference, Margarita Island, Venezuela, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 10-12.

Pipe Line Contractors Association Annual Conference (PLCA), Carlsbad, Calif., (214) 969-2700, e-mail: plca@plca.org, website: www.plca.org. 11-15.

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

International Petrochemicals Technology Conference & Exhibition, London, +44 (0) 20 7357 8394, +44 (0) 20 7357 8395 (fax), e-mail: enquiries@europetro.com, website: www.europetro.com. 16-17.

IP Week, London, +44 (0)20 8561 6030, +44 (0)20 8561-0131 (fax), e-mail: events@energyinst.org.uk, website: www.energyinst.org.uk. 16-19.

EnerCom's The Oil & Services Conference, San Francisco, (303) 296-8834, e-mail: kgrover@enercominc.com, website: www.theoilandservicesconference.com/index.html. 18-19.

International Downstream Technology & Catalyst Conference & Exhibition, London, +44 (0) 20 7357 8394, +44 (0) 20 7357 8395 (fax), e-mail: enquiries@europetro.com, website: www.europetro.com. 18-19.

ASEG/PESA International Geophysical Conference & Exhibition, Adelaide, +61 8 8352 7099, +61 8 8352 7088 (fax), e-mail: ASEG2009@sapro.com.au, website: www.sapro.com.au/aseg.htm. 22-25.

Laurance Reid Gas Conditioning Conference, Norman, Okla., (405) 325-2248, (405) 325-7164 (fax), e-mail: bettyk@ou.edu, website: www.engr.outreach.ou.edu. 22-25.

Nitrogen + Syngas International Conference and Exhibition, Rome, +44 20 7903 2167, +44 20 7903 2432 (fax), e-mail: conferences@crugroup.com, website: http://crugroup.com. 22-25.

CERI Natural Gas Conference, Calgary, (403) 282-1231, (403) 284-4181 (fax), e-mail: conference@ceri.ca, website: www.ceri.ca. 23-24.

International Pump Users Symposium, Houston, (979) 845-7417, (979) 847-9500 (fax), e-mail: inquiry@turbo-lab.tamu.edu, website: http://turbolab.tamu.edu. 23-26.

MARCH

EAGE North African/Mediterranean Petroleum and Geosciences Conference & Exhibition, Tunis, +31 88 995 5055, +31 30 6343524 (fax), e-mail: eage@eage.org, website: www.eage.org. 2-4.

SPE Research & Development Conference, Lisbon, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 3-4.

APPEX Prospect and Property Expo, London, (918) 560-2616, (918) 560-2684 (fax), e-mail: convene@aapg.org, website: www.aapg.org. 3-5.

Subsea Tieback Forum & Exhibition, San Antonio, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.subseatiebackforum.com. 3-5.

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

Doha Natural Gas Conference & Exhibition, Doha, e-mail: gascon@qp.com.qa, website: www.dohagascon.com.qa. 9-12.

ARTC Annual Meeting, Kuala Lumpur, +44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 10-12.

European Fuels Conference, Paris, +44 (0) 1242 529 090. +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 10-12.

Turkish International Oil & Gas Conference & Showcase (TUROGE), Ankara, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 10-12.

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

Purvin & Gertz Annual International LPG Seminar, The Woodlands, Tex., (281) 367-9797, website: www.purvingertz.com. 16-19.

Gas Asia, Kuala Lumpur, +44 (0) 1242 529 090, +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.theenergyexchange.co.uk. 17-18.

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

Latin American Meeting on Energy Economics, Santiago, 56 2 3541411, 56 2 5521608 (fax), e-mail: info@elaee.org, website: www.elaee.org. 22-24.

NPRA Annual Meeting, San Antonio, (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npra.org. 22-24.

ACS Spring National Meeting & Exposition, Salt Lake City, (202) 872-4600, e-mail: service@acs.org, website: www.acs.org. 22-26.

Calendar

NACE Corrosion Conference & Expo, Atlanta, (281) 228-6200, (281) 228-6300 (fax), website: www.nace.org/c2009. 22-26.

PIRA Understanding Global Oil Markets Seminar, Dubai, 65 6581 4122, e-mail: jay@pira.com, website: www.pira.com. 23-24.

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

API Spring Petroleum Measurement Standards Meeting, Dallas, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 23-26.

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

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

Offshore Mediterranean Conference & Exhibition (OMC), Ravenna, +39 0544 219418, +39 0544 39347 (fax), e-mail: conference@omc.it, website: www.omc2009.it. 25-27.

NPRA International Petrochemical Conference, San Antonio, (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npra.org. 29-31.

Petroleum Geology Conference, London, +44 (0)20 7434 9944, +44 (0)20 7494 0579 (fax), e-mail: georgina.worrall@geolsoc.org.uk, website: www.geolsoc.org.uk. Mar. 30-Apr. 2.

SPE/ICoTA Coiled Tubing & Well Intervention Conference & Exhibition, The Woodlands, Tex., (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. Mar. 31-Apr. 1.

Offshore Asia/Multiphase Pumping & Technologies Conference & Exhibition, Bangkok, 918) 831-9160, (918) 831-9161 (fax), e-mail: attendingOA@pennwell.com, website: www.offshoreasiaevent.com. Mar. 31-Apr. 2.

APRIL

Georgian International Oil, Gas, Energy and Infrastructure Conference & Showcase (GIOGIE), Tbilisi, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 2-3.

SPE Production and Operations Symposium, Oklahoma City, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 4-8.

SPE Digital Energy Conference, Houston, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 7-8.

ATYRAU Regional Oil & Gas Exhibition & OilTech Kazakhstan Petroleum Technology Conference, Atyrau, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 7-9.

Rocky Mountain Unconventional Resources Conference & Exhibition, Denver, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.RMURconference.com. 14-16.

GPA Mid-continent Annual Meeting, Oklahoma City, (918) 493-3872, (918) 493-3875 (fax), website: www.gasprocessors.com. 16.

Middle East Petroleum & Gas Conference, Dubai, 65 62220230, 65 62220121 (fax), e-mail: info@cconnection.org, website: www.cconnection.org. 19-21.

ERTC Coking & Gasification Conference, Budapest, 44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 20-22.

Hannover Messe Pipeline Technology Conference, Hannover, +49 511 89 31240, +49 511 89 32626 (fax), website: www.hannovermesse.de. 20-24.

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

API Pipeline Conference, Fort Worth, Tex., (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 21-22.

Pipeline Transport Conference & Exhibition, Moscow, +43 1 230 85 35 33, website: www.expopipeline.com. 21-23.

Base Oils and Lubricants in Russia & CIS Conference, Moscow, +44 (0) 1242 529 090, +44 (0) 1242 529 060 (fax), e-mail: wra@theenergyexchange.co.uk, website: www.wraconferences.com. 22-23.

Instrumentation Systems Automation Show & Conference, (ISA), Calgary, Alta., (403) 209-3555, (403) 245-8649 (fax), website: www.petroleumshow.com. 22-23.

CPS/SEG International Geophysical Conference & Exposition, Beijing, (918) 497-5500, (918) 497-5557 (fax), e-mail: semery@seg.org, website: www.seg.org. 24-27.

AIChE Spring National Meeting, Tampa, (203) 702-7660, (203) 775-5177 (fax), website: www.aiche.org. 26-30.

API Spring Refining and Equipment Standards Meeting, Denver, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 27-29.

EAGE European Symposium on Improved Oil Recovery, Paris, +31 88 995 5055, +31 30 6343524 (fax), e-mail: eage@eage.org, website: www.eage.org. 27-29.

ENTELEC Conference & Expo, Houston, (972) 929-3169, (972) 915-6040 (fax), e-mail: blaine@entelec.org, website: www.entelec.org. Apr. 29-May 1.

MAY

EAGE International Petroleum Conference & Exhibition, Shiraz, +31 88 995 5055, +31 30 6343524 (fax), e-mail: eage@eage.org, website: www.eage.org. 4-6.

Offshore Technology Conference (OTC), Houston, (972) 952-9494, (972) 952-9435 (fax), e-mail: service@otcnet.org, website: www.otcnet.org. 4-7.

GPA Permian Basin Annual Meeting, Austin, (918) 493-3872, (918) 493-3875 (fax), website: www.gasprocessors.com. 5.

Interstate Oil and Gas Compact Commission Midyear Meeting (IOGCC), Anchorage, (405) 525-3556, (405) 525-3592 (fax), e-mail: iogcc@iogcc.state.ok.us, website: www.iogcc.state.ok.us. 10-12.

ERTC Asset Maximisation Conference, Prague, 44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 11-13.

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

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

North American Unconventional Oil & Gas Conference & Exposition, Denver, (403) 209-3555, (403) 245-8649 (fax), website: www.petroleumshow.com. 12-13.

NPRA National Safety Conference, Grapevine, Tex., (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npra.org. 12-13.

International School of Hydrocarbon Measurement, Norman, Okla., (405) 325-1217, (405) 325-1388 (fax), e-mail: lcrowley@ou.edu. Website: www.ishm.info. 12-14.

Uzbekistan International Oil & Gas Exhibition & Conference, Tashkent, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 12-14.

NPRA Reliability & Maintenance Conference, Grapevine, Tex., (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npra.org. 19-22.

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

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

APPEA Conference & Exhibition, Darwin, +61 7 3802 2208, e-mail: jhood@appea.com.au. website: www.appea2009.com.au. May 31-Jun. 3.

SPE Latin American and Caribbean Petroleum Engineering Conference, Cartagena, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. May 31-Jun. 3.

JUNE

Caspian International Oil & Gas/Refining & Petrochemicals Exhibition & Conference, Baku, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 2-5.

Asia Oil & Gas Conference, Kuala Lumpur, 65 62220230, 65 62220121 (fax), e-mail: info@

cconnection.org, website: www.cconnection.org. 7-9.

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

PIRA Scenario Planning Conference, Houston, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 8.

ILTA Annual International Operating Conference & Trade Show, Houston, (202) 842-9200, (202) 326-8660 (fax), e-mail: info@ilta.org, website: www.ilta.org. 8-10.

International Oil Shale Symposium, Tallinn, Estonia, +372 71 52859, e-mail: Rikki.Hrenko@energia.ee. 8-11.

SPE EUROPEC/EAGE Conference and Exhibition, Amsterdam, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 8-11.

PIRA Understanding Global Oil Markets Seminar, Houston, (212) 686-6808, (212) 686-6628 (fax), website: www.pira.com. 9-10.

GO-EXPO Gas and Oil Exposition, Calgary, Alta., (403) 209-3555, (403) 245-8649 (fax), website: www.petroleumshow.com. 9-11.

Petro.t.ex Africa Exhibition & Conference, Johannesburg, +27 21 713 3360, +27 21 713 3366 (fax), website: www.fairconsultants.com. 9-11.

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

ASME Turbo Expo, Orlando, (973) 882-1170, (973) 882-1717 (fax), e-mail: infocentral@asme.org, website: www.asme.org. 13-17.

Society of Petroleum Evaluation Engineers (SPEE) Annual Meeting, Santa Fe, NM, (713) 286-5930, (713) 265-8812 (fax), website: www.spee.org. 14-16.

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

IPAA Midyear Meeting, Dana Point, Calif., (202) 857-4722, (202) 857-4799 (fax), website: www.ipaa.org. 15-17.

PIRA Scenario Planning Conference, London, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 16.

Atlantic Canada Petroleum Show, St. John's, Newfoundland & Labrador, 403) 209-3555, (403) 245-8649 (fax), website: www.petroleumshow.com. 16-17.

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

PIRA Understanding Global Oil Markets Seminar, London, 44 1493 751 316, e-mail: miles@pira.com, website: www.pira.com. 17-18.

AAPL Annual Meeting, Clearwater Beach, Fla., (817) 847-7700, (817) 847-7704 (fax). e-mail: aapl@landman.org, website: www.landman.org. 17-20.

IAEE International Conference, San Francisco, (216) 464-2785, (216) 464-2768 (fax), website: www.usaee.org. 21-24.

Society of Professional Well Log Analysts Annual Symposium (SPWLA), The Woodlands, Tex., (713) 947-8727, (713) 947-7181 (fax), website: www.spwla.org. 21-24.

SPWLA Annual Symposium, The Woodlands, Tex., (713) 947-8727, (713) 947-7181 (fax), e-mail: webmaster@spwla.org, website: www.spwla.org. 21-24.

International Offshore and Polar Engineering Conference (ISOPE), Osaka, (650) 254-1871, (650) 254-2038 (fax), e-mail: meetings@isope.org, website: www.isope.org. 21-26.

Asia LPG Seminar, Singapore, (713) 331-4000. (713) 236-8490 (fax), website: www.purvingertz.com. 22-25.

API Exploration & Production Standards Oilfield Equipment and Materials Conference, Westminister, Colo., (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 22-26.

Moscow International Oil & Gas Exhibition (MIOGE) & Russian Petroleum & Gas Congress, Moscow, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 23-26.

Calendar

JULY

Rocky Mountain Energy Epicenter Conference, Denver, (303) 228-8000, e-mail: conference@epicenter2008.org, website: www.denverconvention.com. 7-9.

API Offshore Crane Operations and Safety Conference, Houston, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 14-15.

Oil Sands and Heavy Oil Technologies Conference & Exhibition, Calgary, Alta., (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: http://oshot09.events.pennnet.com/fl/index.cfm. 14-16.

AUGUST

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

SPE Asia Pacific Oil and Gas Conference and Exhibition, Jakarta, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 4-6.

EnerCom's The Oil & Gas Conference, Denver, (303) 296-8834, email: kgrover@enercominc.com, website: www.theoilandgasconference.com. 9-13.

ACS Fall National Meeting & Exposition, Washington, (202) 872-4600, e-mail: service@acs.org, website: www.acs.org. 16-20.

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

Summer NAPE, Houston, (817) 847-7700, (817) 847-7704 (fax), e-mail: info@napeexpo.com, website: www.napeonline.com. 27-28.

SEPTEMBER

EAGE Near Surface European Meeting, Dublin, +31 88 995 5055, +31 30 6343524 (fax), e-mail: eage@eage.org, website: www.eage.org. 7-9.

IAEE European Conference, Vienna, (216) 464-5365, e-mail: iaee@iaee.org, website: www.iaee.org. 7-10.

Offshore Europe Conference, Aberdeen, +44 (0) 20 7299 3300, e-mail: nbradbury@spe.org, website: www.offshore-europe.co.uk. 8-11.

GITA's GIS Annual Oil & Gas Conference, Houston, (303) 337-0513, (303) 337-1001 (fax), e-mail: info@gita.org, website: www.gita.org/ogca. 14-16.

Polar Petroleum Potential 3P Conference, Moscow, (918) 584-2555, (918) 560-2665 (fax), website: www.aapg.org. 16-18.

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

SPE Eastern Regional Meeting, Charleston, W.Va., (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 23-25.

ERTC Sustainable Refining Conference, Brussels, 44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. 28-30.

✦IADC Advanced Rig Technology Conference, Houston, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 29.

Unconventional Gas International Conference & Exhibition, Fort Worth, Tex., (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.unconventionalgas.net. Sept. 29-Oct. 1.

ERTC Biofuels+ Conference, Brussels, 44 1737 365100, +44 1737 365101 (fax), e-mail: events@gtforum.com, website: www.gtforum.com. Sept. 30-Oct. 2.

OCTOBER

Interstate Oil and Gas Compact Commission Annual Meeting (IOGCC), Biloxi, Miss., (405) 525-3556, (405) 525-3592 (fax), e-mail: iogcc@iogcc.state.ok.us, website: www.iogcc.state.ok.us. 4-6.

SPE Annual Technical Conference and Exhibition, New Orleans, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 4-7.

World Gas Conference, Buenos Aires, +54 11 5252 9801, e-mail: registration@wgc2009.com, website: www.wgc2009.com. 5-9.

ISA EXPO, Houston, (919) 549-8411, (919) 549-8288 (fax), e-mail: info@isa.org, website: www.isa.org. 6-8.

Kazakhstan International Oil & Gas Exhibition & Conference (KIOGE), Almaty, +44 (0) 207 596 5233, +44 (0) 207 596 5106 (fax), e-mail: oilgas@ite-exhibitions.com, website: www.oilgas-events.com. 6-9.

NPRA Q&A and Technology Forum, Ft. Worth, Tex., (202) 457-0480, (202) 457-0486 (fax), e-mail: info@npra.org, website: www.npra.org. 11-14.

API Fall Petroleum Measurement Standards Meeting, Calgary, Alta., (202) 682-8000, (202) 682-8222 (fax), website: www.api.org. 12-15.

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

SPE/EAGE Reservoir Characterization and Simulation Conference and Exhibition, Abu Dhabi, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 18-21.

GSA Annual Meeting, Portland, (303) 357-1000, (303) 357-1070 (fax), e-mail: meetings@geosociety.org, website: www.geosociety.org. 18-21.

SEG International Exposition and Annual Meeting, Houston, (918) 497-5500, (918) 497-5557 (fax), e-mail: register@seg.org, website: www.seg.org. 25-30.

SPE/IADC Middle East Drilling Conference & Exhibition, Manama, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 26-28.

Louisiana Gulf Coast Oil Exposition (LAGCOE), Lafayette, (337) 235-4055, (337) 237-1030 (fax), e-mail: lynette@lagcoe.com, website: www.lagcoe.com. 27-29.

Offshore Middle East Conference & Exhibition, Manama, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.offshoremiddleeast.com. 27-29.

NOVEMBER

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

IPAA Annual Meeting, New Orleans, (202) 857-4722, (202) 857-4799 (fax), website: www.ipaa.org. 4-6.

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

API Fall Refining and Equipment Standards Meeting, Dallas, (202) 682-8000, (202) 682-8222 (fax), website: www.api.org/events. 9-11.

Deepwater Operations Conference & Exhibition, Galveston, Tex., (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.deepwateroperations.com. 10-12.

SPE International Oil and Gas China Conference & Exhibition, Beijing, (972) 952-9393, (972) 952-9435 (fax), e-mail: spedal@spe.org, website: www.spe.org. 10-12.

ASME International Mechanical Engineering Congress and Exposition (IMECE), Lake Buena Vista, Fla., (973) 882-1170, (973) 882-1717 (fax), e-mail: infocentral@asme.org, website: www.asme.org. 13-19.

✦IADC Completions Conference, Houston, (713) 292-1945, (713) 292-1946 (fax), e-mail: conferences@iadc.org, website: www.iadc.org. 17.

Houston Energy Financial Forum, Houston, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.accessanalyst.net. 17-19.

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

DECEMBER

✦World LNG Summit, Barcelona, +44 (0)20 7978 0000, +44 (0)20 7978 0099 (fax), e-mail: info@thecwcgroup.com, website: www.thecwcgroup.com. 1-4.

Unconventional Emerging Resources Conference & Exhibition, Shreveport, (918) 831-9160, (918) 831-9161 (fax), e-mail: registration@pennwell.com, website: www.emerginresourcesconference.com. 8-10.

PIRA Natural Gas Markets Conference, New York, (212) 686-6808, (212) 686-6628 (fax), e-mail: sales@pira.com, website: www.pira.com. 14-15.

PIRA Understanding Natural Gas and LNG Markets Seminar, New York, (212) 686-6808, (212) 686-6628 (fax), website: www.pira.com. 14-15.

PIRA Understanding Global Oil Markets Seminar, New York, (212) 686-6808, (212) 686-6628 (fax), website: www.pira.com. 16-17.

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Old pipes thread '30s ranch

Nina M. Rach
Drilling Editor

Recycling and ingenuity are not new concepts in the oil and gas industry. A ranch in the Texas Hill Country is known for the unique oil field-pipe construction of buildings from the 1930s and 1940s, engendered by thriftiness during the Great Depression.

Daniel James Moran became president of Marland Oil Co. in 1928 and oversaw the merger with Continental Oil & Transportation Co. in 1929.

Moran "shepherded the company [Continental Oil Co.] through the worst days of the depression…reduced the company's debt, and reintroduced habits of frugality and careful management."[1]

In June 1936, Moran bought nearly 7,000 acres along the north fork of the Guadalupe River in Kerr County, Tex., which he named "Mo-Ranch."

He called up a Conoco construction crew and used old pipe, sucker rods, and steel from scrapped derricks and local limestone as building materials to develop this family ranch and company retreat. Some of the pipe is easy to spot in bridges and roof supports, but most provides hidden structural support in buildings or, buried throughout the property, carries electrical and water lines.

"Every day you dig in the ground, you find something new or different," said Mark Perhamus, director of facilities at Mo-Ranch. "Oil field pipe was used for everything."

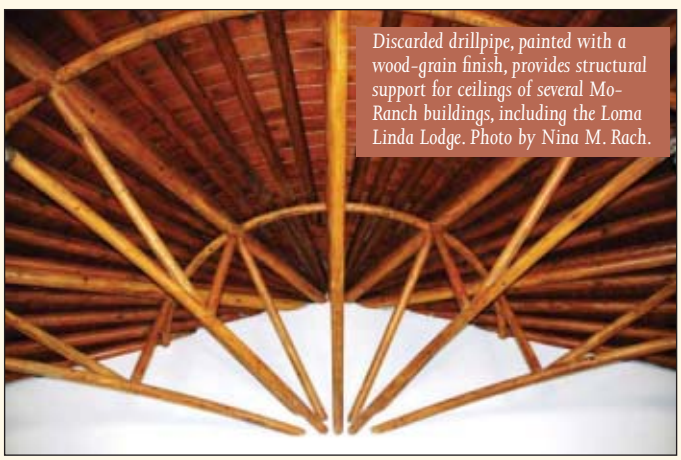
Bridges

A 462-ft long "catwalk" (cover) spans Wilson Draw, named for W.W. Wilson, who owned the ranch 1924-28.

Moran designed and built the bridge using 4-in. junked pipe for the main structure and top rail and sucker rods for the parallel horizontals lining each side of the walkway, Perhamus says.

Moran brought a hydraulic pipe bender to the ranch to create the arching bridge supports. The catwalk is supported in midspan by the bottom part of a derrick and the "halfway house" is an old rig house from the 1930s. The light posts along the bridge once held red letters that spelled out "CONOCO."[2]

The nearby "kittywalk" bridge is 83 ft long and was built in a similar manner.



Discarded drillpipe, painted with a wood-grain finish, provides structural support for ceilings of several Mo-Ranch buildings, including the Loma Linda Lodge. Photo by Nina M. Rach.

Buildings

Perhamus says the Moran-era buildings used 4-in. and 2-in. OD pipe for framing and roof support. "Then they were rocked, so [that] much of the structural pipe is hidden." The solid walls are as thick as 2 ft and the original windows were set in steel casement frames welded to pipe inside the walls.

In addition to the larger tubulars, Perhamus says sucker rods were used extensively. "All of the buildings used this rod for concrete reinforcement and for angle braces."

Moran built the first four rock buildings in 1936, a swimming pool complex in 1937, a guest lodge in 1938, and a gymnasium and skating rink in 1939, with pipe support beams painted to resemble wood. In 1941, he added the stone chapel, with oil pipe used in the ceiling vaulting, and then in 1943, the "Scout" building. Beyond the cavernous, whitewashed lobby with its large hearth and Mexican tile, large dormitory rooms are crowned with ceilings of wood and decorative, faux-finished oil pipes (see photo).

Legacy

When Dan Moran died Apr. 3, 1948, his family put the property on the market.

In June 1949, the Presbyterian Synod of Texas purchased it for $512,500. It sold 6,500 acres of unimproved ranchland to the Texas Game and Fish Commission; that land eventually became the Kerr Wildlife Management Area.

Mo-Ranch now operates as a conference facility on about 500 acres, 10 river crossings west of Hunt, Tex. (www.moranch.com). ✦

References

1. Blauvelt, H., Conoco, The First One Hundred Years, 1975.
2. Lively, R.D., By Streams of Water, 1987.

Editorial

A looming political fight

The interlude between presidencies, twilight of the 110th Congress, is the time to practice diplomacy, the time to praise cooperation, the time to voice hope for bipartisan policy-making. But the US oil and gas industry must not delude itself. From the Democratic presidency of Barack Obama and strongly Democratic 111th Congress, it faces an historic fight.

Any doubt that this is so should have vanished when Rep. Henry Waxman (D-Calif.) deposed John Dingell of Michigan as chairman of the House Committee on Energy and Commerce. Dingell has never been a fan of the oil and gas business. But he would listen to its positions on issues and sometimes compromise. Nothing in Waxman's background indicates that the chairman of the House Committee on Oversight and Government Reform, representing ultraliberal Beverly Hills, will be that hospitable. He'll more likely be downright combative in service to House leadership that has shown abysmal knowledge about energy and even less willingness to learn.

Troublesome Senate

The Senate is no less troublesome. No one should forget the Senate Judiciary Committee's pointlessly theatrical grilling of oil industry executives over oil prices and profits last May, a shameful spectacle that reprised a similar farce staged by a joint committee in November 2005. The Senate will have a stronger Democratic majority next year. An unpopular industry has nothing to lose—and great public service to perform—by defending itself vigorously against certain antagonism.

The industry must resolve to be ruthlessly honest about energy. This won't be easy. The American public has been tricked into believing the unbelievable. It thinks renewable energy and conservation can make it energy-independent. It believes that lapses of technology and political will are all that stand in the way of this high ambition.

The public needs to know the truth. It needs to understand that renewable energy and conservation are essential to US energy health but hardly the whole remedy. It also needs to understand that energy independence is unachievable. Until these realities inform discussion, constructive energy policy will continue to elude the US.

While asserting realism in the national energy discussion, the industry should frame its policy arguments within the interests of consumers. Energy mistakes hurt consumers, who also are taxpayers.

Here, the industry has reason for optimism. Congress allowed moratoriums on federal offshore leasing to expire in September after voters expressed support for drilling. Painfully high oil prices highlighted the need for increased supply, and Americans apparently came to see the link between supply and drilling. This is an important breakthrough. The industry should develop the insight, never forgetting that it originates in the interests of people rightly resistant to excessive energy cost.

A related strategy is to counter the antioil prejudice that underlies US policy-making. For environmental extremists, rejection of hydrocarbon energy is a deliberate goal. For others concerned about energy, it's an unconscious yearning attached to futile hopes for energy independence and supply somehow free of cost and environmental consequence.

The countervailing reality is that oil, gas, and coal will dominate energy markets as long as buyers care about cost. Hard facts about form—the physics of accessibility and usability—make this so. Americans will either learn the lesson now and respond or make economic sacrifice to politically driven energy fantasies--and still, in the end, rely on economically dominant oil, gas, and coal. Oil and gas companies need to press the choice.

Confused climate

These messages will not be easy to deliver in a political climate as radically confused as that of the present. Yet the oil and gas industry must do so clearly, consistently, and emphatically—directly to the public as well as to politicians.

Because the public doesn't want to hear the message, the messenger won't be popular. But the oil and gas industry will never be popular. The fight ahead goes beyond popularity to legitimacy and the license to do business. An industry confronted with those stakes must never miss a chance to show to a hostile government and wary public unyielding commitment to—and willingness to fight for—its indispensable work. ✦

Sustainability reports address oil spills and GHG emissions

Paula Dittrick
Senior Staff Writer

Safety improvements aimed at better protecting both the environment and employees were key topics for major oil companies that issued 2007 sustainability reports or corporate social responsibility reports.

The lengthy, nonfinancial disclosures focus on what the companies call responsible energy development while the world faces increasingly difficult energy choices and concerns about climate change.

In these reports, companies outlined both achievements and disappointments. Content of the reports vary considerably among companies and also among countries. The following summaries show the variety of information oil companies reported.

StatoilHydro: spill unacceptable

Statoil ASA and Hydro ASA formally merged as scheduled on Oct. 1, 2007, and the resulting company said its goal is "to remain a competitive and sustainable group."

Noting "high ambitions in the environmental area," StatoilHydro said a December 2007 oil spill into the Norwegian North Sea from the Statfjord A platform was unacceptable. It was the largest oil spill so far on the Norwegian continental shelf.

Some 27,500 bbl (4,400 cu m) of crude oil leaked from the Statfjord A platform while a shuttle tanker was loading from the platform. The company's sustainability report said 2007 oil spills tallied 4,989 cu m total, up from 181 cu m in 2006.

A subsequent investigation showed the Statfjord oil spill did not cause any obvious harm to the environment. The investigation was carried out by Sintef, the Institute of Marine Research, StatoilHydro, and the Norwegian Institute for Nature Research. The spilled oil began disappearing 3 days later from the sea's surface.

Norway's Petroleum Safety Authority (PSA) released a report critical of StatoilHydro's operations on the Statfjord A platform.

"An investigation reported serious weaknesses and recommended a number of technical, organizational, and management measures," said StatoilHydro, noting that its goal is a robust, efficient response to oil spills despite harsh, cold conditions.

The company's 2007 sustainable development report, entitled "Going North," outlines efforts to expand its international presence. StatoilHydro entered the Canadian oil sands through the acquisition of North American Oil Sands Corp.

"The easily accessible resources are getting ever scarcer," StatoilHydro said. "Our industry accordingly directed its gaze to the far north in the hunt for tomorrow's oil and gas. That creates great opportunities, but also poses big demands for sustainable solutions."

Internal postmerger work continues. StatoilHydro believes the in-house integration process will extend into 2009.

"First comes the design phase, where

we describe the new standards we're going to work to and the operations philosophy of the restructured organization," Vice-Pres. Mereta Aasheim said. "That's followed by planning the implementation, and finally by the actual implementation. This is a far-reaching job."

Some 27,500 bbl (4,400 cu m) of crude oil leaked from StatoilHydro's Statfjord A platform while a shuttle tanker was loading from the platform in December 2007. It was the largest oil spill on the Norwegian continental shelf. Photo from StatoilHydro.

Petrobras and biodiversity

Brazil's Petroleo Brasileiro SA (Petrobras) created sustainable development guidelines for its exploration and production efforts in the Amazon. Scientists and regional agencies helped prepare the guidelines aimed at protecting the region's biodiversity.

"Preserving the Amazon rainforest is a strategic priority for the company," said Petrobras Chief Executive Officer Sergio Gabrielli. Last year, the company launched the Petrobras Center of Environmental Excellence in the Amazon.

Petrobras spent years negotiating a development plan and an environmental management plan for Ecuador's Block 31, which includes territory in Ecuador's Yasuni National Park, a UNESCO Biosphere Reserve (see map, OGJ, July 10, 1995, p. 32).

The Ecuadorian government recently announced that Petrobras agreed to transfer the block license to the state. Petrobras received the license in August 2004 but never started production. Environmental groups protested exploration and production in the park.

In September 2008, Ecuador officials announced an agreement with Petrobras to transfer the Block 31 license to the state and Petroecuador. Officials suggest Block 31 probably will be operated by Petroamazonas SA, a unit of Petroecuador.

Elsewhere in the Amazon, Petrobras created a nursery for seedlings of native rainforest species used to restore forest clearings and provided an orchidarium where orchid and bromeliad species are studied and preserved to be reintroduced to reforested areas.

The company said it confers with the International Union for the Conservation of Nature and Nature Resources regarding the IUCN red list of endangered species for information about species inhabiting areas where Petrobras has operations.

"Although it is not yet possible to list all endangered species found around company facilities, efforts are made to increase scientific learning in Brazil and to conserve endangered and other species and ecosystems," Petrobras said in its Social and Environmental Report 2007.

The company said it also works with the Brazilian Ministry of the Environmental to help protect amphibians, reptiles, birds, and mammals. Last year, Petrobras joined the World Business Council for Sustainable Development, a business initiative focusing on sustainable development.

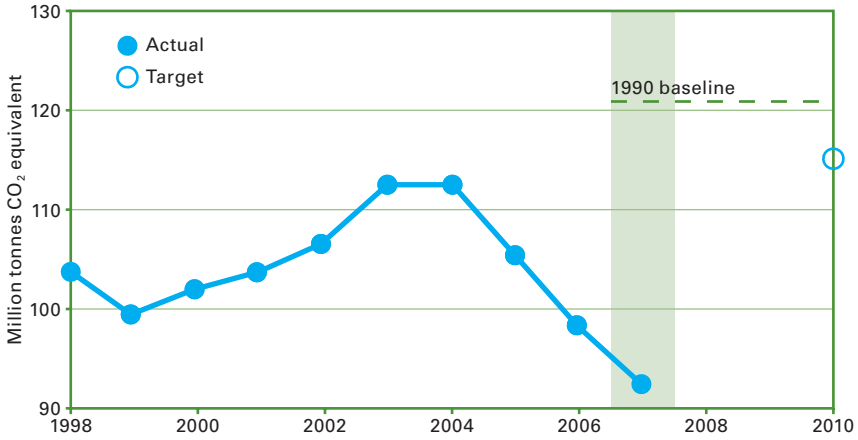
BP monitors safety

BP PLC's executive team continues monitoring safety performance closely in the aftermath of the 2005 explosion at its Texas City, Tex., refinery.

"Since 1999 after the BP-Amoco merger, our safety performance has improved by approximately two-thirds, which over the past 2 years has been our best [record] ever," BP Chief Executive Tony Hayward wrote in the BP Sustainability Report 2007.

The company's ultimate goal is having no accidents, no harm to people, and no damage to the environment,

SHELL'S GREENHOUSE GAS EMISSIONS*



*Target and baseline adjusted to reflect changes in assets.
Source: Shell Sustainability Report 2007

said Hayward, who directs a group operations risk committee. A separate safety, ethics, and environmental assurance committee reports to BP's board.

BP invested $6 billion in 2007 to review its assets and minimize the risk of major incidents. It also worked to strengthen its process safety management and to enhance the skills of operational staffers from executives to plant employees, the report said.

The company is making "substantial progress" in changing culture, becoming less bureaucratic, reducing complexity, and simplifying activities, concluded L. Duane Wilson, an independent expert hired to monitor BP's progress on implementing recommendations to improve its process safety standards (OGJ, Sept. 8, 2008, p. 20).

Regarding midstream and upstream operational integrity, BP spent more than $250 million in Alaska to upgrade or replace pipelines, increase corrosion inspection and monitoring, conduct preventative maintenance and repairs, as well as to expand capacity and improve efficiency.

BP replaced sections of oil transit lines in Prudhoe Bay field during 2007-08, and the company expected to finish that work during 2008.

About 340 oil spill incidents involving 1 bbl or more were reported company-wide in 2007 compared with 417 incidents during 2006. The volume of oil spilled in 2007 was 1.05 million l. compared with 2.2 million l. in 2006, 4.3 million l. in 2005, and 5.7 million l. in 2004.

BP also seeks to influence HSE standards at joint ventures where it does not hold a controlling interest, particularly at the Russian JV, TNK-BP.

"In 2007, the board of TNK-BP established an HSE committee," BP said. "Areas of focus where BP interacts with TNK-BP include occupational, process and driving safety and advice and technical support on TNK-BP's environmental agenda."

TNK-BP records its safety performance using international metrics aligned with the US Occupational Safety and Health Administration. TNK-BP is reports this through the International Association of Oil and Gas Producers, BP said.

ExxonMobil cuts emissions

In its 2007 Corporate Citizenship Report, ExxonMobil discussed its continuing efforts to reduce greenhouse gas (GHG) emissions in its operations and to develop new technologies that enable more-efficient energy use.

The company reported a 23% reduction during 2004-07 in combined emissions of volatile organic compounds, nitrogen oxides, and sulfur dioxide from operations. In 2007, ExxonMobil reported 141 million tonnes of GHG, down about 5 million tonnes from the previous year.

ExxonMobil conducts internal research and also works with universities and other companies to develop technologies aimed at cutting GHG emissions for the long term. Technologies include gasification, biofuels, and carbon capture and storage.

High environmental standards are a goal, particularly when operating in areas without local standards. ExxonMobil Development Co. developed standards for nitrogen oxides emissions, offshore drill cuttings discharges, and flare and venting reductions.

Reduction of hydrocarbon flaring is a priority.

ExxonMobil—a member of the World Bank's Global Gas Flaring Reduction Partnership—flared 8.1 million tonnes total worldwide last year, up from 7.7 million tonnes in 2006.

"Our operations in Nigeria continue to be the largest source of flaring among our operations globally," ExxonMobil said. "To eliminate routine gas flaring in Nigeria, we are investing more than $4 billion in gas utilization and commercialization projects."

Downstream, ExxonMobil's refineries reduced flaring by 15% in 2007. That reduction stemmed partially from construction of a new light hydrocarbons recovery unit at the 78,000 b/cd Altona refinery near Melbourne, Australia.

Shell promotes CCS

Royal Dutch Shell PLC is promoting carbon capture and storage (CCS) technology to reduce GHG emissions from the power sector and oil industry.

"It is an area where, with our engineering skills and knowledge of underground geology, we hope to make a big contribution to managing CO_2," Shell said on its web site. "We are encouraging governments to move fast to create the incentives and regulations needed to get CCS demonstration plants up and running."

Shell said it's determined to help build CCS capabilities in part because the company believes this technology

UK oil industry reflects on Piper Alpha lessons

Uchenna Izundu
International Editor

What safety lessons has the UK North Sea oil industry learned as it reflects on the 20th anniversary of the Piper Alpha disaster?

On July 6, 1988, 167 people died in an explosion and fireball on the Piper Alpha oil platform due to a gas-condensate leak from pipework connected to a condensate pump (OGJ, July 11, 1988, p. 20). The safety valve had been removed for maintenance, the leak was ignited, and an explosion and fire followed; only 61 people survived.

As the industry strives to attract young entrants, it is crucial to pass on the safety lessons of this tragedy, stressed Chris Allen, health, safety, social, and environment director at UK trade association Oil & Gas UK (OGUK).

"Safety is not just a company or industry matter, but it is something for every individual working offshore or onshore," Allen said.

Cullen report

The disaster prompted the Cullen review of safety culture in the UK North Sea, which was published in 1990, with all stakeholders examining regulation, training, processes, and ways of improvement.

Responsibility for offshore safety was transferred from what was then known as the government's Department of Energy to the Health and Safety Executive (HSE). In addition, major design changes were made to offshore platforms; existing prescriptive legislation was replaced with goal-setting requirements, and a safety case regime was established.

Recently unprecedented high oil prices prolonged the use of aging platforms, and the ongoing trend of selling assets to newcomers—some small and without operating experience on the UK Continental Shelf—requires different approaches to managing safety risks.

Technological advances often mean that little or no operational experience is needed for managing fields.

Steve Jenkins, president of trade body Oil & Gas Independents Association, told OGJ that safety had not dropped as a priority.

"We have to be fully compliant with regulations, and regular audits are carried out," Jenkins said. Small operators use bridging contracts with drilling companies whereas the majors work with them directly.

KP3 challenge

The number of fatalities fell to two during April 2006-April 2007, and the number of major injuries in the fiscal year ended April 2008 was the lowest since 1995.

However, although safety has improved over the years, much progress is needed on UK platforms, according to the "Key Program 3" (KP3) report HSE published last November. The body investigated the safety and integrity of nearly 100 offshore installations and their equipment over a 3-year period and concluded that more than half of the oil and gas industry's basic assets were in poor condition.

"This report looked at management issues, and these are harder to deal with," said Ian Whewell, head of HSE's offshore division, in an interview with OGJ. "Senior management had a culture of 'Give us solutions.' People wanted to know that everything was all right. We have said that if you hear that everything is all right then you should be worried."

Earlier this year, HSE shut down three installations until operators could rectify the problems.

But OGUK has contested some of the findings in the report, arguing that when it was published some data were out of date. The industry is preparing its feedback, and HSE will send a new document to the secretary of state in April 2009.

"We are hoping to see a detailed analysis of the progress made since KP3 was published," Allen said.

The report concluded that greater leadership, more good practice sharing, and improved worker involvement are needed to reduce offshore risks. But Jake Molloy, regional organizer of OILC, the offshore trade union, warned that employers are still intimidating workers about voicing safety issues.

"Constructive dissent serves as an important monitoring force within

will be important for managing CO_2 emissions from Shell's refineries, chemicals plants, and oil and gas production.

The major joined a broad-based coalition named the European Technology Platform for Zero Emission Fossil Fuel Power Plants (ZEP). ZEP wants to see CCS in commercial use by 2020.

"There is no time to lose," said the Shell Sustainability Report 2007. "Every year's delay in the large-scale rollout of CCS adds more than 1 ppm to long-term global levels of CO_2 in the atmosphere." Shell executives urge governments to establish international policies to lower GHG emissions without distorting competition. For itself, Shell set a 2010 target to keep GHG emissions from operations at a level that is at least 5% below 1990 levels.

So far, Shell has reduced GHG emissions by nearly 25% compared with 1990 (see figure, p. 24).

Chevron analyzes projects

Chevron Corp. last year implemented its Environmental, Social, and Health Impact Assessment (ESHIA)—a process applied to new capital projects to identify, analyze, and enhance environmental, social, and health benefits.

Chevron's Piceance basin natural

organizations, a warning signal of danger ahead or of organizational decline. Industry leaders on the UKCS need to realize that internal dissent is not itself a crisis: it is priceless insurance against disaster," Molloy said.

Asset integrity

A key safety challenge now is asset integrity as platforms continue to work beyond their design life.

According to a recent viewpoint on asset integrity published by Celerant Consulting, an operational advisory firm, although capital spending budgets in the UK North Sea rose by 25%, the number of improvement and prohibition notices in 2006 was 53% higher than in 2005.

The North Sea is a challenging environment with high waves and harsh weather. Low oil prices in the late 1990s meant that installation integrity fell on the priority list for operators. With an estimated recoverable 27 billion boe still to be discovered, asset integrity is crucial to ensure that future discoveries can be tied-in and decommissioning postponed. Production from the mature UKCS made strong economic sense when oil prices peaked at almost $147/bbl in July.

Now, with oil prices rapidly falling, have companies stopped investing in asset integrity? OGUK told OGJ that $1.5 billion will be spent on it this year.

"There is no sign of this effort slacking off," OGUK said. "This will never be a job that is fixed; we will always be working on it and addressing the legacy issues, as no one thought that the platforms would be there for as long as they [have]."

Having strong leadership at industry and company level is critical in setting the tone for any company on safety matters. The global skills shortage means it is more difficult getting the right person in place to deliver operations successfully.

Celerant Consulting said there was "fundamental misalignment between the asset integrity aspirations of senior management and the reality on the ground. Indeed, asset integrity may very well not be at the level of excellence that many senior executives would like to believe."

HSE has set a goal of making the UKCS the safest offshore area by 2010.

Operators are committing huge sums on asset integrity and safety programs, but safety culture is fundamentally about attitudes and training. Therefore, it is imperative that succeeding generations share the lessons from Piper Alpha to avoid mistakes that could so easily escalate out of control.

gas project managers used the ESHIA to assess the project's environmental footprint in western Colorado. Consequently, the project is using the latest technology in directional drilling rigs to drill multiple wells from one location. The development is on private land so no federal permits are needed and no environmental impact assessment is required.

Nevertheless, Chevron conducted a series of public stakeholder meetings throughout 2007. Chevron plans to develop up to 40,000 acres of natural gas reserves in the Piceance basin.

An ESHIA report outlines a management plan that incorporated social and environmental issues. For the Piceance basin, this resulted in moving a school playground away from a road used by trucks and putting a concrete safety barrier along school property. ✦

IOGCC following CCS initiatives, rulemaking

Paula Dittrick
Senior Staff Writer

The Interstate Oil & Gas Compact Commission is closely monitoring carbon capture and storage (CCS) initiatives by governments, research institutions, and the oil and gas industry.

Various speakers at the IOGCC's annual meeting Nov. 16-18 in Santa Fe, NM, addressed the status of CCS development efforts by federal, state, and provincial governments in the US and Canada.

CCS potentially offers one way to reduce carbon dioxide emissions into the atmosphere.

Separate from the IOGCC conference, US President-elect Barack Obama said he wants to set stringent limits on greenhouse gas emissions. His comments came in videotaped statements to the Governor's Global Climate Summit in Los Angeles on Nov. 18.

CCS has yet to be implemented on a large-scale, commercial basis anywhere in the world. In the US and Canada, existing federal, provincial, or state legislation covers some aspects of CCS, but various CO_2 storage issues have yet to be addressed.

Alberta's CCS projects

At the IOGCC conference, a speaker for the Alberta government said the province is getting closer to selecting CCS projects in which it plans to invest $2 billion total.

Len Webber, Alberta's parliamentary assistant to the Minister of Energy, said Alberta plans to invest in three to five large-scale CCS projects.

Previously, Alberta asked companies interested in CCS projects to submit proposals under what the province

called an expression of interest, or EOI phase.

Webber said 50 submissions were made under the EOI phase.

A short list of 20 companies was selected, Webber said, adding that the EOI phase identified the proposals having the greatest chance of being built quickly and providing the best opportunities to greatly reduce GHG emissions.

The next step requires the 20 successful EOI applicant companies to each submit a full project proposal by April 2009, Webber said.

The full proposals are to outline details for capture, transportation, and storage of CO_2.

"We do develop our resources responsibly.

"We will continue to take a responsible and resourceful approach," Webber said referring to criticism from some groups that oil sands production results in high [GHG] emissions.

Webber said oil sands are responsible for 0.1% of GHG emissions.

The Canadian federal government and Alberta officials believe CCS has potential to mitigate GHG emissions from oil sands production and electric power generation from fossil fuel-fired power plants.

In April 2007, the Canadian federal government released a "Turning the Corner" plan for reducing GHG emissions from all industrial sectors. More details were released in March, calling for implementation of CCS technology by 2018.

Canada's federal government is seeking proposals under a $125 million fund to encourage CCS technology development. Separately, Alberta is one of various provincial governments offering initiatives seeking to advance CCS projects.

IOGCC tracks CO_2 lawmaking

Lawrence Bengal, chairman of IOGCC's taskforce on carbon capture and geologic storage, believes that 5-15 states will have legal and regulatory systems for regulating CO_2 sequestration and storage by 2010.

Bengal directs the Arkansas Oil & Gas Commission.

The taskforce, whose efforts were financed by the US Department of Energy and its National Energy Technology Laboratory, has proposed a state-administered CCS regulatory framework under the authorities of states wishing to participate (OGJ, Oct. 1, 2007, p. 30).

Earlier this year the US Environmental Protection Agency released proposed regulations for a category of injection wells for long-term underground CO_2 storage, and Congress is contemplating CCS technology. EPA is accepting public comment on its advance notice of proposed rulemaking (OGJ, July 21, 2008, p. 30).

Bengal believes IOGCC's model regulatory framework and the EPA framework "fit like hand in glove." He added, "This is largely because of the role that states play in the administration of UIC programs under EPA primacy authority."

Bengal said, "I would also anticipate that in this same general timeframe that the EPA will likewise have in place regulations governing geologic storage of CO_2 under the Safe Drinking Water [SDW] Act and implementing the Underground Injection Control [UIC] program."

The EPA's proposed sequestration regulations fall under the SDW Act. Bengal said states already play an integral role in administering the UIC program and under future rules governing geologic storage, are likely to do so again.

Having participated with the EPA regulatory development process, Bengal said EPA's involvement of representatives from states "helps insure compatibility between the state and federal components of geologic storage regulatory oversight." ✦

Taxes, restrictions could stifle US shale gas potential

Nick Snow
Washington Editor

Natural gas production from US shale plays such as the Marcellus shale in New York, Pennsylvania, and West Virginia could double in the next 10 years and provide 25% of the nation's supply, a Natural Gas Supply Association official said Nov. 21.

But NGSA Vice-Chairman Terrence L. Ruder, who also is senior vice-president for Devon Energy Corp.'s marketing and mainstream division, also warned that a windfall profits tax and new restrictive regulations could hurt that effort at a time when more gas will be needed to help meet clean air requirements mandated by climate change legislation.

"What we've seen so far from shale fields is just the tip of the iceberg. To facilitate a steady supply growth of gas from shale, we need a stable tax and regulatory environment," Ruder told a Federal Energy Regulatory Commission conference on the US gas infrastructure.

He said shale developments provide an estimated 6-8 bcfd of gas, or 10-12% of projected 2008 US demand. Over the next 10 years, US shale gas production could double to 15-20 bcfd, with total reserve estimates at 250-750 tcf of gas, he indicated.

Ruder said Devon has invested more than $10 billion in the Barnett shale play in northern Texas. He estimated that the gas industry as a whole will spend $150 billion to fully develop the Barnett shale play.

WATCHING GOVERNMENT

Nick Snow, Washington Editor

Blog at www.ogjonline.com

Energy chairs plan for 2009

The chairmen of two key congressional energy committees are making plans for 2009. Jeff Bingaman (D-NM), who leads the Senate Energy and Natural Resources Committee, and Nick J. Rahall (D-W. Va.), who leads the House Natural Resources Committee, separately outlined their strategies.

"My immediate plans for the next several weeks," Bingaman said, "are to reach out to and consider the ideas of my colleagues on both sides of the aisle, and on and off the committee, as we prepare for the next Congress. Then, when the new Congress convenes, I hope to put forward a starting point for energy legislation that will be both bold and broadly supported," he added in a Nov. 17 address at the Center for Strategic and International Studies.

Rahall announced on Nov. 21: "Issues relating to oil and gas development off the nation's coastlines will be front and center in the committee's agenda…as federal lands and waters are critical to our energy supply and our economy, producing approximately 25% of the nation's domestically supplied oil and gas." Equally important, he continued, will be the committee's continued investigation into federal oil and gas revenue collection procedures and practices.

Differing jurisdictions

The two chairmen described different goals, as their committees have jurisdiction over other areas beyond energy. Both said they would be working closely with the Obama administration.

Bingaman listed main energy challenges facing the next Congress: deploying clean energy technology, improving energy efficiency, maintaining adequate supplies of conventional fuels while the US transitions to newer forms of energy, increasing innovation, making energy markets more transparent, and maintaining a balance between energy and environmental policies, especially those related to global climate change.

"Our energy strategy has to make sure that we have adequate supplies of conventional fuels as we go through that transition." Bingaman emphasized, "We need an intelligent policy to continue to promote domestic production of oil and natural gas, both onshore and offshore."

Multiple use mandate

Rahall said his committee also would examine the impact of global climate change on land and water resources. His committee will look at the 1976 Federal Land Policy and Management Act's multiple use mandate because he said it has never fully been realized.

"For too long, and particularly in the last 8 years, development of our public lands has trumped all other facets of what was envisioned as a broad, balanced [US Bureau of Land Management] mandate," he said.

The two chairmen also emphasized different aspects of controlling carbon. Rahall said his committee will consider ways to implement carbon capture and sequestration because it is the key technology that will allow continued use of US coal resources. Bingaman said his committee also might look at technologies that could be used under a cap-and-trade system. ✦

Twenty major US fields

Ruder noted that there are about 20 major shale fields across the US that have the potential to or are currently producing gas, including the Bakken play in North and South Dakota, the Woodford in eastern Oklahoma, the Haynesville in East Texas and Louisiana, and the Green River Piceance basin play in Colorado.

"Shale developments are highly capital intensive, and a windfall profit tax assessment now being discussed in Congress would directly and adversely affect production," Ruder warned.

Another NGSA member, Clay Bretches, vice-president, minerals and marketing, at Anadarko Petroleum Corp., expressed similar concerns. "I cannot emphasize enough the importance of a stable regulatory environment. When exploration and production companies expend billions of dollars on capital projects, they can mitigate some of the risks stemming from price fluctuations, resource requirements, and transportation constraints.

"But in absence of a transparent and consistent regulatory environment, these projects may be delayed or, worse yet, never get off the drawing board," he said.

"What we need is regulatory certainty that not only benefits the economics of the projects, but also provides adequate and on-time supply to consumers.

"Make no mistake about it, regulatory uncertainty strongly impacts price volatility," Bretches said.

Ruder said shale developments have the potential to reshape the traditional domestic gas supply mix and aid in the replacement of declining conventional production.

"Industry has proven it can develop shale plays safely. These resources, however, will only partially satisfy the nation's growing demand for natural gas, demand that will increase even more rapidly with any new climate change policies," he said. ✦

Harkin offers bill to reform trading of swaps

Nick Snow
Washington Editor

US Senate Agriculture, Nutrition, and Forestry Committee Chairman Thomas Harkin (D-Iowa) introduced legislation on Nov. 20 to reform the trading of swaps and other over-the-counter financial derivatives.

Harkin said his bill was designed to establish stronger standards of openness, transparency, and integrity in derivatives over-the-counter trading as a critical step toward rebuilding confidence in the US financial system.

Congressional efforts to regulate derivatives trading more closely could matter to oil and gas producers, petroleum refiners and marketers, and natural gas utilities because reforms could affect their ability to use financial hedges. Several congressional leaders believe reforms are necessary because they say speculators grew dominant in crude oil futures markets and drove prices above $150/bbl this past summer.

Harkin said the total face value of swaps reached a peak of about $531 trillion by mid-year, eight and a half times the world's $62 trillion gross domestic product. Congress and the US Commodity Futures Trading Commission have accommodated the swaps industry over the years by allowing instruments that are essentially futures contracts to be privately negotiated without safeguards provided by trading on regulated exchanges, he maintained.

"By restoring reasonable safeguards and regulation of swaps, including credit default swaps, along with all futures contracts, this legislation will go a long way toward ensuring confidence in the markets and re-establishing soundness and integrity that the financial system needs," Harkin said. "My bill will end the unregulated 'casino capitalism' that has turned the swaps industry into a ticking time bomb, and it will bring these transactions out into the sunlight where they can be monitored and appropriately regulated,"

He said his bill would specifically amend the Commodities Exchange Act to eliminate the distinction between "excluded" and "exempt" commodities on one hand and regulated commodities on the other. Essentially, all contracts for futures, options, and other commodities would be treated the same, he said.

The bill also would eliminate the statutory exclusion of swap transactions and end the CFTC's authority to exempt such transactions from the general requirement that a contract for purchase or sale of a commodity for future delivery can trade only on a regulated board of trade, according to Harkin. Virtually all contracts that now are commonly referred to as swaps fall under the definition of futures contracts, and they function in the same basic manner, he said. ✦

MMS reports record disbursals during fiscal 2008

Nick Snow
Washington Editor

The US Minerals Management Service disbursed a record $23.4 billion to state, American Indian, and federal accounts from onshore and offshore energy production during fiscal 2008, Interior Secretary Dirk A. Kempthorne said on Nov. 20.

Disbursements from royalties, rents, and bonuses from production on federal land shattered the fiscal 2007 total of $11.6 billion and broke the previous record of $12.8 billion established in 2006, he added.

"Particularly in today's economic environment, these revenues represent an increasingly important source of funding for many federal, state, and tribal budgets," Kempthorne said. Funds disbursed to individual states and tribes support projects ranging from infrastructure improvements and capital works to funding for education, he noted.

Kempthorne attributed the record disbursements to higher energy prices during the 12 months ended Sept. 30, 2008, and the more than $10 billion in bonus bids paid by companies to lease tracts in the Gulf of Mexico and offshore Alaska as well as from onshore lease sales.

As part of the total, a record $2.59 billion was distributed to 35 states as their share of federal revenue collected from energy production within their borders; $17.3 billion went to the US Treasury, and $534 million went to 34 Indian tribes and 30,000 individual Indian owners, MMS said.

Wyoming led the states receiving payments at more than $1.27 billion, followed by Colorado at nearly $178.38 million, Utah at nearly $173.84 million, and California at nearly $103.45 million, the agency indicated.

American Petroleum Institute President Jack N. Gerard said the record payments demonstrate the importance of domestic oil and gas production to the US economy. "These revenues are only a fraction of the economic benefits states receive from oil and gas development. This development also provides well-paying jobs and a big boost to the local economies in the form of increased retail sales and other business opportunities," he observed.

"Imagine how much more revenue and jobs could be generated for the benefit of all Americans if Congress and the Obama administration listen to the American people and put America's vast oil and gas resources, including those that have been subject to federal moratoriums, to good use to strengthen our nation's economy and energy security. Given what we know about our nation's potential resources, total royalties that could be collected over the life of all our nation's resources could reach $880 billion," Gerard said. ✦

Indonesia orders oil firms to use domestic banks

Eric Watkins
Oil Diplomacy Editor

The Indonesian government, in an effort to boost liquidity and shore up the falling rupiah, will order oil and gas companies to keep funds for energy projects in domestic banks, according to the country's oil and gas regulator BPMigas.

"This policy aims to increase our banks' liquidity," said BPMigas chairman R. Priyono. "As the oil and gas sectors use many dollars, it will also boost dollar liquidity in our domestic banks. It will have positive effects on our banks' balance of payments."

The regulation could be implemented as soon as December and would be mandatory, applying to both national and international oil and gas operators.

"Oil and gas operators must use domestic bank services, otherwise their expenses will not be reimbursed under the cost recovery scheme," Priyono said, adding that BPMigas had the authority to issue such a regulation.

Priyono said oil and gas operators might spend about $11.8 billion in 2009, and he expressed hope that "all of the transactions for these funds will be through our domestic banks."

Djoko Harsono, BPMigas deputy for finance, said, "This policy aims to help boost rupiah value against the dollar. We want contractors in energy projects to put all their US dollar funds in local banks, especially state-owned banks."

Another unsettling change?

According to the Harsono, who said the order would be imposed in 1-2 months, Indonesia plans to finance oil and gas projects worth more than $11 billion in 2008 and $12 billion in 2009.

Roberto Lorato, president of the Indonesian Petroleum Association, declined to comment on the BPMigas proposal, saying that investors and the government needed to discuss further on the matter.

Lorato did say the proposal is one of many changes taking place in the industry and that oil and gas investors were starting to feel less comfortable over the past year.

"They are starting to feel less comfortable, because they perceive a number of changes, or sometimes there are simply rumors about changes to production-sharing contracts, about changing part stakes, and about changing cost-recovery provisions, which are affecting investors' comfort on what they have signed for and on what they will get," Lorato said.

Lukman Mahfoedz, project director at domestic oil and gas operator PT Medco Energy, said his company had been using domestic bank services and was satisfied with them.

Mahfoedz also urged domestic banks to participate in financing investment in the upstream oil and gas sector.

"Medco plans to spend about $300 million on its projects in 2009," Mahfoedz said. "It would be very good if domestic banks could participate in some of these projects."

Data from Indonesia's Central Bank shows that domestic bank lending for the energy sector is relatively small. At the end of August, outstanding loans for the energy sector stood at $4.2 billion, or about 3.5% of total bank credits disbursed. ✦

Somali hijackers have international network

Eric Watkins
Oil Diplomacy Editor

In an exclusive interview with the London-based Asharq al-Awsat newspaper, a negotiator for the pirates holding the Saudi supertanker Sirius Star off the Somali coast disclosed how some 40 hijackers seized control of the vessel.

Among other things, the negotiator said that the hijackers' "love" for Saudi Arabia—because it is a Muslim country—would reduce the ransom. He also disclosed that the pirates have help from informants in other countries who provide them with data about ships and their movements.

The negotiator, who spoke by telephone and identified himself as Jami Adam, said that discussions were continuing with the owners of the Saudi tanker. "The negotiations are ongoing and I am expecting easy negotiations, God willing," said Adam. He explained that no agreement had been reached yet but expected this to happen soon and said: "We (the pirates) must consult and obtain information about the vessel and to whom it belongs."

Dubai, London negotiations

Adam went on to say that these negotiations were being held through Dubai (the headquarters of the company that owns the tanker) and London (the headquarters of the company that insures the tanker).

He stressed that the hijackers receive their ransom payments only in cash and denied they have any bank accounts abroad. "We do not have accounts abroad. Most of us did not leave the sea in the first place," he said.

He pointed out that they share the sums they receive as ransom for releasing the ships, and that they also distribute part of money among the poor families in the region.

Adam said the number of the tanker's hijackers was more than 40 Somalis and that some 25 of them are still aboard it now, adding that the original hijackers were replaced by others on Nov. 19.

On the conditions of the Saudi tanker's crew, he pointed out that they were safe and free on its deck and moving inside it, adding that they were eating from the vessel's supplies.

Hijackers 'love' Saudi Arabia

He mentioned that the kidnappers' ransom demand, which he refused to specify, was not exaggerated, especially as the tanker belongs to Saudi Arabia, which, according to him, "they respect very much and love because it is a Muslim country."

He also underlined the need to recover costs. "We had to bear many expenses to hijack it; $500,000 was paid for information and expenses for the people who hijack ships," he said.

Though he did not set a time period for ending the negotiations with the tanker's owners, he said in the past they have handed back 10 ships belonging to Asian countries, among them China and Japan, whose owners paid ransoms ranging between $1 million and $1.8 million.

"Some of them paid $1 million, $1.5 million, and $800,000. There is

Eric Watkins, Oil Diplomacy Editor

Blog at www.ogjonline.com

Lukoil's Repsol bid

Spanish officials are up in arms to defend their nation's oil and gas industry from an invasion by the Russians. Does that sound a little dramatic? Read on.

Last week, Spain's Interior Minister said he would prefer that a company other than Russia's Lukoil buy builder Sacyr Vallehermoso's stake in Spanish oil group Repsol—and he didn't mince words.

"If you ask me if there is another partner for Repsol I would prefer than Lukoil, I would definitely find one," said Alfredo Perez Rubalcaba, speaking on Spanish radio station Onda Cero.

Isn't it unusual for a country's interior minister to be consulted on such a deal? In our experience, interior ministers are usually concerned with matters of national security.

If so, then you can see the kind of concern generated in Spain over the desire of Lukoil to buy into Repsol. The purchase is perceived—in some sense or another—as a threat to national security.

Security threatened

Urgency was also suggested by Spanish Industry Minister Miguel Sebastian, who said Madrid would do everything it can to keep Repsol "independent and in Spanish hands."

Sebastian said at a conference that Repsol is "key and strategic" for Spain's energy supply. So, there you have it: the question of national security and the reason for involvement by the country's interior minister.

The two ministers' comments came after Spanish state media reported that Repsol's main shareholder Sacyr Vallehermoso SA was in talks to sell its 20% stake to Lukoil or another company.

But the plot thickened when it was learned that Lukoil also was in talks with Repsol's No. 2 stakeholder Criteria CaixaCorp SA, the investment arm of Spanish savings bank La Caixa, said people close to the situation.

Lukoil could own Repsol

Criteria has a 9.1% direct stake in Repsol, and about another 5% via the investment vehicle Repinves set up by La Caixa and savings bank Caixa Catalunya. In a word, Lukoil was poised to buy as much as 34.1% of Repsol.

That percentage—or anything around 30%—brought cries of concern when it was reported that under Spanish takeover law, a shareholder must launch an offer for the whole company once it passes the 30% threshold.

The main opposition Popular Party (PP), which privatized Repsol in 1997 when it was in office, stepped up its attacks on the government, accusing it of entrusting Spain's strategic interests to a Russian firm with close ties to the Kremlin.

"No European Union country would allow a company with these characteristics to gain control of a strategic sector of their country," said PP Sec.-Gen. Maria Dolores de Cospedal.

Allowing Lukoil to own a majority stake in Repsol would be a "terrible mistake" she said, expressing deep concern that "important decisions like the supply of electricity, oil, and gas would depend on foreign governments, in this case Moscow." ✦

nothing fixed. It is negotiation."

Adam disclosed that the pirates benefit from information they receive from their partners who support and provide them with information from other countries.

Hijackers' international network

"We have countries that give us information about the ships in the sea, if there are commercial ships or sailing in our way," he said, adding that these neighboring countries include Yemen, Eritrea, Kenya, and South Africa.

Asked how they follow the ships, he said, "We have radars and know every ship's location. We have collaborators in Kenya, Sri Lanka, Yemen, and Dubai." He pointed out that these collaborators have nothing to do with the money "and they only provide us with the information."

Adam stressed that the pirates' partners who are present in more than one Arab, African, and Asian country raise the costs of their operating expenditures in a single hijack, adding that the cost of a hijacking might reach $500,000.

Adam downplayed the dangers of attacks on the pirates by the war fleets of many countries in the region, among them NATO, the US, and Russia, saying these fleets were close to them and they see them.

Talking about the American ships, he said, "They cannot watch all the sea. They have their own matters," then added that the pirates and passing Western ships exchange greetings when they are sailing close to each other. ✦

Kurdish rebels blast Kirkuk-Ceyhan pipeline again

Eric Watkins
Oil Diplomacy Editor

Oil shipments along the Kirkuk-Ceyhan pipeline are set to resume later this week following a Nov. 21 bomb attack on the line near Midyat in the Mardin province in southeast Turkey.

"Repairs have begun on the part of the line affected by the explosion," said a Turkish energy ministry official. "It still doesn't work, and oil flow has been stopped since the day of the explosion."

The official said, "It's difficult to give a date for flow to start but we're aiming for a week," adding that oil was still flowing through a line that runs parallel to the affected link.

The Kurdistan Workers Party (PKK) rebel group claimed responsibility for the bomb attack, which triggered a large fire that stopped flow of 400,000 b/d of Iraqi crude along the line.

Turkish authorities confirmed that the blast appeared to be caused by sabotage, although they said an investigation was ongoing.

The Iraqi Oil Ministry said exports from the pipeline would be unaffected as there were about 6 million bbl of Kirkuk crude already in storage facilities in Ceyhan.

KRG wants export rights

The attack near Midyat, 80 km from the Turkey-Iraq border, was the second on the Turkish section of the pipeline this month, following a bombing Nov. 5, which shut down the line and forced Turkish pipeline operator BOTAS to undertake repairs (OGJ Online, Nov. 7, 2008).

According to analyst BMI, the PKK attacks are likely to continue unless there is a wider agreement allowing the Kurdish Regional Government (KRG) in northern Iraq to export via the pipeline.

In that connection, Iraq's oil minister and officials from the largely autonomous Kurdistan region agreed on Nov. 24 to link two Kurdish oil fields to the main northern export pipeline to the Turkish port of Ceyhan.

"Concerning this issue, we have agreed to prepare and link the pipeline (from both fields) to the Iraqi strategic pipeline," said Iraqi oil minister Hussain Al Shahristani, referring to the Shiwashuk and Tawke oil fields.

Baghdad nixes KRG deals

Still, the minister hedged slightly, saying, "Regarding the exporting process, there are still some unresolved points, which will be discussed…in coming days."

DNO produces oil from Tawke field, but the Norwegian firm has not been granted a license to export it due to what the central Iraqi government sees as an illegal contract it signed with the KRG.

Shahristani met with officials in the Kurdish city of Arbil for talks aimed at resolving the disputes over contracts KRG signed with international oil companies (IOCs) on its own initiative.

Altogether, the Kurds signed nearly 20 production-sharing contracts with IOCs after drafting their own oil and gas law in August 2007.

Baghdad insists that such contracts, which lack the imprimatur of the central government, are illegal. But it has been slow to approve a national oil law that the Kurds say would grant them more autonomy regarding agreements with IOCs.

Meanwhile, Iraqi oil exports increased in October to an average of 1.7 million b/d, up from 1.64 million b/d in September.

October exports included 1.38 million b/d through Basra, up from 1.32 million b/d in September, while exports of Kirkuk crude decreased to an average of 319,000 b/d, down from 322,000 b/d in September. ✦

EAGC: Edison official stresses European gas diversity

Uchenna Izundu
International Editor

Enhancing diversity of gas supplies is a key challenge for Europe, and the Caspian could become an important source, said an Edison SPA senior official at the European Autumn Gas Conference (EAGC) in Lake Como, Italy.

Riccardo Pasetto, executive vice-president of corporate business development at Edison, said: "We want to promote new gas from the Caspian; the advantage of our position is small compared with [that of] Nabucco."

Edison's proposal is the IGI gas pipeline that would import 8-10 billion cu m/year of gas from the Caspian and the Middle East areas through Turkey to connect Italy and Greece. Deliveries are expected to start in 2012. Edison is working with the Greek company Depa to build the 800-km long pipeline.

OMV AG is developing the 3,300-km Nabucco gas pipeline, which is of strategic importance for the European Union. It has a planned capacity of 31 billion cu m/year of gas to be delivered from the Caspian and Central Asia beginning in 2013.

Energy security sought

Currently Russia is one of the biggest suppliers of natural gas to Europe, but this reliance troubles European politicians as Russia increasingly uses energy to shape its foreign policy.

In 2007, Russia provided 27% of Italy's required 13.5 billion cu m of gas, followed by Libya 11% and Norway 10%, according to Pasetto. However the IGI pipeline in 2015 will supply 27% of the 24 billion cu m required, with Qatar providing 26%, Algeria 17%, Libya 17%, and Russia 17%.

"Russia and North Africa will remain the main suppliers to Europe, providing 35% of total demand," Pasetto said. "Russia's—incremental supplies of 30-60 billion cu m should be lower than the additional capacity provided by the projects under development."

Pasetto said LNG supplies will be essential to meeting future European gas demand, but this could be subject to arbitrages on the US and Asian markets. Qatar's role will be crucial, and Edison is developing the 8 billion cu m/year North Adriatic LNG regasification terminal in partnership with ExxonMobil Corp. and Qatar Petroleum.

RasGas II has agreed to supply 6.4 billion cu m/year for 25 years. The remaining 20% of Adriatic's capacity will be available to third parties. The terminal is expected to become operational next year.

Gas storage is another major priority for Edison to optimize on logistical flexibility, and the company is developing 1.6 billion cu m of working gas storage capacity by 2013-14. Gas storage would provide regular returns, and the authorities are still considering exempting Edison from offering access to third parties under European Union's rules.

The project will cost €550 million, of which €230 million is for the facilities and €320 million is for the cushion gas. In 2006-07, Edison provided 0.2 billion cu m of total gas capacity, but it expects this to rise to 2.2. billion cu m by 2013-14.

Edison plans to increase its share of equity gas in its portfolio by 15%, concentrating on exploration and acquisition, Pasetto added. ✦

EAGC: Credit crisis to affect European gas projects

Uchenna Izundu
International Editor

Eni Gas & Power SPA Chief Operating Officer Domenico Dispenza warned in a keynote address at the European Autumn Gas Conference (EAGC) at Lake Como, Italy, that the credit crisis could seriously affect the supply and diversity of gas supply projects in Europe.

Dispenza said extreme volatility in stock and commodity prices were complicating the planning of major developments, and the drying up of financing has led to unprecedented government intervention in the market.

"The forecasting of the medium and long-term European gas demand will become a difficult exercise as the common wisdom of its unstoppable growth is being challenged by 2 full years of decrease—the combined effects of mild winters, marginal fuel competition, and efficiency measures," Dispenza said.

European gas companies have proposed a number of pipelines and LNG import terminals to bring in natural gas from Russia, Algeria, and Qatar to meet the growing deficit in gas supplies. But Dispenza stressed that infrastructure developments would be difficult without major finance and that strong upstream resources and a good project framework would be crucial.

He was critical of the "dangerous inward attitude" regarding development of the European single gas market and called for all actors to display similar attitudes to action investment. Otherwise, he warned, it would be difficult to encourage suppliers to establish multibillion-dollar export infrastructure.

"The priority of any new regulator and the third European liberalization package should therefore be on the promotion of a favorable investment climate and a finally stable regulatory framework," Dispenza said. ✦

Mexico's oil output drops but gas production rises

Eric Watkins
Oil Diplomacy Editor

Mexico will account for 26.1% of Latin America's regional oil demand by 2012 while providing 28.34% of supply, according to a recent analyst report.

Latin American regional oil use, which stood at 6.66 million b/d in 2001 and reached 7.47 million b/d in 2007, should average 7.59 million b/d in 2008 and then rise to around 8.23 million b/d by 2012, said Business Monitor International's Mexico Oil & Gas Report.

In terms of natural gas, Latin America consumed 183 billion cu m (bcm) in 2007 with demand of 254 bcm targeted for 2012, representing a 39% growth.

Production of 196 bcm in 2007 should reach 279 bcm in 2012, and implies 25 bcm of net exports by the end of the period, BMI said.

In 2007, Mexico consumed 29.52% of the region's gas, with its market share for 2012 forecast at 29.33%. In 2007, Mexico produced 23.52% of the region's gas, and is expected to be contributing 20.08% by 2012.

OPEC basket price

In the second quarter of 2008, BMI estimates that the Organization of Petroleum Exporting Countries' basket price averaged just under $115/bbl, up 24% from the first quarter 2008 level.

The OPEC basket price had exceeded $127/bbl on May 22, slipping back towards $121/bbl later in the month.

In June, BMI assumed an average of around $120/bbl, to deliver its quarterly estimate of $114.98/bbl.

The estimated second quarter 2008 average prices for the main marker blends are now $118.63/bbl for Brent, $119.61/bbl for West Texas Intermediate, and $115.89/bbl for Russian Urals (Mediterranean delivery).

BMI said its projections for 2008 as a whole have been revised upwards from the last quarterly report.

"We are now assuming an OPEC basket price average of $106/bbl for 2008, compared with the $81/bbl estimate provided by our last quarterly report," the analyst said.

Based on recent price differentials, this implies Brent at $109.71/bbl, WTI averaging $110.64/bbl, and Urals at $106.88/bbl.

Mexico's GDP growth down

Mexican real GDP growth is now forecast by BMI at 2.9% for 2008, down from 3.3% in 2007.

"We are assuming 3.4% growth in 2009, 3.5% in 2010, followed by 3.9% in 2011, and 3.7% in 2012," the analyst said.

"Unless the government introduces a radical shift in energy policy, we expect state-owned Petroleos Mexicanos to retain full responsibility for oil production, without international oil company involvement," it said.

BMI is assuming oil and gas liquids production of no more than 3.18 million b/d by 2012. Consumption is forecast to increase by less than 2%/year to 2012, implying demand of 2.15 million b/d by the end of the forecast period.

Gas up, oil down

The export capability would therefore be 1.03 million b/d by 2012, it said.

Gas production is forecast to increase from 46 bcm in 2007 to 56 bcm over the period, with 19 bcm of net imports required by 2012.

Between 2007 and 2018, BMI is forecasting a decrease in Mexican oil production of 9.4%, with crude volumes falling steadily to a low point of 3 million b/d in 2015, before recovering somewhat at the end of the 10-year forecast period.

Oil consumption between 2007 and 2018 is set to increase by 19%, with growth slowing to an assumed 2%/year towards the end of the period and the country using 2.41 million b/d by 2018.

Gas production is expected to rise gradually, from around 46 bcm in

2007 to 70 bcm in 2018. With demand growth of 81%, this implies a need for imports to rise from 8 bcm to 28 bcm between 2007 and 2018. ✦

Beach to share in Gulf of Suez development

Beach Petroleum NL, Adelaide, has received ministerial approval to acquire from Tri-Ocean Energy a 20% interest in the North Shadwan oil concession in the Gulf of Suez.

Beach will pay $110 million for the share, and Tri-Ocean will retain a 30% interest.

BP Exploration (Delta) is operator of North Shadwan, which contains three undeveloped oil discoveries along with several attractive exploration prospects.

The government also approved development of the field. First production is scheduled for 2009. Appraisal drilling is under way on the NS394-1A Burtocal discovery well, which found oil in late 2007 when it penetrated a thick oil column in the regionally prolific Nubia formation reservoir.

Burtocal-2 is testing separate fault compartments in the structure and will assist in determining potential reserves leading to a selection of development options.

Beach also received ministerial approval to acquire from operator Santos Egypt a 20% interest in the South East July concession, also located in the Gulf of Suez.

The first well (South July-1) will be drilled in December about 10 km west of Saqqara oil field.

The well targets potential recovery up to 100 million bbl in stacked reservoir sands in the Miocene and Nubia formations. July, Ramadan, and Morgan fields are nearby.

Santos will retain 40%, and Dana Petroleum has the other 40% interest. ✦

MMS takes first steps for leasing process off Virginia

The US Minerals Management Service has taken the first step in the multiyear leasing process to hold a sale for acreage off Virginia.

The call for information and interest (CII) and nominations and notice of intent (NOI) to prepare an environmental impact statement published in the Federal Register, beginning a 45-day public comment period that ends in late December, MMS said.

"The purpose of the CII and NOI is to gather information to use for planning and analysis and does not indicate a preliminary decision to hold a lease sale," MMS said, adding, "The final decision will be made at a later date only if the sale is in compliance with applicable laws including all requirements of the [Outer Continental Shelf] Lands Act and the National Environmental Policy Act."

MMS Director Randall Luthi said, "At the request of [Virginia Gov. Timothy M. Kaine], MMS included the area offshore Virginia based on the Commonwealth's current energy policy and continued interest in knowing what resources may be off its coastline."

The sale, referred to as Lease Sale 220, is proposed to be held in 2011, MMS said.

The area off Virginia was initially included in the OCS Oil and Gas Leasing Program: 2007-12 but leasing was prohibited due to an executive withdrawal and a Congressional moratorium. In July, President George W. Bush lifted the withdrawal and the Congressional moratoria expired on Sept. 30. Both of these actions allowed the option of the special interest lease sale.

Luthi noted that an environmental impact study (EIS) will evaluate environmental resources and potential impacts in this part of the mid-Atlantic—an area that has not held a lease sale since 1983.

"Throughout the scoping process for the EIS, federal, state, and local governmental agencies, along with all other interested parties, have the opportunity to aid MMS in determining the significant issues and alternatives for analysis in the EIS we are preparing under NEPA," Luthi said.

Currently, the area offshore Virginia being considered for leasing includes a 50-mile buffer and a no-obstruction zone from the mouth of the Chesapeake Bay, as requested by the governor. As with any sale, the public will have multiple opportunities for input into the sale process.

API response

The American Petroleum Institute reported that it "welcomed" government work on leasing off Virginia. API Pres. and Chief Executive Officer Jack Gerard said, "The American public has made clear its strong support for increased access to untapped domestic oil and natural gas resources; a full 70% of Virginians in July supported increased access."

Gerard said, "The industry stands ready to help put America's vast energy resources to good use to strengthen our nation's economy and energy security, generate billions of dollars for the benefit of our federal and state treasuries, and provide good jobs for Americans across the country."

He said, "The industry has proven it can develop these resources in an environmentally safe manner. With energy consumption expected to grow in the coming decades, America needs access to its untapped domestic resources. Beginning the process of leasing offshore Virginia is a good start." ✦

Petroproduccion lets seismic pact off Ecuador

Petroproduccion, an affiliate of Petroecuador, has issued a letter of agreement for Scan Geophysical ASA to implement a major 2D seismic program off Ecuador in support of the govern-

ment's plan to develop hydrocarbon prospects in the region.

The agreement calls for Scan Geophysical to shoot about 10,000 km of 2D marine acquisition in waters along most of the Ecuadorian coast, focusing on basins in Esmeraldas, Manabi, Guayas, and Santa Elena provinces. The agreement is subject to the parties finalizing a mutually agreeable contract.

The seismic program will be acquired utilizing Scan Geophysical's new, technologically advanced vessel and onboard seismic equipment, including 8,000 m towed solid streamer.

Amistad gas field off the southwestern coast is Ecuador's only Pacific offshore production, but several operators have drilled discoveries and established production to the south off Peru's northwest coast.

Scan Geophysical also reported receipt of a contract from GX Technology (GXT) a subsidiary of Ion Geophysical, Oslo, to acquire as much as 8,000 km of long offset 2D data off Argentina, part of which will be used to complete GXT's ArgentineSpan program. The two companies agreed to mobilize Scan Geophysical's high-capacity 2D vessel MV Geo Searcher. Data acquisition is scheduled to begin immediately upon the vessel's arrival in Argentina. ✦

Australia

Eastern Star Gas and Gastar Exploration Ltd. reported an independently certified 82% increase in proved and probable reserves for the Narrabri coal seam gas project in New South Wales, Australia.

Proved reserves were unchanged at 21 bcf. The estimate of 2P gas reserves in the Bohena project area of PEL 238 rose to 336 bcf at Sept. 30, 2008, from 185 bcf on Dec. 31, 2007.

The increase is based on results from the first four core holes in the Dewhurst area, which show that the same thick, gas-saturated, and highly permeable coals identified in 2007 in the Bibblewindi corehole project extend southeast into Dewhurst.

Gastar expects more increases at the end of 2008 and in 2009 as data from other core holes and production pilot wells, including Edgeroi northeast of Bibblewindi, are included.

The first of four multilateral horizontal production projects is to spud in November, and commercial gas sales to the Wilga Park power station are to start by early spring 2009.

Mauritania

Affiliates of Malaysia's Petronas cut gas and oil columns at the Banda East-1B appraisal well in the Atlantic off Mauritania.

Wireline logging indicated that the well intersected 22 m of net gas pay and 7 m of net oil pay. TD is 2,716 m.

The well, in 300 m of water, is to be cased and tested for gas deliverability. No oil test is planned. Banda oil and gas field spans PSC Areas A and B.

Petronas entities hold 53.8% interest in the well. Tullow Oil PLC has 24.3%, Mauritania Holdings BV has 13.1%, Roc Oil Co. Ltd. 4.2%, Fusion Mauritania A BV 3%, and FP Mauritania A BV 1.6%.

Northwest Territories

MGM Energy Corp., Calgary, reduced its 2008-09 winter drilling program to three wells from four, citing lack of regulatory progress on the Mackenzie Valley gas pipeline project.

The three wells to be drilled are Ellice J-27 on Ellice Island to test the Taglu formation, Ellice J-17 to test a stratigraphic play on the west side of Langley Island, and Ellice A-25 to test a footwall of the Ellice Island anticline.

The first well is to spud by Dec. 25. The company called its working capital position strong.

Colorado

Laramie Energy II LLC, private Denver operator, will begin continuous drilling in the second half of 2009 on leases held by Dejour Energy USA Inc., Vancouver, BC, in the northwestern Piceance basin in Colorado.

Laramie Energy will have the right to earn up to 55% of 22,000 gross acres held by Dejour by completing at least four commercial wells.

The agreement allows Dejour to focus internal resources on preparing for the drilling in 2009 of multiple wells to the Williams Fork formation at Gibson Gulch and Roan Creek in the basin and to continue work on other potential joint ventures in the area.

New Mexico

The oil conservation commission designated the Eumont State-1 oil discovery in Lea County, NM, as the Urssey Tank (Yates-Seven Rivers) pool.

The well is flowing at more than 150 b/d of oil on a 1⁹⁄₆₄-in. choke from 3,962-68 ft, and cumulative production exceeds 30,000 bbl, said Saxon Oil Co. Ltd., Dallas, 15% working interest owner.

The operator, which has elected not to increase the flow rate to the 350 b/d allowable to optimize ultimate recovery, plans to drill at least one offset well on an adjacent proration unit in the first quarter of 2009.

Washington

Delta Petroleum Corp., Denver, expects to have encountered 4,500 ft of stacked tight gas sands below basalt and reach total depth by the end of 2008 at its exploratory well in the Columbia River basin in Washington.

The Gray 31-23 is in Kittitas County on the 20,000-acre Bronco I prospect.

Delta Petroleum acquired EnCana Corp.'s leasehold position earlier this year and sold a half interest in its resulting 844,000-acre spread in Washington and Oregon to Husky Energy Ltd., Calgary (OGJ, Oct. 13, 2008, p. 44).

Hercules develops HSE dashboard to safeguard offshore operations

Nina M. Rach
Drilling Editor

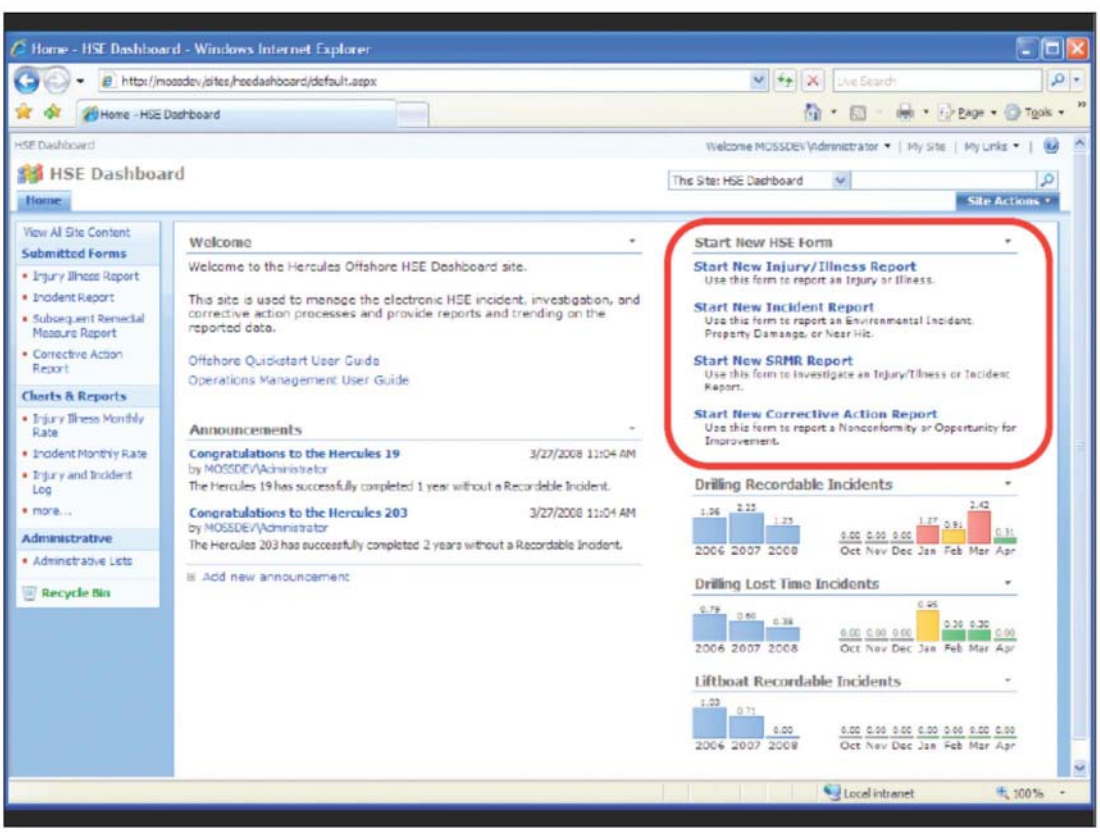
Offshore drilling contractor Hercules Offshore Inc., Houston, has developed and implemented a predictive accident-prevention program to maintain safety standards and protect workers and the environment.

Hercules Offshore has improved its health, safety, and environmental management with an HSE dashboard solution.

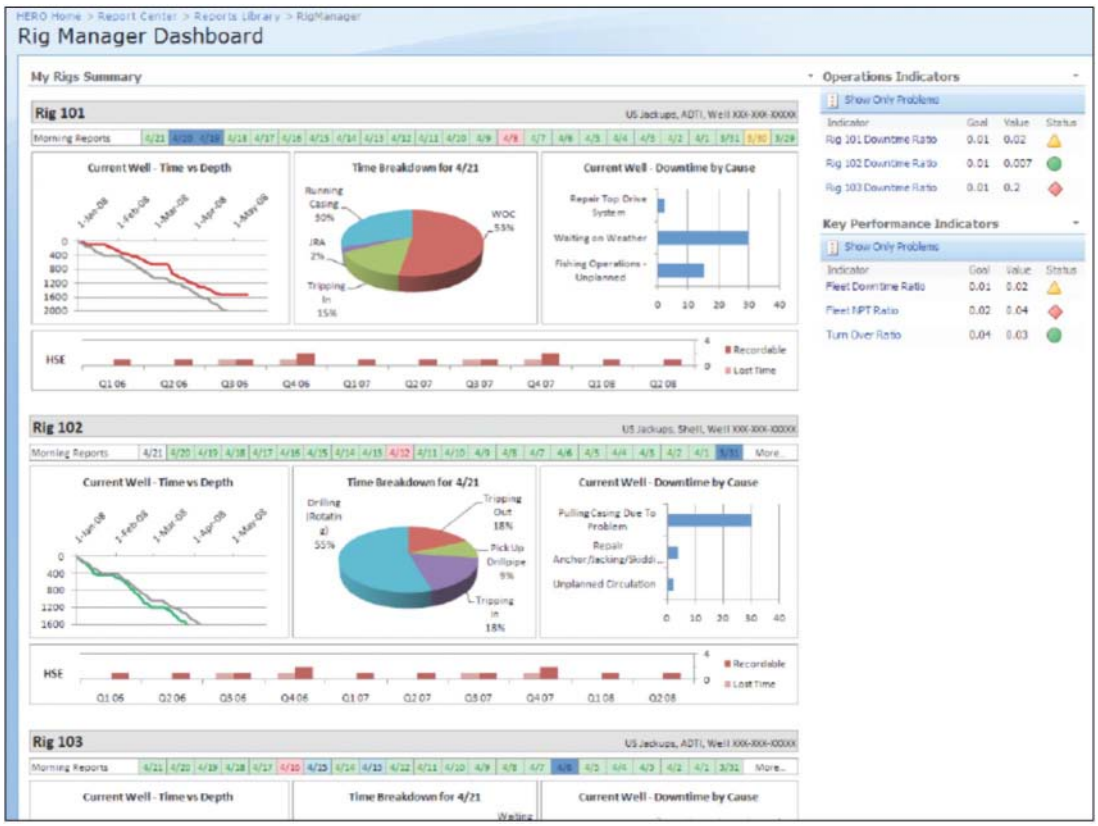
John T. Rynd, chief executive officer and president of Hercules Offshore, observes in the company's health, safety, and environmental policy statement that "HSE is not managed by good luck."[1]

Hercules started operations in 2005 with five rigs, acquired several companies, and merged with TODCO in July 2007 after the latter was spun off by Transocean Inc. (early 2004). Rick McClaine, vice-president-HSE at Hercules Offshore, said, "The TODCO merger compelled us to take action to standardize and simplify our HSE policies and procedures. This was an opportunity to evaluate what we had been doing and get it right."[2]

After the merger, Hercules needed to integrate separate incident-reporting



The main web page of Hercules Offshore's HSE Dashboard provides news, data, and the ability to easily begin new forms (Fig. 1).



Hercules Offshore's rig manager dashboard includes familiar operations indicators and KPI's for multiple rigs (Fig. 2).

systems and remotely deploy the resulting solution to about 3,500 employees on rigs in nine countries on four continents. Hercules now operates a fleet of 35 jack up drilling rigs, 27 barge rigs, 65 lift boats, 3 submersible rigs, 1 platform rig, and a fleet of marine support vessels. Its operations range from drilling and well services to platform inspection, maintenance, and decommissioning.

Management wanted to improve HSE organization and reporting processes by standardizing and automating them to outperform previous systems. The HSE department's vision was to develop a streamlined and simplified process that engaged employees, was visible and transparent, and clarified accountability.[3]

Hercules selected Applied Information Sciences (AIS) to develop its new HSE Dashboard using the Microsoft Office SharePoint server 2007 development platform.

The project began in September 2007, went live in three administrative offices in January 2008, and was rolled out incrementally to 130 vessels worldwide in January-March 2008.

Development

AIS captured legacy processes from Hercules and TODCO, gathering forms, processes, and reports. AIS technical lead Eric Stevens and oil and gas practice manager Gary McDonald worked with a Hercules team to define processes and forms for the new web-based HSE reporting model:[3]

- Forms: injury, illness, environmental, property damage, near hit, proactive measures, behavioral audit, and root cause analysis.
- Work flow: work spaces, email notifications, auditing, security, and versioning.
- Reporting: reports, key performance indicators (KPIs), trends, dashboards, and work-flow status.
- Research and analysis: dynamic reporting, pivots, and drill-in.

Using automated, computerized work flows instead of paper forms is quicker and safer, without the problems of transmitting, storing, or even losing paper forms. Meaningful data can be correlated and allow staff to spot emerging trends and focus training efforts.

Collaboration

HSE Dashboard is a Microsoft Office business application that promotes collaboration.[2] It runs on PCs and has a clear, concise interface (Fig. 1).

The AIS team used SharePoint InfoPath 2003 forms for data entry in the new dashboard, allowing them to create forms that looked like existing paperwork, which could be completed off-line. McClaine said that retaining familiar reporting formats reduced training time for employees based in the field, and the standardized work flows reduced administrative expenses.[2] The newly streamlined process engages employees; the environment is conducive to reporting incidents and participating in preventive programs.

AIS built a custom link from the InfoPath form libraries to a Microsoft SQL server 2005 database, facilitating data aggregation. The Rig Manager dashboard, for instance, aggregates data from multiple rigs for easy comparison (Fig. 2).

The new HSE Dashboard generates 52 different types of charts and reports from data collected through the standardized work flows.

McClaine told OGJ that the HSE Dashboard is easy to use and brings new visibility to HSE information. He said the project was delivered quickly

and helped the company quickly develop new safety policies. Now, McClaine runs reports and analyses against HSE data across the entire fleet, allowing him to quickly focus on specific problems.

Forerunner, follow-up

Stevens and McDonald built an early version of the HSE Dashboard using the Microsoft.Net platform for GlobalSantaFe in 2003-04. After joining AIS, they rebuilt the HSE Dashboard for Hercules using a new set of Microsoft tools on the new SharePoint platform, which offered better collaboration and document management.

Houston-based Atwood Oceanics Inc. places a strong emphasis on safety and its safety management system. The company is developing HSE Dashboards as part of its "safety, health, environment, and security" structure. Atwood kicked off the project in early November and will be performing internal testing in December.

AIS

AIS has been in business since 1982, provided software engineering services to federal, state, and local government agencies, and Fortune 1,000 companies. BP, CITGO, SAIC, and Suez Energy are among its commercial energy industry clients. AIS partners with IBM and Microsoft. The company has been a Microsoft managed gold partner since 1995. ✦

References

1. www.herculesoffshore.com/documents/HerculesOffshoreHSEPolicyStatement.pdf.
2. "Service Provider in Oil and Gas Improves HSE Management with Dashboard Solution," Sept. 26, 2008, http://www.microsoft.com/industry/manufacturing/oilandgas/default.mspx.
3. Stevens, Eric, and MacNeil, Don, "HSE Dashboard Case Study—Hercules Offshore," presentation to IADC HSE Committee quarterly meeting, Apr. 17, 2008.

Software-supported process ensures safer work practices

Allen Saville
Petrotechnics USA Inc.
Houston

Stan Garner
K. P. Rosamond
BP Gulf of Mexico Deepwater Production
Houston

To ensure consistency in application across all its deepwater Gulf of Mexico assets, BP has worked with Petrotechnics to identify and implement industry best practices and incorporate those into a uniform approach to how all work is done at the front-line. A key element in achieving these results and providing for sustainability and continuing improvement is the Petrotechnics' electronic permit-to-work (eptw) system called Sentinel PRO.

This is an internet-based software system that leads people through a carefully designed process for safe-work execution. The process ensures that all executed work is assessed rigorously in terms of hazards and risks, planned properly with controls for all identified hazards and risks, and executed in a safe manner in coordination with all other work being conducted.

Offshore operations

A statement of the obvious: offshore oil and gas production is a challenging business. The facilities and equipment needed for deepwater production are complex and require constant attention. These facilities handle large quantities of hydrocarbons, and the potential consequences of a mishap can be serious. On these complex facilities, the execution of multiple, simultaneous tasks is required on a 24/7 basis to operate, maintain, repair, and improve the facilities and equipment necessary to produce oil and gas.

Conscientiously managing and controlling all these tasks are essential for increasing operational safety, effectiveness, and efficiency. Working safely always has been a primary concern of companies operating offshore facilities, but new technology is now being employed more aggressively to support people in working safe and working smart.

More and more offshore oil and gas facilities in the Gulf of Mexico are taking safe-work practices further. Oil producing facilities in the Gulf of Mexico operated by both Shell and BP now use a software-supported process to ensure that every task undertaken in this hazardous process work environment is planned thoroughly and executed in a safety first manner.

PROJECT IMPLEMENTATION Table 1

Marlin	May 2004
Horn Mountain	August 2005
Holstein	June 2005
Mad Dog	August 2005
Nakika	February 2006
Pompano	March 2006
Thunderhorse	May 2007
Atlantis	May 2007

During a 12-month period beginning in September 2007, eight BP offshore facilities in the Gulf of Mexico have worked closely together to improve, standardize, and harmonize BP's control of work systems, processes, and practices (Table 1). The effort included the work with Petrotechnics mentioned previously.

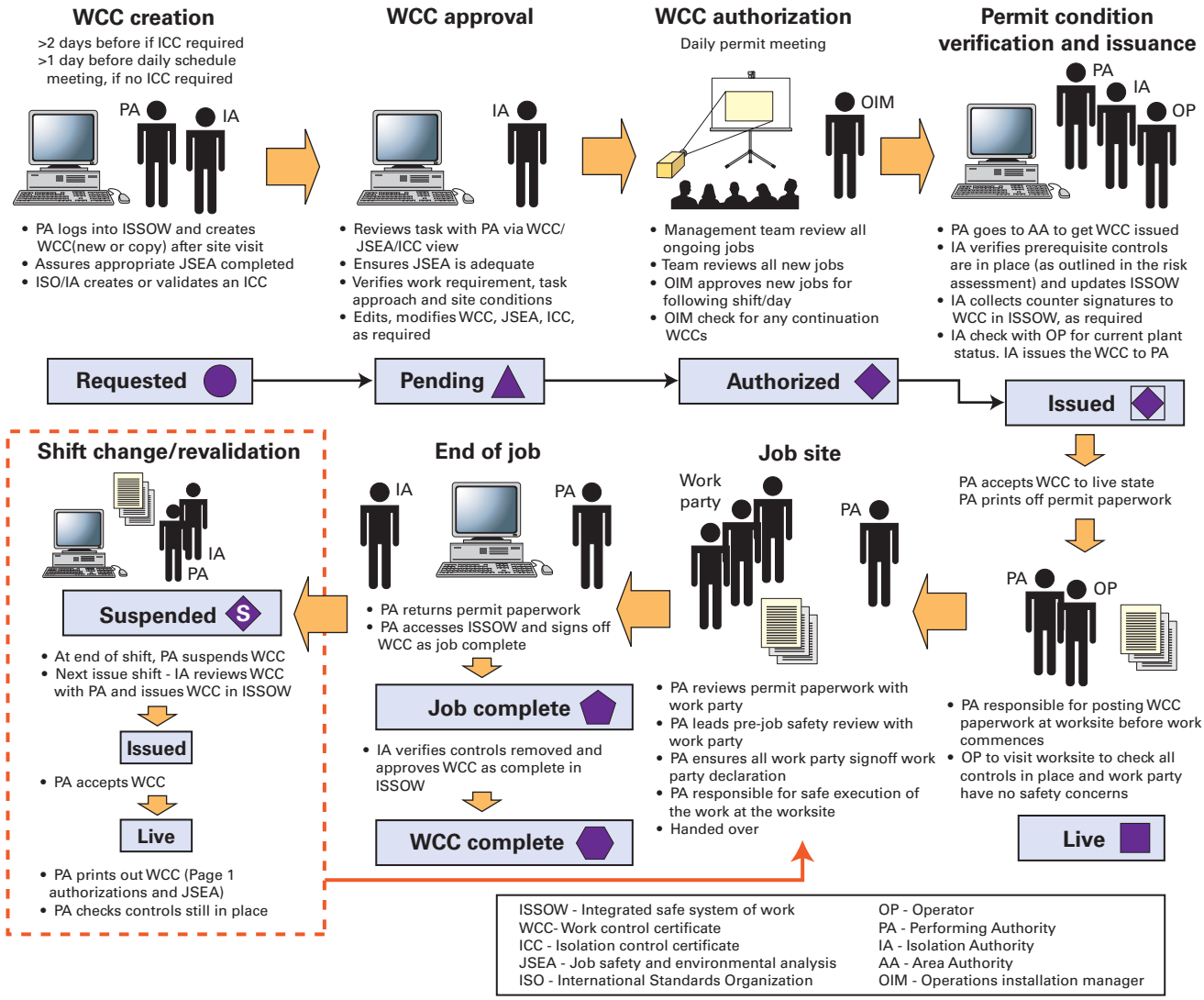
BP Gulf of Mexico Deepwater Production was one of the early adopters of the Sentinel PRO electronic permit-to-work system in the gulf and realized good results in terms of integrating its safe-work systems (Fig. 1).

The operational leaders and health, safety, and environmental (HSE) professionals in this BP strategic performance unit believe in the value of the real-time visibility of the location, type, and status of work operations that is possible with the Sentinel PRO system (Fig. 2).

When Thunderhorse and Atlantis platforms came online in the gulf, BP was committed to implementing the same control of work systems on those platforms right from the beginning. In planning the implementation of integrated safe-work processes, BP also upgraded to the newest version of the

DAILY PERMIT ISSUING PROCESS

Fig. 1



Sentinel PRO eptw system across all of its deepwater facilities.

Harmonizing systems

When the implementation team started thinking through this effort on employing the new software version, it realized that this endeavor provided an opportunity to harmonize not only the permit-to-work system, but also all other safe-work systems used across all offshore facilities.

The team realized that even though all facilities used the same electronic permit-to-work system, there were some notable differences in other safety practices, such as "lock-out-tag-out" and some task risk assessment procedures. This was an opportunity to look at best practices across all assets and get everyone to standardize on a uniform set of best safety practices and procedures.

Of course, the facilities have some differences. Some are small and some are very large. There are different operations being conducted on each one and there are significant differences in some of the equipment on the different platforms. There were reasons, therefore, for different operational processes but not for different control of work procedures.

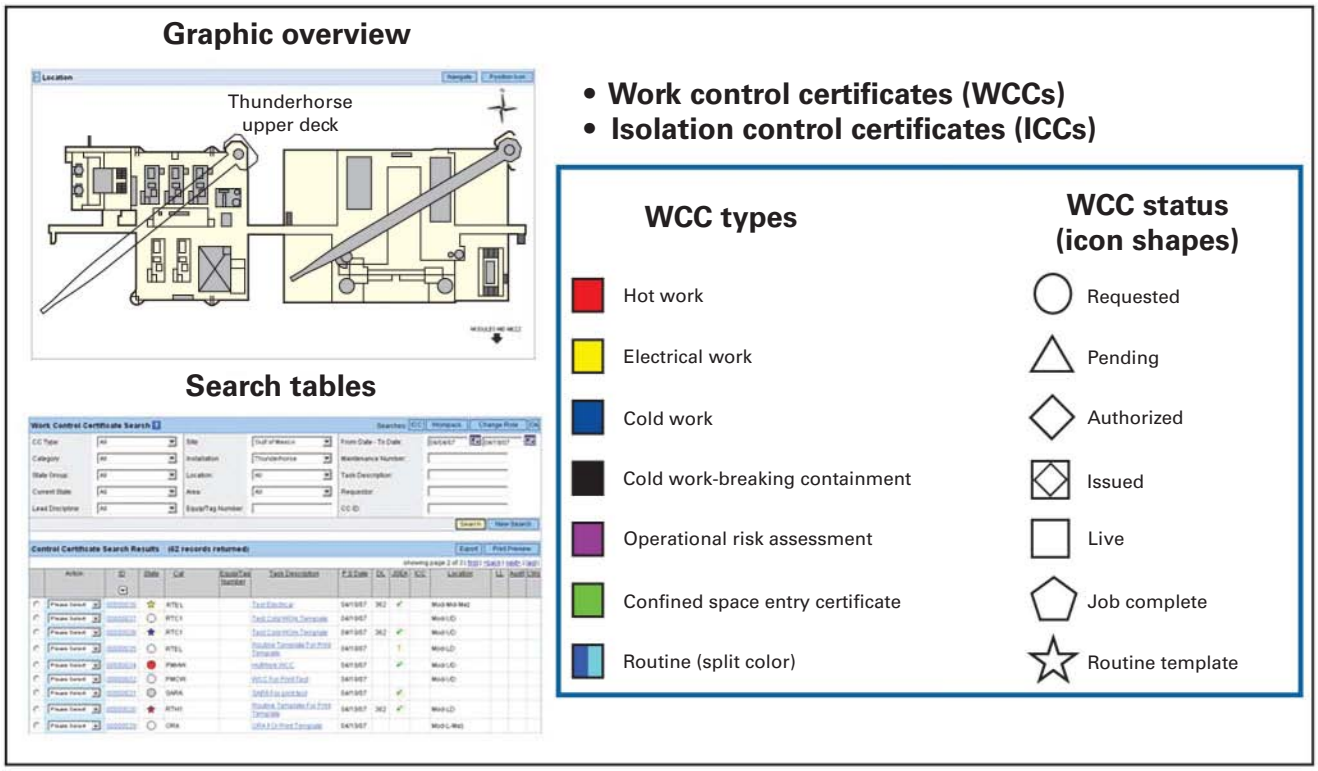
The implementation team knew that the apparent differences and normal human aversion to change would result in some understandable resistance to change when people anticipated having to adopt something different from what they were doing.

With some facilitation assistance and additional information about best practices from the Petrotechnics team, BP assembled representatives from all Gulf of Mexico facilities in one room and moved forward with the task. The people were carefully selected so that they represented a variety of levels and disciplines within the Gulf of Mexico organization.

Represented were people from most

REAL-TIME VISIBILITY

Fig. 2



of the different crafts involved in the maintenance, repair, and other work done on production platforms. This group chose the team name HEAT (harmonization essentials action team).

After some initial disagreements, the team identified and integrated major elements required for harmonization. These included but were not limited to:

- Hazard identification.
- Risk assessment.
- Lockout tag out (LOTO).
- Safe isolation and return to process.
- Management of change.
- Safety awareness.
- Safe practices manual.

Through the process, everyone came to understand that each was committed to safe-work execution and wanted to identify and adopt the "best of the best" in terms of safe-work practices.

In hindsight, proper attention to the membership and work of the HEAT team was a key for success. The HEAT team members proved to be some of the best ambassadors for implementing the Sentinel PRO system upgrade in a rigorous and disciplined manner. Their advocacy and support during the harmonization and implementation process did much to reduce resistance to change and facilitate rapid acceptance of the new system.

Everyone saw the advantages and efficiencies of having one set of the best possible safe-work practices in place uniformly across all platforms. The Sentinel PRO eptw system provided a vehicle for ensuring, and reinforcing—every day, task by task—that every single task was reviewed, planned, evaluated, authorized, approved, executed, and closed out in accordance with a single set of safe-work standards and procedures.

When the HEAT kickoff meeting was held in September 2007, the team took on the challenge of harmonization in order to:

- Leverage current best practices.
- Achieve the greatest possible harmonization and uniformity across all Gulf of Mexico assets.
- Support the BP worldwide control of work standard.
- Move toward industry best practices.
- Establish a base line and a process for continuing improvement.

Harmonization has several other advantages in terms of BP people moving from one platform to another and experiencing consistent practices at all facilities. It also helps the contractors who work on several different deepwater facilities because there is now much more uniformity in the way all facilities ensure that work is conducted safely. The effort has reduced the need to learn multiple different processes.

Parallel and linked to the work of the HEAT team, Petrotechnics configured its Sentinel PRO software in accordance with the harmonized processes and practices. Once all of the harmonization work was completed, it was time to install the upgraded Sentinel PRO soft-

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ware on each platform and to provide training for all who would use the new electronic permit-to-work system and the new harmonized set of safe-work systems.

Software features

The Petrotechnics integrated safe system of work solution, Sentinel PRO, is more than an electronic replacement for a paper-based permit-to-work system. It pulls together a number of safe-work practices and procedures into a single integrated system designed to streamline, standardize, and control the work process. Key safety features include:

- Provides a real-time graphical interface that displays the location and lifecycle status of all work permits on a layout of the facility.
- Allows users to see work conflicts, type of work, and progress at a glance.
- Integrates permit to work, risk assessment, and isolation management.
- Manages approvals via electronic signatures.
- Provides database of past permits, risk assessments, lessons learned, etc. to facilitate and improves the creation and review of new permits, especially in the case of repetitive and frequently executed tasks.
- Contains built-in audit and other monitoring features with electronic questionnaires.

Implementation, training

Coordinating the hardware, software, training, and other elements of this major undertaking had a few hiccups. Having two knowledgeable persons on the ground was essential. K.P. Rosamond from BP and Trent Pearson from Petrotechnics made sure that everything was scheduled and executed. They also worked closely together to ensure that all issues were raised, addressed, and hammered out so that the system quickly worked well for all BP deepwater facilities.

During this cooperation, more than 500 people were trained in the use of the new Sentinel PRO web-based safe work system. Training sessions were kept relatively small to ensure effective knowledge transfer. The endeavor involved more than 45 training sessions, conducted mostly at BP's Houma, La., offices Also, several additional coaching sessions were held on the various offshore facilities to provide in depth, hands-on experience with the features and functionality of the new safe-work system.

Now every single permit to work on each BP offshore facility is handled in the same way 24/7/365. The Sentinel PRO safe-work system ensures that the same set of safe-work practices (risk assessment, LOTO, safe isolation, etc.) is applied in a uniform manner.

Continuing attention by HSE and operations leaders reinforces the link between these safe-work systems and the BP overall control of work approach.

The experience of undertaking this effort to harmonize all safe-work systems across all Gulf of Mexico facilities and implementing a single system of permitting work based on a uniform set of standards, policies, and procedures has been instructive. In retrospect, some of the anticipated resistance did happen, but high-quality training and coaching did much to minimize the difficulties of the changes.

Observed benefits

Now that the platforms all use a uniform approach and people have had a little time to work with this new system, the following are some of benefits noted:

- Safety audits are more meaningful, and audit results have greater and wider applicability.
- BP's deepwater production facilities share more knowledge. The fact that all facilities have the same basic system makes lessons learned more applicable to everyone.
- HSE professionals have a greater and more meaningful community of interest.
- Higher levels of leadership are becoming more interested in safe-work execution at the facility level and are finding ways to use the internet connectivity to the various facility eptw systems to check on things such as the quality of risk assessment, isolation controls, etc.
- There is a higher level of concern about a more thorough integration of safe-work processes and practices. And, there is more energy to resolve potential issues with the application of BP's global control of work standard.

The BP Gulf of Mexico deepwater facilities have improved safety through better process rigor and transparency from clear lines of authorization and ownership of work. With this new internet-based system, it is now possible to monitor, review, and audit how people use these safe-work systems from anywhere on the globe with access to the internet.

Some specific results realized are:

- The endeavor has eliminated 10-15% of permit to work related rework and preplanning, thus freeing up time and allowing personnel to work more efficiently.
- The harmonization of operational working practices has produced benefits in terms of safety, effectiveness, and cost savings.
- A single, uniform approach and a standard electronic permit-to-work system across all Gulf of Mexico facilities have made it much easier for BP to ensure that all new people and contractors are properly trained before they arrive on the platforms—thus making time offshore more productive and profitable.

Individuals closest to the design and execution of the harmonization effort and greater integration of safe-work systems are positive about short-term results, sustainability, and greater long-term benefits. The specific results listed previously are all positive contributions to a work environment in which safety and performance go hand-in-hand and both continue to improve.

The integration of the Sentinel PRO eptw system with the other safe-work systems is a central and reinforcing force that encourages continuing viability and sustainability of the overall

integrated safe system of work. The increased rigor applied to, greater access to, and visibility of, the work associated with hazard identification, task risk assessment, isolation controls, etc. is involving more people who are beginning to be even more creative in finding potential improvements in safe-work systems. ✦

The authors

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K.P. Rosamond is the control of work technical authority for BP's Gulf of Mexico SPU. He has 10 years of experience in HSE built around operations and projects. Rosamond dedicates much of his time to developing HSE action plans by means of cross-communication between field representation and BP management.

Many states expand air permits; some submittals due in January

Gary Daves
Trinity Consultants
Houston

Some important US oil and gas industry states are requiring maintenance, start-up, and shutdown emissions to be added to air quality permits. Deadlines for some submittals are as soon as January 2009.

SIPs

For many years, oil and gas facilities have been required to obtain air quality authorizations as part of the new source review (NSR) permitting process for their air emissions. Traditionally, air quality permits covered only emissions from normal, ongoing facility operations (i.e., emissions from typical operations).

Emissions from maintenance, start-up, and shutdown (MSS) activities typically were not addressed as a part of air quality authorizations, mostly because state agencies were not requiring those emissions to be identified in air permit applications. Most agencies allowed these MSS emissions to be reported as excess emissions, and in general, both predictable and unpredictable MSS emissions have been reported as emission events, upsets, or malfunctions.

Over the past few years, however, the US Environmental Protection Agency (EPA) has been paying increased attention to how states have addressed predictable MSS emissions in state implementation plans (SIPs) that every state is required to submit to EPA for approval. SIPs include provisions for all air quality regulations, including NSR authorizations as well as excess emissions reporting.

EPA's position is that all periods of "excess emissions" are unallowable violations, and start-up, shutdown, and maintenance activities should be considered part of a facility's normal operations and therefore subject to NSR requirements or a violation of air quality regulations.

Some states have provisions in their SIPs for companies to present an affirmative defense against civil penalties related to excess air emissions due to equipment malfunctions under certain conditions. EPA maintains, however, that state affirmative defense provisions are inappropriate for scheduled maintenance events because the "scheduled maintenance activities are predictable events subject to planning to minimize releases, unlike malfunctions (emission events), which are sudden, unavoidable, or beyond the control of the owner or operator."[1] Thus, "malfunctions," as described by EPA are separate and distinct from scheduled predictable maintenance, start-up, and shutdown activities.

As a result of EPA's increased scrutiny of state provisions and procedures related to predictable MSS emissions, state agencies have begun to address those emissions through NSR permitting. These initiatives require state agencies to revise their SIP provisions and clarify their positions on predictable and unpredictable MSS emissions.




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EPA: US refiners lower air, increase water emissions during 1996-2005

In the 10 years 1996-2005, US refiners significantly reduced the amount of hazardous air emissions, according to a September 2008 report from the US Environmental Protection Agency.

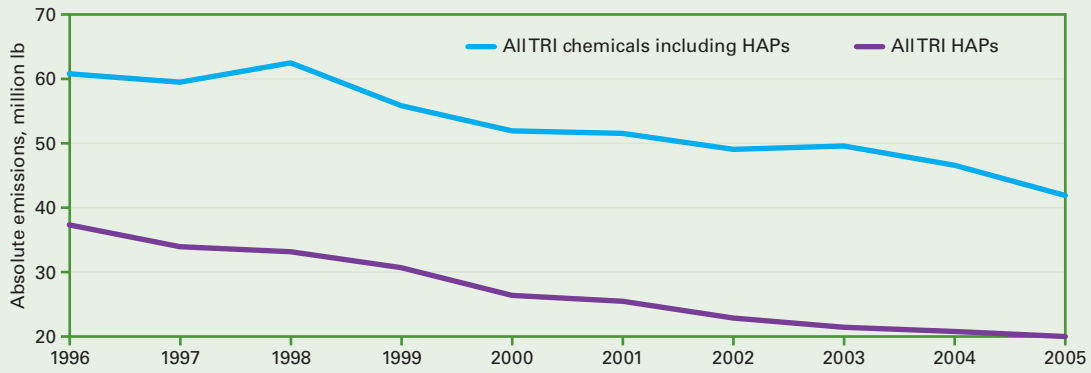
The report "2008 Sector Performance Report" said that, in 2005, US refiners reported 42.2 million lb of absolute air emissions to EPA's annual Toxics Release Inventory (TRI). This was a 31% decrease from the level in 1996, which was 61.1 million lb.

TRI chemicals in water discharges, however, increased during the reporting period.

The total amount of waste managed decreased during 1996-2005.

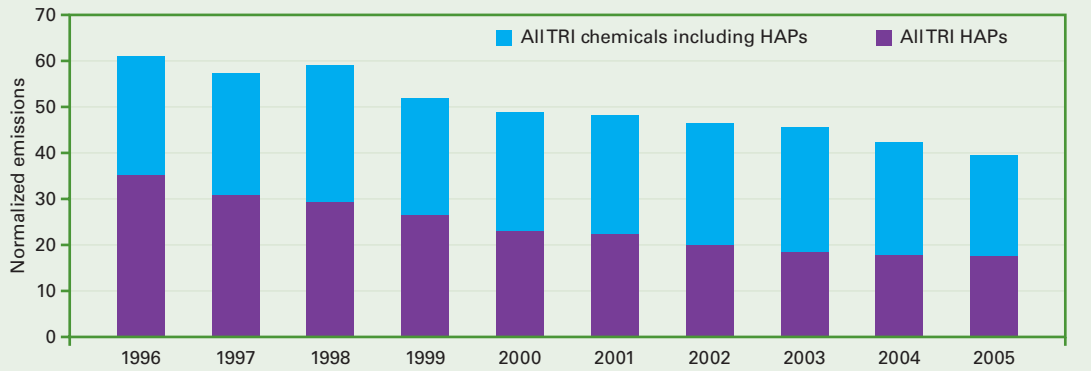
Refinery air emissions

Fig. 1



Normalized air emissions

Fig. 2



Air emissions

In 2005, 163 refineries reported they emitted 18.9 million lb less air pollutants than in 1996, a reduction of 31% (Fig. 1).

These emissions of all TRI chemicals include hazardous air pollutants (HAPs) regulated under the Clean Air Act.

HAP emissions during 1996-2005 declined to 19.4 million lb from 36.0 million lb.

When normalized by crude inputs to the refineries, air emissions decreased by 36% during the reporting period

Most of the states are adopting EPA's historical position by continuing to allow reporting of unpredictable types of MSS emissions (i.e., malfunctions) as excess emissions and are beginning to authorize the predictable type of MSS activities through NSR permitting. Some of the states requiring MSS emissions to be included in air quality permits are states with large numbers of oil and gas facilities, including Texas, Louisiana, and New Mexico.

MSS

Since states have some discretion in how they structure their air quality permitting requirements, one state can have somewhat different requirements for MSS emissions than another state does.

The Texas Commission on Environmental Quality (TCEQ) has considered requiring facilities to obtain authorization for unplanned but quantifiable and anticipated (QUAN) emissions, such as those from pressure-relief valves. When TCEQ promulgated its MSS permitting rules that are currently being implemented, however, it elected not to include any requirements to authorize QUAN emissions.

Thus, in Texas, only scheduled MSS activity emissions, which are a predictable type of MSS activities, can now be authorized through TCEQ's NSR program. Since "unplanned" MSS emissions are not authorized, those unplanned

(Fig. 2). The emissions of HAPs normalized for crude inputs decreased 50%, to 18.1 million lb.

EPA's report also assigned a risk-screening environmental indicator to each TRI chemical to consider the relative toxicity of air emissions.

The normalized toxicity score for US refiners increased by 50% during 1996-2005.

The toxicity score increased mainly due to sulfuric acid, which has a relatively high weighting compared with other TRI chemicals and is related to SO_2 emissions. Sulfuric acid accounted for about three quarters of the 2005 toxicity score.

Ammonia was the most emitted chemical in 2005, accounting for 8.574 million lb. Sulfuric acid was the next highest-ranked chemical with 8.015 million lb emitted in 2005.

Greenhouse gases

The report stated that, in terms of methane emissions, US refiners released an estimated 28.4 million tonnes of CO_2 equivalent in 2005. This was an increase of 7% since 1996.

Vented emissions accounted for 87% of greenhouse gas emissions. Fugitive and combustion emissions accounted for 6% and 7% of emissions, respectively.

Water discharges

The EPA report stated that in 2005, 121 US refineries reported water discharges of 17.7 million lb of TRI chemicals. This amount was an absolute increase of 52% compared with 1996 and a normalized increase of 42%.

Nitrate compounds and ammonia accounted for 97% of the reported discharges.

Waste management

According to the report, refiners reported generating 5.1 million tons of hazardous waste in 2005. The hazardous-waste management method that refiners used most was disposal, which accounted for 84% of wastes managed.

In 2005, refineries reported 1 billion lb of chemicals released, disposed, or managed through treatment, energy recovery, or recycling. This was a 22% decrease in waste managed compared with 1996, when normalized by crude inputs.

In 2005, 54% of managed waste was treated, 23% was recovered for energy use, 17% was recycled, and 6% of TRI-reported waste was disposed or released. Energy recovery was the main waste management method in the late 1990s; treatment, however, is now the primary management method.

Refiners reported disposing of 6.3 million lb of TRI chemicals to land or transferred to offsite locations for disposal in 2005. Ammonia, zinc, and nickel accounted for nearly half of the total weight of chemicals disposed. Most refinery TRI hazardous waste disposals used underground injection, although 43% relied upon landfill disposal.

QUAN emissions will continue to be covered by rules addressing unauthorized emissions under the excess emissions reporting program.

Meanwhile, the New Mexico Environmental Department (NMED) is still considering whether to require facilities to obtain authorization for emissions from anticipated but unplanned activities, which would be similar to the QUAN emissions that TCEQ considered. As can be seen in this example, the types of emissions that a state agency deems subject to permitting vary among states; individual state requirements must be consulted.

MSS permitting: obstacles, concerns

As a part of NSR, many states require state best available control technology (BACT) to be applied to any emission sources that are included in air quality authorizations. While state BACT requirements may not be as stringent as BACT requirements related to the US "Prevention of Significant Deterioration" (PSD) BACT requirements (discussed presently), state BACT can still result in additional control technologies being required for maintenance activities (and also start-up and shutdown emissions).

Besides the additional cost to implement BACT requirements, there can also be additional labor requirements, depending on what additional steps would be required to minimize emissions during MSS events. Additional staff time will be required for documenting compliance with the air permit requirements related to MSS emissions and emissions reduction efforts.

One obstacle for obtaining a permit for MSS air emissions can be documenting, through air-dispersion modeling, that the proposed emissions do not cause a violation of ambient air quality standards. Permits cannot be issued unless the emissions to be permitted can be shown not to cause a violation of ambient air quality standards such as the National Ambient Air Quality Standards (NAAQS) and state ambient air standards, including state toxic air pollutant standards.

Since many oil and gas facilities have property lines near their air emission sources, off-site impacts could be high for some MSS emissions. Even for emission sources some distance from property lines, the magnitude of MSS emissions can cause problems with air-dispersion modeling results.

These considerations can affect decisions about how to conduct MSS activities and whether additional operational measures for emissions reductions should take place. In some cases, a company may want to explore its options to see what is feasible before it submits information to the state agency. In light of the potential permitting problems for some current MSS activity methods, some of the alternative methods of conducting infrequent MSS activities should be explored long before a permit application will be required.

PSD REQUIREMENTS

Table 1

Best available control technology (BACT)	Control technology requirements that can be more stringent than state BACT requirements
Air quality analysis	Air-dispersion modeling utilizing EPA-approved models and procedures to demonstrate the proposed emissions will not cause or contribute to a violation or exceed a National Ambient Air Quality Standard (NAAQS) or PSD Increment. Ambient monitoring also can be required.
Class I area analysis	Assessment of impact of proposed emissions on specially protected, pristine areas (e.g., national parks and wilderness areas). Distance to the nearest Class I determines whether this analysis is required.
Additional impact analysis	Includes an assessment of impact of proposed emissions on visibility, soils, and vegetation, among other requirements.

NONATTAINMENT NSR REQUIREMENTS

Table 2

Lowest achievable emission rate (LAER)	Most stringent control technology (and-or emissions minimizing techniques) required by EPA (more stringent than PSD BACT)
Emissions offsets	Facility must purchase emissions offsets or make emissions reductions to generate offsets. Offsets must exceed the quantity of proposed emissions, with the ratio of offsets to proposed emissions depending on the area's level of nonattainment status.
Statewide compliance certification	All major stationary sources owned or operated by the applicant (or by any person controlling, controlled by, or under common control with the applicant) in the state must be in compliance or on a schedule for compliance with all applicable state and federal emission limitations and standards.
Alternatives analysis	Includes an assessment of alternative processes and control techniques for the proposed emissions, among other requirements.

In Texas, facilities are being required to prepare and submit to the TCEQ air-dispersion modeling analyses for pollutants with ambient air quality standards as well as for pollutants with screening levels under the Texas air toxics program. One common problem with modeling air emissions from MSS activities is demonstrating compliance with standards with short averaging periods (e.g., 1 hr to 24 hr).

In particular, the sulfur dioxide (SO_2) emissions from flaring gases with high hydrogen sulfide (H_2S) content can cause problems with meeting ambient SO_2 standards, especially because there are federal SO_2 standards with 3-hr and 24-hr averaging periods and state standards with even shorter averaging periods.

State air toxics requirements can also provide difficulties in the permitting process. One common problem that arises for various organic compounds is emissions from various tank MSS activities, particularly for tanks near a property line. The amount of time required to resolve such issues should not be underestimated in planning an MSS permitting project timeline.

Depending on the size and type of operations at a facility, another obstacle to obtaining authorization for MSS emissions can be the triggering of federally mandated NSR requirements, such as PSD and Nonattainment New Source Review (NNSR) requirements.

If the proposed MSS emissions exceed certain thresholds, the facility will have to address PSD or NNSR or both, which have even more stringent requirements than the typical MSS state permitting requirements (Tables 1 and 2). Thus, it is important to propose high enough emissions to allow sufficient operational flexibility, but at some point, a closer look at the level of flexibility may be required due to additional requirements associated with the proposed emissions levels.

In Texas, several petroleum refineries and chemical plants (the first two categories of sources to submit permit applications for MSS emissions) have received requests from the TCEQ either to comply with the additional requirements of PSD and NNSR or provide justification for why their proposed levels of MSS emissions do not trigger PSD or NNSR requirements.

Strategies

Several strategies can be advantageous to a company as it addresses MSS permitting requirements.

- Review the earliest MSS permits issued in the state and comment on provisions that appear unduly restrictive or costly during the public comment period because the earliest permits a state issues set precedent for future permits they issue.

For example, in Texas, petroleum refinery permit applications were the first ones to be submitted. The Texas Oil and Gas Association (TXOGA) has been conducting extensive discussions with the Texas state agency, TCEQ, about members' concerns with some permit conditions proposed by TCEQ. Besides the permit conditions causing concerns for refineries, however, some permit conditions may have effects on upstream oil and gas facilities that they would not have on refineries, as the chemical industry has seen in its review of the proposed permit conditions.

In Louisiana, the Department of Environmental Quality has started requesting information on MSS activities when air-quality permit applications are submitted for permit amendments or renewals. Thus, the Louisiana approach means that permits for multiple industries may be in the first group of permits with MSS requirements.

- Work with state industry groups to address contentious issues with state agencies. Those issues can be in the form of regulations, permit conditions, or even policies and guidance.

For example, the New Mexico Oil and Gas Association (NMOGA) and Independent Producers Association of New Mexico (IPANM) were able to work a compromise at the last minute

on the proposed New Mexico MSS regulation.

One substantial negotiated change was from every emissions event automatically triggering a requirement for submittal of a root-cause analysis to NMED to an emissions event root-cause analysis being required only upon specific request by the NMED.[2]

- Budget for the resources required to meet MSS permitting requirements and do not underestimate the effort required to show compliance with the air dispersion modeling requirements.
- Budget for the increased cost of maintenance activities due to potential BACT requirements.
- Start early identifying MSS activities. A company's environmental staff may want to review past records besides talking with operations and maintenance staff to develop a comprehensive list of MSS activities for permitting based on history and anticipated future activities.
- Facilitate communication between environmental staff members responsible for various sites (and various states).
- Evaluate MSS scenarios to determine which activities could happen simultaneously and which would not. Sometimes air-dispersion modeling problems can be alleviated or reduced by segregating emissions from activities that would not occur simultaneously.
- Develop an MSS activities checklist if the company has several facilities subject to MSS permitting requirements. The checklist can be simply on paper to make sure that all MSS activities are identified, but an appropriately designed checklist in a spreadsheet or database format can be a productive step toward developing the necessary emissions calculations.

Deadlines

Deadlines for obtaining authorizations for MSS emissions vary by state and the individual state regulations should be consulted. Three states near the top of the list in terms of oil and gas production, however, are taking a deliberate approach in addressing MSS emissions through permit applications.

In Texas, the TCEQ has set deadlines for facilities based on standard industrial classification (SIC).[3] For oil and gas facilities in SIC Codes 1311 (Crude Petroleum and Natural Gas), 1321 (Natural Gas Liquids), 4612 (Crude Petroleum Pipelines), 4613 (Refined Petroleum Pipelines), 4922 (Natural Gas Transmission), and 4923 (Natural Gas Transmission and Distribution), the deadline for submitting an air quality permit application or otherwise obtaining authorization for MSS emissions is Jan. 5, 2012 (reference 30 TAC 101.222(h)).

Facilities in other SIC categories have separate deadlines listed in the Texas rules. With the TCEQ considering additional options for authorizing oil and gas industry MSS emissions, now is a good time for oil and gas companies to be engaged with TCEQ on the direction that will be taken in this evolving area of air quality permitting.

The New Mexico Environmental Department (NMED) is taking a slightly different approach. The first deadline of Jan. 27, 2009, applies to all facilities in New Mexico, including all oil and gas facilities.

By Jan. 27, all facilities are to revisit what NMED calls start-up, shutdown, and maintenance (SSM) emissions and determine whether the facilities' owners or operators will need to obtain a permit or change permit status. If a permitting action will be required, the NMED must be notified by Jan. 27 that a permit change is indicated. The agency will then "call" for permit applications based on their priorities.

The stance of the Louisiana Department of Environmental Quality (LDEQ) is that routine MSS emissions should be added to a facility's air quality permit at the earliest opportunity if those emissions are not already in the facility's permit. In fact, permit writers at LDEQ are currently requesting information about MSS emissions during their reviews of permit amendment and renewal applications if the facilities do not have MSS emissions already authorized.

In Louisiana, there is no specific deadline for permitting MSS emissions, but facilities can be subject to enforcement actions if they are found to have unauthorized MSS emissions. Thus, companies with facilities in Louisiana should be evaluating their compliance situation on MSS air emissions now.

Other states

As indicated by this sampling of states, the requirements for MSS emissions vary by state. In some states, such as Texas, New Mexico, and Louisiana, obtaining an air permit that includes MSS emissions is mandatory, while in other states it is voluntary.

For example, on a case-by-case basis, the Arkansas Department of Environmental Quality has allowed some facilities to include MSS activities in their permits to avoid upset condition reporting for those MSS emissions.

Due diligence

This review should make clear how important it is to check on the situation in a particular state. MSS permitting requirements are evolving, and some states are currently amending their

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emissions events and excess emissions rules, which can affect MSS permitting requirements.

Some states are requiring immediate action. Companies should be prepared to address air emissions for MSS activities at their facilities. It is important to plan for the financial and personnel resources that will be needed to comply with MSS permitting requirements. ✦

References

1. EPA comment on excess emissions, TCEQ meeting, Mar. 4, 2005.
2. Compare final adopted rule 20.2.7.114 NMAC (effective Aug. 1, 2008) with proposed rule 20.2.7.113 NMAC (Exhibit 1 for the final rule package at http://www.nmenv.state.nm.us/aqb/prop_regs.html).
3. 30 TAC 101.222(h).

NELSON-FARRAR COST INDEXES

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

	1962	1980	2005	2006	2007	Aug. 2007	July 2008	Aug. 2008
Pumps, compressors, etc.	222.5	777.3	1,685.5	1,758.2	1,844.4	1,850.3	1,959.0	1,966.5
Electrical machinery	189.5	394.7	513.6	520.2	517.3	514.6	517.3	517.3
Internal-comb. engines	183.4	512.6	931.1	959.7	974.6	980.8	990.9	992.2
Instruments	214.8	587.3	1,108.0	1,166.0	1,267.9	1,272.4	1,342.4	1,356.6
Heat exchangers	183.6	618.7	1,072.3	1,162.7	1,342.2	1,374.7	1,374.7	1,374.7
Misc. equip. average	198.8	578.1	1,062.1	1,113.3	1,189.3	1,198.6	1,236.9	1,241.5
Materials component	205.9	629.2	1,179.8	1,273.5	1,364.8	1,356.9	1,768.3	1,779.8
Labor component	258.8	951.9	2,411.6	2,497.8	2,601.4	2,615.7	2,681.2	2,695.7
Refinery (Inflation) Index	237.6	822.8	1,918.8	2,008.1	2,106.7	2,112.2	2,316.0	2,329.3

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

	1962	1980	2005	2006	2007	Aug. 2007	July 2008	Aug. 2008
Fuel cost	100.9	810.5	1,360.2	1,569.0	1,530.7	1,381.5	2,800.5	2,228.4
Labor cost	93.9	200.5	201.9	204.2	215.8	203.8	238.0	237.4
Wages	123.9	439.9	1,007.4	1,015.4	1,042.8	1,006.5	1,130.3	1,094.3
Productivity	131.8	226.3	501.1	497.5	483.4	493.9	475.0	460.9
Invest., maint., etc.	121.7	324.8	716.0	743.7	777.4	779.4	854.6	859.5
Chemical costs	96.7	229.2	310.5	365.4	385.9	381.6	531.8	544.0
Operating indexes								
Refinery	103.7	312.7	542.1	579.0	596.5	579.1	766.4	717.9
*Process units**	103.6	457.5	787.2	870.7	872.6	817.5	1,350.7	1,152.0

**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.

Biomonitors assist smooth pipeline project schedule

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Using biomonitors (qualified on-site biologists with construction expertise) can lead to successful negotiation of contentious environmental issues and full compliance with regulatory conditions and permit stipulations. Southern Natural Gas Co., an El Paso company, used biomonitors to ensure full environmental compliance with regulatory conditions associated with the construction of the Cypress Pipeline project.

Biomonitors allowed environmental compliance issues to be handled in advance or avoided entirely, rather than cropping up unexpectedly during agency inspections or after irreparable damage had been done.

The gopher tortoise was one of several protected species biomonitors removed from harm's way during construction of the Cypress Pipeline (Fig. 1).

The biomonitor system ensured a smooth construction schedule with regard to environmental issues, resulting in significant overall time and cost savings for the Cypress project.

Southern engaged in extensive consultation and negotiation with federal, state, and local regulatory agencies while preparing for the project. Southern used two biomonitors in successfully negotiating contentious environmental issues and fully complying with specialized compliance conditions stemming from the regulatory and permitting processes.

This article details the role of these biomonitors.

Background

The Cypress project called for construction of a 167-mile, 24-in. OD pipeline from just east of Savannah, Ga., to west of Jacksonville, Fla., including five gas-delivery interconnects and three compressor stations. Cypress is a take-away pipeline from Southern's subsidiary, Southern LNG Inc., an operating LNG import and storage terminal located in Savannah.

The selected pipeline route through coastal Georgia and Florida contains some of the most ecologically-sensitive regions in the country. Cypress crossed more than 300 wetlands; 40% of the route (60 miles).

Cypress also crossed more than 200 water bodies; six more than 100 ft long and requiring specialized construction techniques.

The project area served as habitat for more than 24 protected species, 13 of which were found along the project route. Biological surveys conducted before construction identified more than 200 gopher tortoise burrows, for example (Fig. 1). The project area also contained several significant historical sites and essential fish habitat for managed fisheries.

Agency consultation

Southern consulted with many different federal, state, and local agencies, including the Federal Energy Regulatory Commission, US Fish and Wildlife Service, National Marine Fisheries Service (NMFS), US Army Corps of

Based on presentation to the 7th International Pipeline Conference, Calgary, Sep. 29-Oct. 3, 2008.

Biomonitors also removed venomous snakes, such as this eastern diamondback rattlesnake, and alligators from the right-of-way, protecting both the workers and the animals (Figs. 2-3).

Engineers, Georgia Department of Natural Resources, Florida Department of Environmental Protection, the Saint Johns River Water Management District, and others. The environmental resources identified along the Cypress route required creative solutions to the numerous (sometimes conflicting) agency requests regarding avoiding or minimizing environmental impact.

Southern conducted specialized species surveys during preconstruction, relocated protected species, set up exclusion fencing to keep protected species from entering the construction zones, and implemented various other techniques and practices. Southern also manipulated construction windows to avoid foraging and nesting periods for several protected bird species and withdrawing water for hydrostatic testing during spawning events.

Trenchless technologies such as horizontal directional drilling allowed Southern to build underneath significant ecological habitats and historical sites. As part of a specific condition to comply with the NMFS approval, Southern used specially engineered hydrostatic test intake structures to reduce water velocities to 0.5 fps, preventing entrainment or other damage to eggs, larvae, and juveniles of protected fish species.

Agency assurance

Each agency wanted assurance that its proposed avoidance or minimization techniques would be fulfilled correctly. Southern explained that a team of third-party environmental inspectors would be on site to monitor construction and make sure that the permit conditions would be upheld, but the agencies remained concerned that the inspectors would not have the qualified biological background necessary to perform the identified compliance practices.

Southern proposed using biomonitors, in addition to the team of environmental inspectors, to meet all agency consultation and permit conditions. The biomonitors had specialized construction experience and would remain in the field during construction.

Introducing the biomonitor concept increased agency cooperation during consultation.

Results

Southern defined a biomonitor as a professional, possessing an advanced degree in biology or the environmental sciences, tasked with project monitoring to ensure compliance with environmental conditions by communicating and coordinating with the company, inspection, and contractor personnel. Southern used two biomonitors for the Cypress project.

They provided the project with environmental compliance advantages. They routinely participated in morning construction meetings, during which they alerted construction personnel to specific immediately applicable environmental permit conditions or compliance. Biomonitors notified the construction team if a protected species window was approaching and ensured that either activities ceased during

these windows or work was completed beforehand. They also reminded the construction team which waterbodies required specially engineered intake structures during hydrostatic test withdrawals.

Biomonitors surveyed construction areas for sensitive environmental resources before each phase of activity, fostering proactive communication with the construction crew before environmental issues arose. The Cypress construction team avoided several protected species or rescued them from harm's way via this method. Biomonitor scouting also protected construction personnel from animals such as venomous snakes (Fig. 2) and alligators (Fig. 3).

The construction team occasionally needed additional workspaces, contractor yards, or access roads. Such unplanned alterations result in suddenly scrambling through an agency variance process, because environmental issues are usually not in the front of the construction team's thought process when varying from the original plan.

During Cypress, however, biomonitors performed necessary biological surveys and prepared construction variances for agency approval as changes happened. Biomonitors also worked directly with the agencies to manage the variance processes in the event a construction deviation was required.

Georgia and Florida have several water-quality protection permits requiring state-certified personnel to monitor water quality, take water samples, and prepare resulting reports. Cypress biomonitors held certificates from Georgia and Florida allowing them to perform these tasks, and were crucial in meeting state water quality requirements.

Biomonitors also acted as liaisons during agency inspections, escorting agency personnel during construction audits. The biomonitors standing as trained biologists already entrenched in the construction process allowed them to respond readily and articulately to specific environmental issues related to permit conditions. ✦

The authors

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Editor's note: Jason Goldstein worked at El Paso Corp. when this paper was written.

Rebecca Goldstein (rebecca.goldstein@gc-us.com) is a medical writer for the medical & scientific services group of Gardiner-Caldwell US. She earned her PhD in cell biology from the University of Alabama at Birmingham, where her research included characterizing targeted molecular therapies for cystic fibrosis and HIV. She has 7 years of research experience in the fields of cellular immunology and protein trafficking.

Correction

In the article "Hybrid riser application provides deepwater crude export solution" by Francisco E. Roveri, A.G. Velten Filho, V.C. Mello, and L.F. Marques, Table 3 (OGJ, Nov. 10, 2008, p. 62) contained errors. Following is a corrected version of the table.

FLEXIBLE JUMPER CHARACTERISTICS Table 3

Parameter	Measurement
OD	535.5 mm
ID	406.4 mm
Weight, empty in air	336.7 kg force/m
Weight, seawater-filled in seawater	244.8 kg force/m
Bending stiffness, operation	2,500 kNm^2
Bending stiffness, free hanging	2,900 kNm^2

New temperature sensing unit for harsh environments

The newly launched Oryx distributed temperature sensing (DTS) unit is designed for harsh environment wellsite monitoring operations.

It is suited for applications from desert to subzero conditions. It can be combined with satellite, radio link, or fiber communications.

The autonomous, low powered system, able to operate from solar or wind power, has a continuous monitoring range of up to 5,000 m and a sampling resolution of 1 m. It can operate in environmental temperatures of –40° C. to +65° C. The housing enclosure is IP66 rated or above to ensure weather and dustproof deployment. The Oryx features a range of flexible communications options and a direct link to PCs or laptops. Setup, channel configuration, and measurement can be performed remotely, eliminating the requirement to be in the vicinity of the DTS unit at the wellsite. Additional on-board memory helps ensure that a high volume of measurements can be taken, suited for drive-by collection of data where a communications system would be cost prohibitive.

Source: **Sensornet,** Sensornet House, 340 Centennial Park, Elstree, Hertfordshire WD6 3TJ, UK.

Cameras offer embedded machine vision

This firm's smart camera product line has been extended wih three new products: the NI 1744, NI 1762, and NI 1764. The company says its cameras deliver fast processing speed and high image resolution to offer options for engineers requiring an embedded machine vision solution.

Cameras come with an interactive software environment for configuring and deploying complete machine vision applications without programming.

Source: **National Instruments Corp.,** 11500 N. Mopac Expressway, Austin, TX 78759-3504.

Peak Well Services,

Perth, has added to its Aberdeen staff and moved into new offices as part of its effort to expand into Norway and Africa. Peak named Gordon Angus regional managing director, overseeing company operations across Europe and Africa. Andy Stewart was appointed wireline and intervention specialist and charged with supporting a new range of Simlock retrievable bridge plug tools and services. Helen Rankin was named office manager. They join Scott Mitchell, regional sales manager. Peak expects its Aberdeen staff to number 30 in the next few years, with construction to begin soon on a new facility at Aberdeenshire, Scotland, to sell and rent tools along with providing training and offshore services. Plans also call for employing a regional design engineer to support North Sea customers.


Angus


Stewart


Rankin


Mtichell

Peak Well Services, a subsidiary of The Peak Group, is a specialist design, manufacture, and service support company to the offshore oil and gas industry. The company provides both operating and service companies with an extensive range of innovative well intervention products, solutions, and operational product support. It has developed a wide product range that includes high-performance wireline fishing tools and flow control devices.

Wartsila Corp.,

Helsinki, will establish a new, centralized environmental products know-how unit, dubbed Delivery Centre Ecotech (DC Ecotech), effective in January 2009. The new unit will focus on developing and delivering environmental technologies, as well as products for emissions reduction and efficiency improvement. DC Ecotech will be a global unit within Wartsila and is to be headed by Juha Kytola, president of Wartsila Finland, and currently also vice-president, Delivery Centre Vaasa, Finland. DC Ecotech will act as Wartsila's center for developing tailor-made emissions-reducing technologies. DC Ecotech will focus on the further development of these technologies and on a portfolio of products that can be produced in volume. Furthermore, in promoting and providing legislation know-how, the unit will help customers comply with environmental rules and regulations as they become increasingly stringent.

Wartsila provides lifecycle power solutions and services to the marine and energy markets.

Garneau Inc.,

Nisku, Alta., has appointed Terry J. Winnitoy chief development officer. He will work out of the company's Calgary sales office and lead all aspects of business growth for Garneau, including corporate business development strategy, sales and marketing, and brand development for coating, manufacturing, and Garneau's new product, Reelpipe. Previously, Winnitoy was cofounder and vice-president, business development and sales, for Builders Energy Services Trust. Prior to that, he spent 9 years as president of Canadian Alliance Corporate Finance Inc., specializing in finance alternatives for private and public companies primarily involved in the oil and gas services and construction industries. He also led sales and marketing teams at GE Capital and First City Capital.

Winnitoy has more than 20 years of senior executive experience in both the public and private sector, which includes developing and executing strategies in the areas of sales, marketing, finance, acquisitions, contract negotiations, brand development, budgeting, and cost control.

Garneau provides high-performance protective coatings and linings for oil and gas pipeline protection and designs and fabricates oil field equipment for both domestic and international markets.

Curtiss-Wright Corp.,

Roseland, NJ, has promoted David J. Linton and David C. Adams to the newly created positions of Co-Chief Operating Officers. Linton previously was president of the company's Flow Control segment, and Adams president of its Motion Control segment. As part of the realignment, Adams will also assume responsibility for the Metal Treatment segment, replacing Edward Bloom, who will retire in April 2009 and then serve as a consultant to the company. Since taking over as president of the Flow Control segment in May 2004, Linton has aligned an extensive product portfolio within the core markets of oil and gas, power generation, defense, and general industry. Adams joined Curtiss-Wright's Motion Control segment in 2000 and led the global development of the Integrated Sensing division, including a 2-year relocation to the UK. Bloom joined Curtiss-Wright in 1973 and participated in its growth to become the world leader in shot peening services.


Linton


Adams

Curtiss-Wright is a diversified company that designs, manufactures, and overhauls products for motion control and flow control applications and provides a variety of specialized metal treatment services.

CGGVeritas,

Paris, has made a friendly offer to acquire 100% of Wavefield Inseis ASA, Oslo, in a share exchange valuing the deal at about $310 million. The acquisition gives CGGVeritas three high-capacity 3D seismic vessels, three medium-capacity 3D seismic vessels, and two 2D seismic vessels, as well as Wavefield's seabed fiber optic technology for reservoir monitoring

Wavefield is a Norwegian pure-play seismic company that operates a fleet of eight vessels and develops geophysical equipment based on fiber optic technology.

CGGVeritas is a leading international pure-play geophysical company delivering a wide range of technologies, services, and equipment to the global oil and gas industry.

Imports of crude and products

	Districts 1-4		District 5		Total US		
	11-14 2008	11-7 2008	11-14 2008	11-7 2008	11-14 2008	11-7 2008	*11-16 2007
	1,000 b/d						
Total motor gasoline	860	589	0	0	860	589	1,124
Mo. gas. blending comp.	623	447	0	0	623	447	714
Distillate	122	7	0	29	122	36	267
Residual	241	228	0	0	241	228	304
Jet fuel-kerosine	69	7	19	29	88	36	196
Propane-propylene	146	182	18	36	164	218	213
Other	444	1,032	119	(3)	563	1,029	707
Total products	**2,505**	**2,492**	**156**	**91**	**2,661**	**2,583**	**3,525**
Total crude	**8,915**	**8,290**	**956**	**1,213**	**9,871**	**9,503**	**9,820**
Total imports	**11,420**	**10,782**	**1,112**	**1,304**	**12,532**	**12,086**	**13,345**

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

Purvin & Gertz LNG netbacks—Nov. 21, 2008

Receiving terminal	Liquefaction plant					
	Algeria	Malaysia	Nigeria	Austr. NW Shelf	Qatar	Trinidad
	$/MMbtu					
Barcelona	11.83	9.74	11.01	9.63	10.32	10.93
Everett	5.88	4.02	5.55	4.12	4.47	6.14
Isle of Grain	8.06	6.48	7.47	6.43	6.72	7.49
Lake Charles	4.05	2.41	3.86	2.56	2.73	4.58
Sodegaura	9.80	12.03	10.07	11.73	11.02	7.57
Zeebrugge	11.87	9.30	11.22	9.15	10.07	11.23

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	13,003	51,595	28,711	9,657	51,181	13,856	4,101
PADD 2	66,432	48,339	19,157	7,266	25,858	1,300	22,245
PADD 3	167,013	64,857	31,856	10,976	33,934	18,812	31,160
PADD 4	14,899	6,917	2,465	581	2,855	229	[1]2,767
PADD 5	52,201	26,926	21,575	9,647	13,052	4,888	—
Nov. 14, 2008	**313,548**	**198,634**	**103,764**	**38,127**	**126,880**	**39,085**	**60,273**
Nov. 17, 2008	**311,949**	**198,095**	**101,088**	**36,835**	**128,351**	**38,976**	**60,276**
Nov. 16, 2007[2]	**313,605**	**195,190**	**90,674**	**38,830**	**131,005**	**39,097**	**61,213**

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

Refinery report—Nov. 14, 2008

District	REFINERY OPERATIONS		REFINERY OUTPUT				
	Gross inputs	Crude oil inputs	Total motor gasoline	Jet fuel, kerosine	Fuel oils: Distillate	Fuel oils: Residual	Propane-propylene
	1,000 b/d						
PADD 1	1,304	1,301	2,115	67	423	128	86
PADD 2	3,226	3,185	2,058	191	1,014	54	224
PADD 3	7,067	6,947	2,821	637	2,201	266	544
PADD 4	514	512	326	27	172	10	[1]183
PADD 5	2,842	2,613	1,496	463	600	124	—
Nov. 14, 2008	**14,953**	**14,558**	**8,816**	**1,385**	**4,410**	**582**	**1,037**
Nov. 7, 2008	**14,897**	**14,463**	**9,024**	**1,314**	**4,371**	**610**	**1,065**
Nov. 16, 2007[2]	**15,180**	**14,897**	**8,964**	**1,370**	**4,180**	**685**	**1,110**
	17,610 Operable capacity		**84.9% utilization rate**				

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

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

OIL&GAS JOURNAL online research center

OGJ crack spread

	*11–21–08	*11–23–07	Change $/bbl	Change, %
SPOT PRICES				
Product value	58.40	107.18	–48.78	–45.5
Brent crude	48.45	95.35	–46.90	–49.2
Crack spread	9.95	11.83	–1.88	–15.9
FUTURES MARKET PRICES				
One month				
Product value	56.85	106.23	–49.38	–46.5
Light sweet crude	52.50	97.04	–44.54	–45.9
Crack spread	4.34	9.19	–4.85	–52.7
Six month				
Product value	64.80	106.99	–42.19	–39.4
Light sweet crude	56.68	92.09	–35.41	–38.4
Crack spread	8.12	14.90	–6.78	–45.5

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

Statistics

OGJ GASOLINE PRICES

	Price ex tax 11-19-08	Pump price* 11-19-08	Pump price 11-21-07
	¢/gal		
(Approx. prices for self-service unleaded gasoline)			
Atlanta	170.2	216.7	312.9
Baltimore	171.3	213.2	303.8
Boston	171.4	213.3	301.7
Buffalo	142.3	203.2	325.4
Miami	164.5	216.1	327.0
Newark	175.5	208.1	292.2
New York	155.6	216.5	308.0
Norfolk	164.8	203.2	295.9
Philadelphia	165.1	215.8	311.7
Pittsburgh	169.0	219.7	310.8
Wash., DC	185.0	223.4	309.1
PAD I avg	166.8	213.6	309.0
Chicago	154.6	219.0	344.0
Cleveland	157.6	204.0	314.7
Des Moines	152.0	192.4	303.0
Detroit	154.6	214.0	324.7
Indianapolis	149.6	209.0	313.2
Kansas City	146.3	182.3	299.9
Louisville	166.1	207.0	307.4
Memphis	153.2	193.0	304.9
Milwaukee	156.0	207.3	315.3
Minn.-St. Paul	159.4	203.4	306.4
Oklahoma City	144.2	179.6	306.5
Omaha	138.1	183.4	304.3
St. Louis	157.8	193.8	304.5
Tulsa	145.0	180.4	298.5
Wichita	145.2	188.6	299.7
PAD II avg	152.0	197.2	309.8
Albuquerque	166.1	202.5	308.0
Birmingham	154.3	193.6	304.8
Dallas-Fort Worth	149.7	188.1	299.6
Houston	143.5	181.9	292.1
Little Rock	156.2	196.4	304.6
New Orleans	165.7	204.1	297.0
San Antonio	164.6	203.0	293.0
PAD III avg	157.2	195.7	299.9
Cheyenne	160.6	193.0	299.7
Denver	176.2	216.6	308.8
Salt Lake City	154.4	197.3	303.1
PAD IV avg	163.7	202.3	303.9
Los Angeles	173.8	240.9	333.1
Phoenix	193.4	230.8	295.0
Portland	202.3	245.7	317.3
San Diego	183.7	250.8	343.1
San Francisco	182.0	249.1	360.0
Seattle	184.9	240.8	331.2
PAD V avg	186.7	243.0	330.0
Week's avg.	**162.5**	**208.1**	**310.4**
Oct. avg.	**272.3**	**317.6**	**280.9**
Sept. avg.	**322.7**	**367.2**	**280.4**
2008 to date	**297.9**	**342.1**	--
2007 to date	**232.5**	**276.1**	--

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

REFINED PRODUCT PRICES

	11-14-08 ¢/gal		11-14-08 ¢/gal
Spot market product prices			
Motor gasoline (Conventional-regular)		Heating oil No. 2	
New York Harbor	125.46	New York Harbor	180.94
Gulf Coast	119.46	Gulf Coast	176.19
Los Angeles	119.71	Gas oil	
Amsterdam-Rotterdam-Antwerp (ARA)	124.08	ARA	186.65
Singapore	116.62	Singapore	162.86
Motor gasoline (Reformulated-regular)		Residual fuel oil	
New York Harbor	124.59	New York Harbor	91.98
Gulf Coast	118.96	Gulf Coast	92.57
Los Angeles	125.71	Los Angeles	113.07
		ARA	105.74
		Singapore	89.66

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

BAKER HUGHES RIG COUNT

	11-21-08	11-23-07
Alabama	4	4
Alaska	10	11
Arkansas	57	50
California	42	40
Land	42	38
Offshore	0	2
Colorado	123	110
Florida	1	0
Illinois	1	0
Indiana	2	2
Kansas	10	16
Kentucky	12	1
Louisiana	192	165
N. Land	102	60
S. Inland waters	21	25
S. Land	19	29
Offshore	50	51
Maryland	0	1
Michigan	1	1
Mississippi	18	6
Montana	7	11
Nebraska	0	0
New Mexico	74	73
New York	5	2
North Dakota	90	48
Ohio	12	13
Oklahoma	190	199
Pennsylvania	27	17
South Dakota	1	0
Texas	885	861
Offshore	7	12
Inland waters	1	2
Dist. 1	27	22
Dist. 2	33	36
Dist. 3	64	67
Dist. 4	91	82
Dist. 5	167	181
Dist. 6	125	113
Dist. 7B	27	39
Dist. 7C	65	64
Dist. 8	127	119
Dist. 8A	31	21
Dist. 9	42	40
Dist. 10	78	63
Utah	44	43
West Virginia	34	24
Wyoming	82	67
Others—NV-7; TN-3; VA-6; WA-1	17	10
Total US	**1,941**	**1,773**
Total Canada	**400**	**391**
Grand total	**2,341**	**2,164**
Oil rigs	419	343
Gas rigs	1,511	1,424
Total offshore	62	67
Total cum. avg. YTD	**1,888**	**1,763**

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

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

SMITH RIG COUNT

Proposed depth, ft	Rig count	11-21-08 Percent footage*	Rig count	11-23-07 Percent footage*
0-2,500	85	3.5	55	5.4
2,501-5,000	136	53.6	109	59.6
5,001-7,500	253	13.4	222	26.5
7,501-10,000	447	2.6	451	1.1
10,001-12,500	419	2.1	444	3.6
12,501-15,000	384	—	288	—
15,001-17,500	166	—	116	—
17,501-20,000	74	—	64	—
20,001-over	36	—	34	—
Total	**2,000**	**6.5**	**1,783**	**8.3**
INLAND	31		38	
LAND	1,915		1,694	
OFFSHORE	54		51	

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

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

OGJ PRODUCTION REPORT

	[1]11-21-08	[2]11-23-07
	1,000 b/d	
(Crude oil and lease condensate)		
Alabama	20	20
Alaska	691	735
California	663	664
Colorado	63	68
Florida	6	6
Illinois	29	26
Kansas	107	106
Louisiana	1,137	1,163
Michigan	15	14
Mississippi	60	61
Montana	96	92
New Mexico	165	163
North Dakota	127	131
Oklahoma	178	174
Texas	1,307	1,325
Utah	54	54
Wyoming	150	150
All others	66	71
Total	**4,934**	**5,023**

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

US CRUDE PRICES

	11-21-08 $/bbl*
Alaska-North Slope 27°	93.39
South Louisiana Sweet	52.00
California-Kern River 13°	35.60
Lost Hills 30°	43.90
Wyoming Sweet	34.93
East Texas Sweet	46.00
West Texas Sour 34°	42.00
West Texas Intermediate	46.50
Oklahoma Sweet	46.50
Texas Upper Gulf Coast	43.00
Michigan Sour	39.50
Kansas Common	45.50
North Dakota Sweet	33.50

*Current major refiner's posted prices except North Slope lags 2 months. 40° gravity crude unless differing gravity is shown.
Source: Oil & Gas Journal.
Data available in OGJ Online Research Center.

WORLD CRUDE PRICES

$/bbl[1]	11-14-08
United Kingdom-Brent 38°	53.32
Russia-Urals 32°	52.15
Saudi Light 34°	51.46
Dubai Fateh 32°	52.15
Algeria Saharan 44°	55.28
Nigeria-Bonny Light 37°	57.56
Indonesia-Minas 34°	58.99
Venezuela-Tia Juana Light 31°	51.73
Mexico-Isthmus 33°	51.62
OPEC basket	54.11
Total OPEC[2]	52.34
Total non-OPEC[2]	52.01
Total world[2]	52.19
US imports[3]	50.23

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

US NATURAL GAS STORAGE[1]

	11–14–08	11–7–08	11–14–07	Change, %
	bcf			
Producing region	974	963	1,069	–8.9
Consuming region east	2,041	2,041	1,994	2.4
Consuming region west	473	468	476	–0.6
Total US	**3,488**	**3,472**	**3,539**	**–1.4**
	Aug. 08	**Aug. 07**	**Change, %**	
Total US[2]	**2,867**	**3,017**	**–5.0**	

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

PACE REFINING MARGINS

	Sept. 2008	Oct. 2008	Nov. 2008	Nov. 2007	2008 vs. 2007 Change	2008 vs. 2007 Change, %
	$/bbl					
US Gulf Coast						
West Texas Sour	23.44	7.68	7.44	12.27	–4.83	–39.4
Composite US Gulf Refinery	23.96	7.38	7.23	13.17	–5.95	–45.1
Arabian Light	22.35	6.10	4.57	10.91	–6.34	–58.1
Bonny Light	19.33	1.08	1.14	5.73	–4.59	–80.1
US PADD II						
Chicago (WTI)	25.51	12.51	3.74	9.98	–6.23	–62.5
US East Coast						
NY Harbor (Arab Med)	15.32	9.00	4.26	9.94	–5.68	–57.1
East Coast Comp–RFG	19.18	10.04	5.17	11.01	–5.84	–53.1
US West Coast						
Los Angeles (ANS)	15.14	12.59	6.65	12.85	–6.20	–48.2
NW Europe						
Rotterdam (Brent)	8.10	5.34	3.33	5.84	–2.51	–43.0
Mediterranean						
Italy (Urals)	8.42	7.00	3.54	6.83	–3.29	–48.1
Far East						
Singapore (Dubai)	3.68	2.23	0.76	5.48	–4.73	–86.2

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

US NATURAL GAS BALANCE DEMAND/SUPPLY SCOREBOARD

	Aug. 2008	July 2008	Aug. 2007	Aug. 2008–2007 change	Total YTD 2008	Total YTD 2007	YTD 2008–2007 change
	bcf						
DEMAND							
Consumption	1,693	1,715	1,933	–240	15,876	15,614	262
Addition to storage	442	430	294	148	2,300	2,228	72
Exports	58	62	62	–4	658	506	152
Canada	24	29	28	–4	372	289	83
Mexico	28	28	30	–2	252	183	69
LNG	6	5	4	2	34	34	0
Total demand	**2,193**	**2,207**	**2,289**	**–96**	**18,834**	**18,348**	**486**
SUPPLY							
Production (dry gas)	1,779	1,787	1,643	136	13,775	12,676	1,099
Supplemental gas	5	4	5	0	34	43	–9
Storage withdrawal	91	88	168	–77	2,312	2,284	28
Imports	322	319	426	–104	2,622	3,162	–540
Canada	283	284	335	–52	2,366	2,468	–102
Mexico	4	4	4	0	17	44	–27
LNG	35	31	87	–52	239	650	–411
Total supply	**2,197**	**2,198**	**2,242**	**–45**	**18,743**	**18,165**	**578**

NATURAL GAS IN UNDERGROUND STORAGE

	Aug. 2008	July 2008	June 2008	Aug. 2007	Change
	bcf				
Base gas	4,228	4,228	4,230	4,229	–1
Working gas	2,867	2,516	2,171	3,017	–150
Total gas	**7,095**	**6,744**	**6,401**	**7,246**	**–151**

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

WORLDWIDE NGL PRODUCTION

	Aug. 2008	July 2008	8 month average Production 2008	8 month average Production 2007	Change vs. previous year Volume	Change vs. previous year %
	1,000 b/d					
Brazil	88	87	87	84	3	3.8
Canada	642	627	655	697	–42	–6.1
Mexico	363	374	369	408	–39	–9.5
United States	1,839	1,856	1,844	1,748	96	5.5
Venezuela	200	200	200	200	—	—
Other Western Hemisphere	197	191	195	204	–9	–4.3
Western Hemisphere	**3,329**	**3,335**	**3,350**	**3,341**	**9**	**0.3**
Norway	250	301	288	286	2	0.6
United Kingdom	87	154	163	142	21	14.9
Other Western Europe	10	10	10	10	—	1.6
Western Europe	**347**	**465**	**461**	**438**	**23**	**5.3**
Russia	426	423	421	426	–5	–1.1
Other FSU	150	150	150	160	–10	–6.3
Other Eastern Europe	15	15	16	15	1	3.5
Eastern Europe	**591**	**588**	**587**	**601**	**–14**	**–2.3**
Algeria	360	359	355	340	15	4.5
Egypt	70	70	70	70	—	—
Libya	80	80	80	80	—	—
Other Africa	126	127	129	126	3	2.5
Africa	**636**	**636**	**635**	**616**	**18**	**3.0**
Saudi Arabia	1,440	1,440	1,440	1,440	—	—
United Arab Emirates	250	250	250	250	—	—
Other Middle East	885	885	879	870	9	1.0
Middle East	**2,575**	**2,575**	**2,569**	**2,560**	**9**	**0.3**
Australia	72	77	66	75	–9	–11.9
China	650	650	628	613	15	2.4
India	—	—	—	5	–5	–100.0
Other Asia–Pacific	180	178	179	178	1	0.8
Asia–Pacific	**902**	**904**	**873**	**870**	**3**	**0.3**
TOTAL WORLD	**8,381**	**8,503**	**8,474**	**8,426**	**47**	**0.6**

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

OXYGENATES

	Aug. 2008	July 2008	Change	YTD 2008	YTD 2007	Change
	1,000 bbl					
Fuel ethanol						
Production	20,059	19,042	1,017	140,286	97,659	42,627
Stocks	14,882	13,186	1,696	14,882	10,309	4,573
MTBE						
Production	1,549	1,671	–122	12,718	15,624	–2,906
Stocks	1,415	1,252	163	1,415	1,382	33

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

US HEATING DEGREE DAYS

	Oct. 2008	Oct. 2007	Normal	2008 % change from normal	Total degree–days Jan. 1 through Oct. 31 2008	Total degree–days Jan. 1 through Oct. 31 2007	Total degree–days Jan. 1 through Oct. 31 Normal	% change from normal
New England	491	301	467	5.1	674	470	657	2.6
Middle Atlantic	413	197	399	3.5	501	271	526	–4.8
East North Central	434	267	424	2.4	569	382	580	–1.9
West North Central	431	334	424	1.7	587	460	607	–3.3
South Atlantic	191	83	164	16.5	208	98	189	10.1
East South Central	226	136	213	6.1	243	147	246	–1.2
West South Central	106	82	83	27.7	117	83	92	27.2
Mountain	322	308	360	–10.6	442	406	543	–18.6
Pacific	135	189	186	–27.4	195	280	294	–33.7
US average*	**286**	**191**	**282**	**1.4**	**362**	**261**	**383**	**–5.5**

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

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Oil conservation starts before fuel limits take effect

The problem with conservation as an aim of energy policy is that its strongest advocates wouldn't know it if it stared them in the face. It's staring them in the face now.

Until Congress passed the Energy Independence and Security Act of 2007, conservation represented half of any energy-policy initiative discussed in polite company. The other half was renewable energy.

Suggestions that the government do something on behalf of domestic supplies of oil and gas, for example, always sprung a rhetorical trap: What about conservation? What about renewables?

EISA enshrined the preference for conservation and renewable energy with toughened vehicle fuel-economy standards and lavishly increased mandates for biofuels.

Presto! Oil consumption is falling.

The American Petroleum Institute reported on Nov. 19 that total domestic petroleum deliveries in October were down 4% from their level of a year earlier. The year-to-date decline in this important measure of oil consumption was 5%. The 19.6 million b/d consumption average for January-October was the lowest since 2000. The year-to-date rate of decline between this year and last was the largest since the early 1980s.

January-October gasoline deliveries were down 2.6% year to year.

This is conservation. This is what Congress wanted when it passed the EISA. The law must be working.

Well, not exactly. Those new fuel-economy standards that make everybody feel good about having acted on conservation don't take effect until 2011.

Conservation manifest in the API numbers reflects market responses to high prices and diminished economic activity. It's real conservation. People are using less oil than they did last year.

But conservation advocates will have trouble seeing it for what it is because the consumption decline didn't come about in direct response to law or regulation.

It should hearten them to know that the government contributed, nevertheless. Its fuel mandates, for example, imposed inefficiencies that hamper the economy and thus suppress oil consumption.

And it should delight conservation enthusiasts to know that, with US automakers pleading for bailout as new fuel-economy standards loom, and with strict climate-change legislation likely, more such recessionary goodness is on the way.

(Online Nov. 21, 2008; author's e-mail: bobt@ogjonline.com)

The Editor's Perspective

by Bob Tippee, Editor

Market Journal

by Sam Fletcher, Senior Writer

Market fears drive down prices

With the loss of public confidence because of the current financial crisis, world demand for energy is still declining even as prices fall.

The Oct. 24 decision by ministers of the Organization of Petroleum Exporting Countries to cut production by 1.5 million b/d effective Nov. 1 failed to halt the price slide. Instead, the average price for OPEC's basket of 13 crudes fell a further 25% Oct. 24-Nov. 17. OPEC ministers were to gather for consultations Nov. 29 at the meeting of the Organization of Arab Petroleum Exporting Countries in Cairo. "But there is little point in pledging new output cuts until those already agreed are implemented," said analysts at the Centre for Global Energy Studies in London.

In the interim, oil demand forecasts are being revised down and a year-on-year contraction in global oil demand in 2008 and 2009 "is now a very real possibility for the first time for 25 years," said CGES analysts.

"It took 40 months for oil prices to rise from $50/bbl to almost $150/bbl and just 4 months for them to fall back again," they said. A series of "psychological" oil price floors have crumbled since early July, and heady forecasts of oil prices above $200/bbl before the end of the year "now belong to a different world," CGES analysts reported.

However, they said, "With people fearful for their jobs and income prospects, a 25-30% fall in gasoline prices will not change their new driving habits." Growing demand for oil in Asia, Latin America, and the Middle East can no longer offset the continuing decline among member nations of the Organization for Economic Cooperation and Development, as demand for Asian-made goods falters and rampant oil demand growth eases in oil-producing countries.

Paris-based International Energy Agency slashed its 2009 demand outlook by 670,000 b/d—the largest cut in 12 years—to 86.5 million b/d, or 0.3% growth, down from its previous estimate of 8% growth. OPEC reduced its 2009 oil demand growth forecast for the third consecutive month, down by 200,000 b/d to a growth of 500,000 b/d for total world demand for 86.68 million b/d in 2009.

CGES was even more pessimistic, however, suggesting that global oil demand will fall in both 2008 and 2009. However, it expects declining demand to be offset somewhat by the lack of growth in non-OPEC supplies. "OPEC's call for support from Russia, Mexico, and Norway in cutting production is already being delivered, albeit involuntarily, with production falling year-on-year in all three countries," CGES analysts said.

"If prices fall far enough, it may be difficult to cover the operating costs of the most expensive non-OPEC production, Canada's oil sands." These costs may be no higher than $30/bbl, "but will fall further as the cost of generating heat for the extraction process falls," they said.

CGES analysts said a new floor price for oil "presumably lurks at the level at which OPEC's members are prepared to sacrifice potential sales and turn customers away unfulfilled, or at which high-cost non-OPEC production begins to be shut in. Oil prices will continue to fall until one of these breakpoints is reached."

Among the incidents to watch, said CGES, are signs of a shut-down of oil-sands production projects in Alberta and OPEC's response to a deteriorating global economic situation and US President-elect Barack Obama.

Pirates slow supplies

On Nov. 15, pirates hijacked the Sirius Star, a very large crude carrier owned by Saudi Aramco and operated by Vela International, 450 nautical miles off Kenya—the farthest out to sea that modern pirates have ever struck. As company officials negotiated to ransom the vessel with its crew of 25 and a cargo of 2 million bbl of oil, an Indian warship attacked and sank a pirate "mother ship." A multinational naval force is patrolling waters between the Arabian Peninsula and the Horn of Africa where pirates recently have become bolder and more violent.

Still, the AP Moller-Maersk Group, one of the biggest shipping companies with a fleet that includes tankers, plans to route its vessels beyond the Gulf of Aden waterway that the pirates have been raiding. Frontline Ltd. is considering doing the same with its fleet of VLCC tankers.

"If Frontline or other owners embark on the same deviation, it will not only increase voyage time and cost but will also result in a build up of stock at sea that will need to be added to the demand equation," said Olivier Jakob at Petromatrix, Zug, Switzerland. "The longer supply line would also result in a lower stock security cover for Europe."

(Online Nov. 24, 2008; author's e-mail: samf@ogjonline.com)

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- ✓ Ensure flawless functionality of system components after cementing
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Results:

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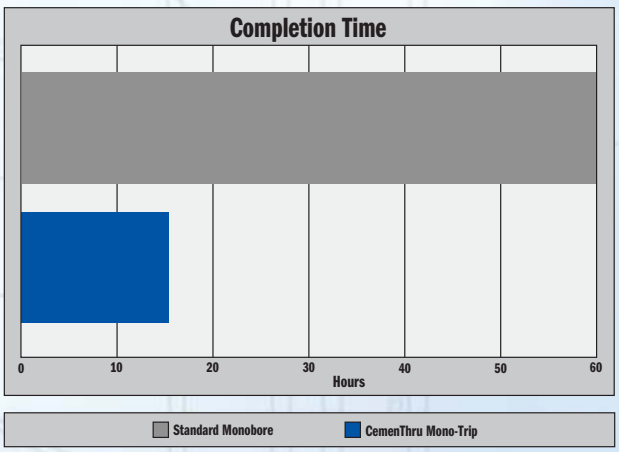

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Customer: Cimarex Energy

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  - ✓ Hole inclinations up to 15°, with DLS of 10°/100 ft
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Solutions:

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  - ✓ Optimized for formation and BHA
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Results:

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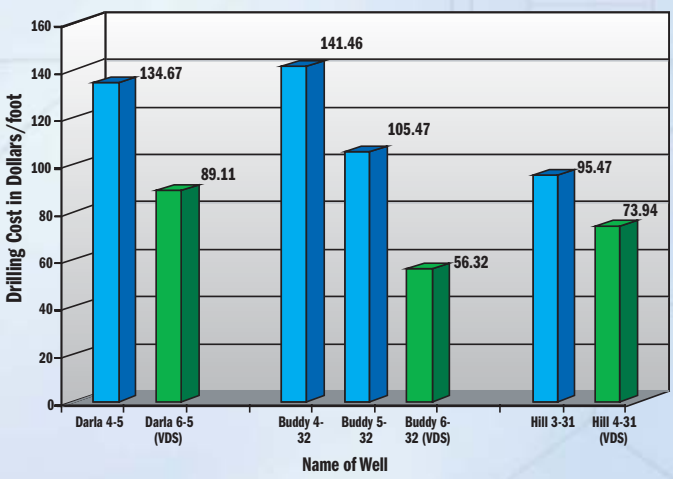
- ✓ VertiTrak system with Genesis XT bits saved an average of $150,000 per well, for $2.5 million total savings



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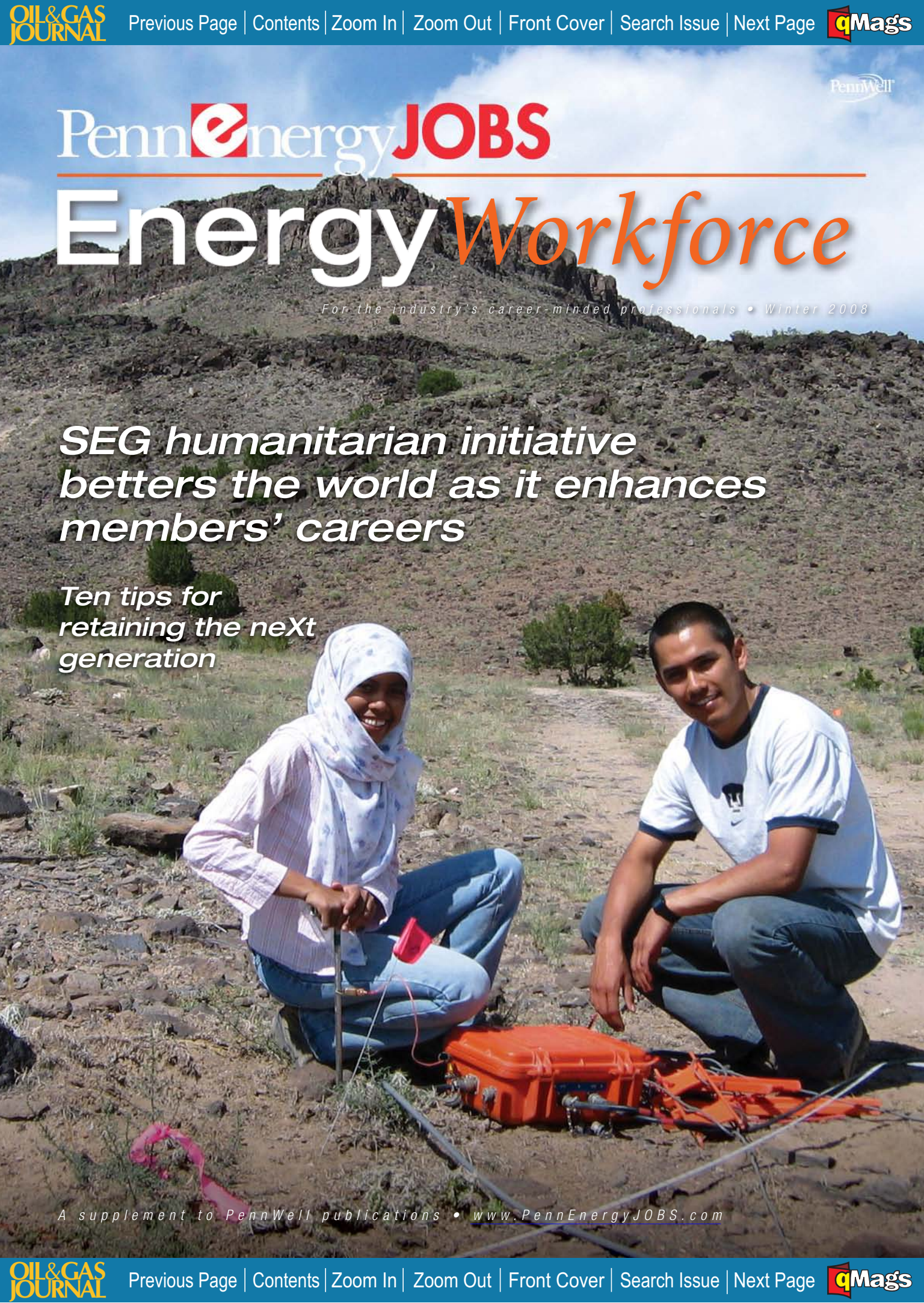
For the industry's career-minded professionals • Winter 2008

SEG humanitarian initiative betters the world as it enhances members' careers

Ten tips for retaining the neXt generation



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On the cover: Students Yusliza Sufian and Jose Carrillo-Rangel are in the field acquiring electromagnetic data for groundwater applications during a Summer of Applied Geophysical Experience (SAGE) field camp in New Mexico in July 2004. Such projects involving geoscience students will increasingly be directed toward communities in need under the new SEG (Society of Exploration Geophysicists) Foundation program Geoscientists Without Borders, which is profiled in an article beginning on p. 4. SAGE is a unique educational program designed to introduce students in geophysics and related fields to "hands-on" geophysical exploration and research. SAGE is hosted by the Los Alamos National Laboratory branch of the Institute of Geophysics and Planetary Physics, University of California, and supported by SEG and other organizations. Photo by Matthew Ludwig courtesy of SAGE.

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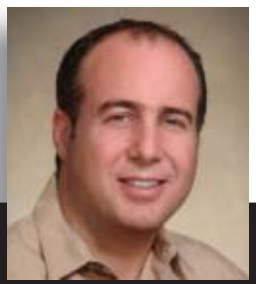
Telecommuting benefits outweigh negatives



Dear Reader,

How effective would you be in your job if you worked at home?

Some of us would see productivity gains; others would fare better in an office setting.

The high costs of transportation fuel has many companies reviewing their policies for flexible working arrangements and telecommuting. And with good reason.

The Consumer Electronics Association conducted a study recently that found that telecommuting has "terrific" potential for reducing US energy consumption. Presently, 3.9 million people in the US work from home at least 1 day a week. With the average commute put at 22 miles, this saves 840 million gallons of gasoline per year—but that's against total US gasoline consumption of 146 billion gallons/year.

Telecommuting at least part of the time makes workers more productive and happier at their jobs…[and] retention is probably the No. 1 staffing concern in the energy industry. So even if the energy savings and environmental benefits aren't enough justification, that would be the clincher in convincing management to be more flexible on the issue.

However, CEA also found that as many as 53 million people *could* telecommute. Even at just 1 day per week, that works out to an 8% reduction in annual gasoline use.

The study found that the current level of telecommuting saves the equivalent energy of the amount of electricity used by about 1 million US households each year. It also reduces carbon dioxide emissions equivalent to removing 2 million vehicles from the road every year.

The CEA study took into account increased home-based carbon emissions resulting from telecommuting and found that they were more than offset by the savings in gasoline consumption and, in some cases, part of the energy consumption associated with commercial office space.

But if millions more workers started telecommuting 1 or more days per week, it would represent a sea change in the American workplace. Concerns have been raised by management and staff alike as to what widespread telecommuting would do to the workplace. Some managers remain concerned about worker productivity and team interaction. Some workers worry about career prospects and the intrusion of work into the home space.

A recent study by Penn State University revealed some interesting findings about the purportedly negative aspects of telecommuting. The study found that, overall, it improved productivity, enhanced morale, reduced conflicts between work and family, did not damage career prospects, and did not—if limited to 1 or 2 days—harm workplace relationships.

The key finding of the study is that telecommuting gives employees a sense of freedom or greater control over their work environment. From this the other benefits flow. There seems to be inherent limits, however. According to the study, working from home more than 2 days a week, while still benefiting the family, tended to have a negative effect on workplace relationships. And managers have to adapt to this new workstyle; micromanagers will have the biggest challenge.

Still, the results of the study are clear: Telecommuting at least part of the time makes workers more productive and happier at their jobs. As articles in this publication have shown, retention is probably the No. 1 staffing concern in the energy industry. So even if the energy savings and environmental benefits aren't enough justification, that would be the clincher in convincing management to be more flexible on the issue.

Sincerely,

Publisher & Director of Recruitment Advertising

America's 'invisible' energy efficiency boom

Tucked into the massive $700 billion bailout—uh, "economic rescue" plan—that Congress passed and President Bush signed into law in early October was a pretty hefty wish list for proponents of greater energy efficiency. These new energy efficiency tax provisions include:

- Extending the tax credit for efficient furnaces, boilers, air conditioners, water heaters, and insulation and window upgrades for existing homes.
- Extending the new energy-efficient home tax credit 1 year.
- Providing 3 years of manufacturer tax credits for sales of high-efficiency refrigerators, clothes washers, dishwashers, and dehumidifiers.
- Extending the commercial buildings tax deduction to yearend 2013.
- Adding a new tax credit for plug-in hybrid vehicles.
- Adding a new 10% investment tax credit for combined heat and power systems.
- Extending fuel cell and microturbine credits to yearend 2016.
- Accelerating depreciation for smart meters and smart grid systems.
- Establishing a new energy conservation bond program to help local and state governments fund energy conservation efforts.
- Extending an existing bonding program for green buildings and sustainable design.

The National Electrical Manufacturers Association applauded the passage of these tax provisions, noting that some "provide the private sector the needed longer-term certainty for business investment and planning…."

If NEMA is happy, then the American Council for an Energy-Efficient Economy must be positively giddy. ACEEE describes energy efficiency as America's "invisible" energy boom, having slashed US energy consumption per dollar of economic output in half since 1970, from 18,000 BTUs to about 8,900 BTUs in 2008.

ACEEE contends that energy efficiency is underdeveloped and that the US could cost-effectively reduce energy consumption by another 25–30% during the next 25-30 years. (One presumes that is measured in BTUs per dollar of GDP again, not in absolute terms.)

ACEEE also claims that the $300 billion the US invested in energy efficiency in 2004 was triple the amount invested in traditional energy infrastructure.

Turns out that $300 billion represents "the full cost associated with the efficiency technology investments, including the base cost of the technology needed to simply maintain previous levels of energy intensity, as well as the incremental cost needed to provide the increased level of productivity," according to ACEEE. Well, OK then.

Energy efficiency by itself is no more a silver bullet to solve our energy woes than any other single solution. At a time when the whole world is staring into an economic abyss, any energy solution has to be pay for itself in fairly short order.

In any event, promoting further energy efficiency gains is certainly laudable, but the key here is ACEEE's reference to cost-effectiveness. Energy efficiency by itself is no more a silver bullet to solve our energy woes than any other single solution. At a time when the whole world is staring into an economic abyss, any energy solution has to be pay for itself in fairly short order. For example, Consumer Reports advises against buying costly tankless water heaters because they won't pay out before they give out, despite their 22% energy savings.

The omnibus bailout bill pays for these energy efficiency tax credits in part by shaving some standard business tax credits from oil and gas companies. That's billions of dollars that won't be invested in finding and producing more oil and gas, which of course, carries its own short-term and long-term costs.

If we're going to rob Peter to pay Paul, let's make sure Ponzi isn't in on the deal too.

Bob Williams,
Managing Editor

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SEG humanitarian initiative betters the world as it enhances members' careers

The Society of Exploration Geophysicists Foundation has embarked on an ambitious new program that deepens the foundation's involvement in humanitarian activity—and by turn, SEG members' commitment to giving back to the world community.

Geoscientists Without Borders is designed to benefit disadvantaged communities by funding projects that apply geophysical and geoscience technologies to meeting community needs. These humanitarian projects are intended to create a brighter future for communities in need while raising the profile of applied geoscience. Universities and students will be heavily involved.

The seed for the program was planted in a response to the horrific December 2004 Asian tsunami that killed more than 230,000 people and displaced millions more.

Geophysics played a role in helping recovery efforts of local populations. For example, Germany's BGR (Federal Institute for Geosciences and Natural Resources) conducted a post-tsunami helicopter electromagnetic survey along the coasts of Aceh, northern Sumatra, to discriminate between fresh-water and saltwater aquifers, according to Geoscientists Without Borders committee member Louise Pellerin of Green Engineering Inc.

"Saltwater intrusion occurred close to the coast as a result of the tsunami, and deep saltwater occurrences—particularly around 30 m depth—were mapped up to several kilometers inland," she said. "Based on the survey results, recommendations were made to locate shallow, hand-dug wells and medium-depth (60 m) water wells."

Program details

Geoscientists Without Borders was largely the brainchild of Craig Beasley, a Schlumberger executive who was SEG president for 2004-2005 and who had exhorted his fellow members to help the tsunami-devastated communities of Asia with a call to action that "we have a significant contribution to make as geophysicists."

Schlumberger stepped up to launch Geoscientists Without Borders with a funding commitment of $1 million in late 2007.

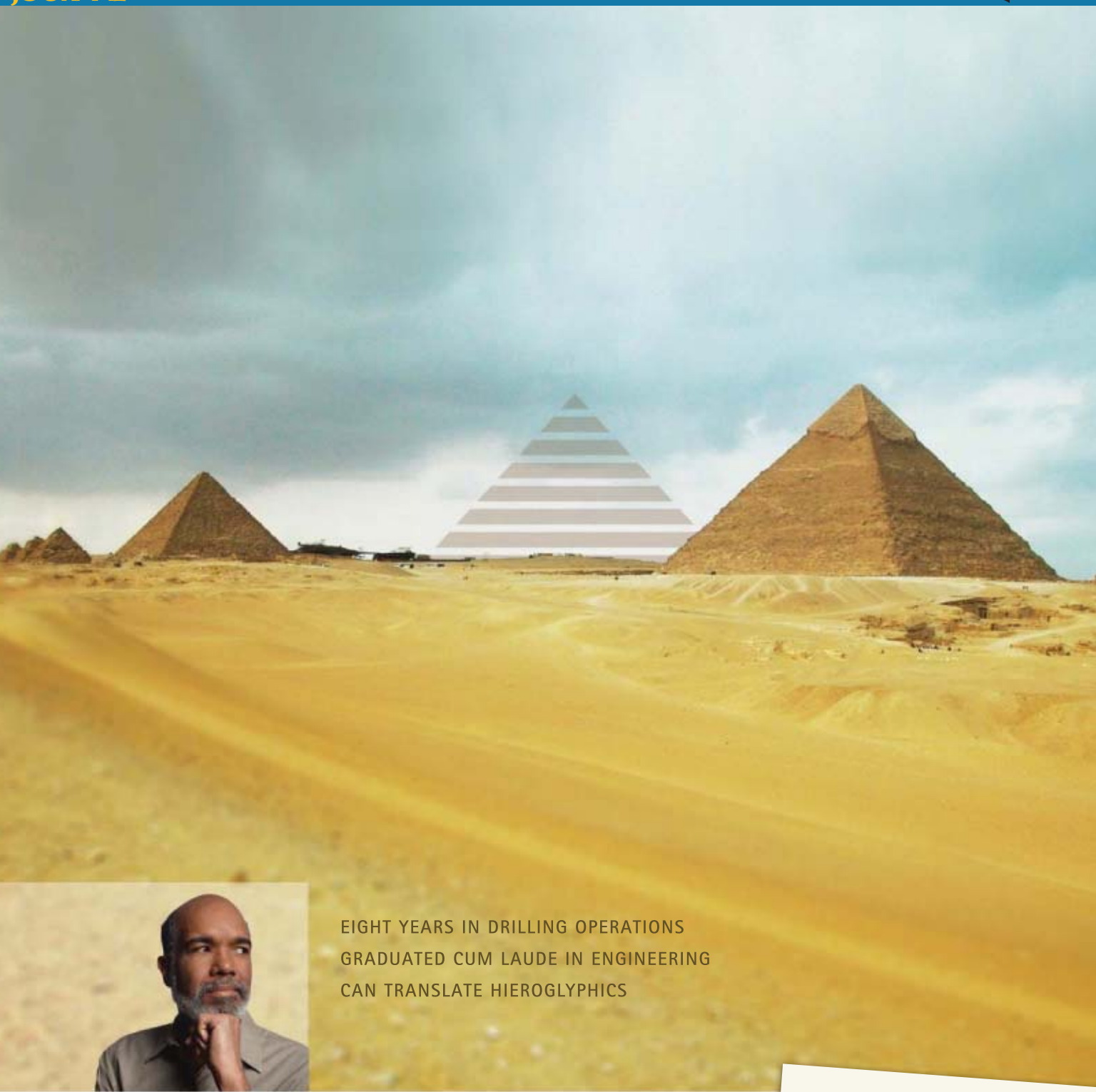
The SEG Foundation program was launched in May 2008, when the request for first-phase project proposals was published and a July 2008 deadline set.

Program committee members have recommended the first two projects for award, and those details were to be announced after this publication's presstime, at the foundation's donor luncheon at SEG's annual meeting in Las Vegas in November. The second round of first-phase proposals was due for submissions in early October, and those recipients would be announced in December 2008 or January 2009.

Qualifying projects will be required to demonstrate that they will deliver humanitarian and environmental benefits through application of geophysical and geoscience expertise. These benefits could include a wide range of projects, such as locating fresh-water supplies, pollution remediation, natural hazard detection, manmade hazard

"We are proud to be able to help establish a program that will focus on humanitarian applications of geoscience and inspire students to use their skills in the geosciences to make the world a better place."

— Dalton Boutte, WesternGeco



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mitigation, sustainable resource development, and related education. Anyone interested in applying for grants or offering their services as mentors should visit the SEG website at http://www.seg.org/foundation.

SEG is the global professional organization dedicated to advancing the science and technology of applied geophysics. It serves more than 30,000 members and student sections at 204 academic institutions worldwide. Members are involved in oil and gas, mining, environmental, and other industries and research efforts that benefit from applied geophysics.

The SEG Foundation is the society's charitable organization dedicated to advancing the mission of the society through grant and award programs. The foundation provides scholarship opportunities, travel grants, and funding for field camp programs and other projects of merit made available to student members worldwide, as well as global education programs for practicing members.

Program benefits

Beasley, a vice-president of WesternGeco, a business segment of Schlumberger, and chair of the SEG Foundation Committee for Geoscientists Without Borders, concurs with the view that volunteer and charity work enhances the career of a petroleum professional.

"Like many people in the petroleum industry, I have had the opportunity to travel extensively and experience firsthand the poverty in underdeveloped parts of the world," he said. "I think it has an effect on all of us when we live and work with people coming from these circumstances. So it is gratifying to do something that can directly improve the lives of people in need."

Beasley also acknowledges the benefits to the industry that result from petroleum professionals "giving back"

"Certainly having visibility in helping people improves a company's image—for any type of company," he said. "But one of the most important aspects of the Geoscientists Without Borders program is that it establishes links on a global basis among professionals, their companies, students, universities, and people in need. This direct, person-to-person contact can have a large effect on perceptions of the petroleum industry."

Dalton Boutte, executive vice-president of Schlumberger and president of WesternGeco, underscored the Geoscientists Without Borders program goals in announcing his company's funding commitment to the SEG Foundation: "When we looked at the technologies we have developed in the oil and gas sector and the potential benefits to humanitarian efforts, we were interested in enabling these applications through interaction with the academic community, students, and the SEG Foundation.

"We are proud to be able to help establish a program that will focus on humanitarian applications of geoscience and inspire students to use their skills in the geosciences to make the world a better place."

Academia benefited

Students and universities also benefit from the important role they will play in the success of the program. Students will benefit personally through the experience of planning and executing such projects.

According to Gabriel Borges, outgoing 2007 president of the SEG Student Section at the University of Oklahoma, "The program represents a great opportunity for geoscience students to provide an early contribution to the professional community while building their technical

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— Dalton Boutte, WesternGeco

skills and assuming a leadership role in the global fight for human dignity in these disadvantaged communities."

The Schlumberger commitment to the program was made to the SEG Foundation's major gift campaign, *Advancing Geophysics Today, Inspiring Geoscientists for Tomorrow*. SEG Foundation Board Chairman Gary Servos noted the importance of this new investment in the future of geophysics: "SEG Foundation has a long history of supporting students and universities engaged in the study of applied geophysics. We are proud to work with Schlumberger to raise this engagement to a new level. Geoscientists Without Borders will strengthen university programs, introduce students to the practical and humanitarian benefits of geophysics and geoscience, and make a difference to the quality of life in many of the world's most disadvantaged communities." —EW

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Ten tips for retaining the neXt generation

Justin G. Roy, SullivanKreiss

Generations X and Y will continue to challenge us as firm owners and managers; they will test the waters and will sometimes go overboard.

However, their style is here to stay, and trying to fit them into the what-worked-before model will only cause headaches

Of course, we all know there are fewer people in the next generations, making it that much more important to focus on recruiting and retaining them. How can a firm overhaul its entire approach to employee recruiting and retention when half their staff is still sold on and used to the old way? Baby steps, that's how.

Here are some tips to implement into your day-to-day retention strategy.

- **Encourage them to use online social networks.** Take the site-block off of MySpace and Facebook and LinkedIn. These sites offer more than one would think; besides a good way to blow off steam during the day (we all need a 5-minute break), they offer much more. As online social networking grows, these sites become much larger hubs of information, which, when used correctly, can benefit your firm. The sites allow people to keep in touch and see what their friends and connections are up to. Within a few minutes, you could know who is looking to make a job change (great recruiting strategy), who is relocating to your area, what firms are hiring, etc.

- **Flex time.** The option to come in early and leave early or come in late and leave later is very appealing to these generations. Some are trying to balance a social life, while others are trying to balance their family life. Offering your employees the benefit of arriving at work an hour early or later gives them the flexibility to schedule "life issues" such as daycare, eldercare, or doctor appointments. With this flexibility also comes a great benefit to the employer; it allows the employee to be in the office for a "full shift" rather than having to take extra time off for an appointment.

- **Flex office.** "If I can get it done, and get it done well, why does it matter where I work?" From working at a coffee shop to working from home, the technology age has allowed us to be more mobile than ever. Put together a laptop, cellular telephone, and an internet connection, and you have an instant office. In fact, most people will never know that you are not in the office (with calls forwarded to the cell phone).

- **Reward based on merit.** More and more people in the workforce do not believe in the old equation of time put in = promotion. They look at their individual contribution to the company and to the team as a metric for promotion and merit rewards.

- **Be a socially conscious organization.** "Sustainability" and "green" are the hot words today. The younger generations are very interested in social and environmental happenings, both through the media as well as through their employer. Communicate what your firm does to better society and benefit the environment. If you come up empty-handed, ask your employees to come up with a program. It can be as simple as volunteering at a reading program, spending a day rebuilding or renovating a house for somebody in your community, planning ways to make your office "green." Get everybody involved, and you create emotional equity, making it a bit more difficult for these folks to leave your firm.

- **Training.** Offer opportunities for your staff to further their knowledge, for work-related functions as well as career-focused training. People are always excited and interested in furthering their knowledge and see it as a huge benefit when a firm offers these courses. If you cannot afford to hold them at your office, send candidates out to a training program for a day or two out of the office; when they come back, ask them to make a presentation to the rest of the company about what they learned.

- **Management style.** Flat-line management is top choice lately, and for a lot of good reasons. How many times have you been on top of—or at the

bottom of—a delivered message, only to find out the end person heard a very different version? This is a good example of the telephone game.

- **Spend time and mentor.** Make sure you spend time with every employee, on a project, by the water cooler, or even at a one-on-one lunch. These conversations will help others understand who and what management is and will help you create a bond with your employees. The same adage goes with being a manager as it does with networking: If you do not know three things about the other person that are not work-related, then you need to rethink your style.

> *"Take the site-block off of MySpace and Facebook and LinkedIn. These sites offer more than one would think; besides a good way to blow off steam during the day (we all need a 5-minute break), they offer much more. As online social networking grows, these sites become much larger hubs of information, which, when used correctly, can benefit your firm. The sites allow people to keep in touch and see what their friends and connections are up to. Within a few minutes, you could know who is looking to make a job change (great recruiting strategy), who is relocating to your area, what firms are hiring, etc."*

- **iPod Friday.** Quite a few firms have been banning the use of iPods in the office, noting the loss of collaboration opportunities between colleagues, loss of communication, and missed mentoring opportunities that could have been seized by simply listening to more experienced staff in

'Sustainability' and 'green' are the hot words today. The younger generations are very interested in social and environmental happenings, both through the media as well as through their employer. Communicate what your firm does to better society and benefit the environment. If you come up empty-handed, ask your employees to come up with a program. It can be as simple as volunteering at a reading program, spending a day rebuilding or renovating a house for somebody in your community, planning ways to make your office 'green.' Get everybody involved, and you create emotional equity, making it a bit more difficult for these folks to leave your firm."

the office. The younger generations, however, justify the use of iPods, saying they help concentration, allow them to be more creative, and help get the job done faster. Allow your employees to bring in and wear their iPods on Friday (or another day). Make known the expectation that it should not hinder their work or ability to get the job done. Of course, guidelines will need to be set, such as volume (so they can still hear the telephone), but try to work with rather than against them.

- **Gym membership.** Offer discounted or free membership to a local gym, or build your own. While our belts seems to be getting tighter by the day, this generation is growing up with the overhaul in the fast food industry. Ask any of them who Jared (Fogle) is; I bet you they will mention Subway. Take a look at the McDonald's menu now—they are offering fruit and milk Obesity and healthy eating are today's headlines. I have seen this benefit sway a potential employee to

signing the papers with one company versus the other. It is also no secret that healthy employees tend to take less time off and have fewer health problems. This benefit is one that can add to your bottom line.

Are some of these ideas and tips extremely wild? Of course they are. But so is the next generation. Being proactive on retention today will yield a much higher return than the firms who are reactive tomorrow. —EW

The Author:

Justin G. Roy is the chief operating officer of SullivanKreiss, a national executive search firm that serves the engineering, environmental consulting engineering, planning, architecture, and landscape architecture sectors. He is responsible for the management of recruiting operations, along with client and project development. Roy also advises clients on recruitment strategy, compensation, relocation, outplacement, and other human resources issues. He is also the cofounder of Networking for a Cause, a non-profit organization dedicated to raising awareness for non-profits and like-minded people. Roy has a BA in international business with a concentration in Spanish studies from Assumption College in Worcester, Mass. He was the recipient of the 2004 Crown and Shield Award for his civic and global service and leadership.

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Strategies to Address the Problem of Exiting Expertise in the Electric Power Industry

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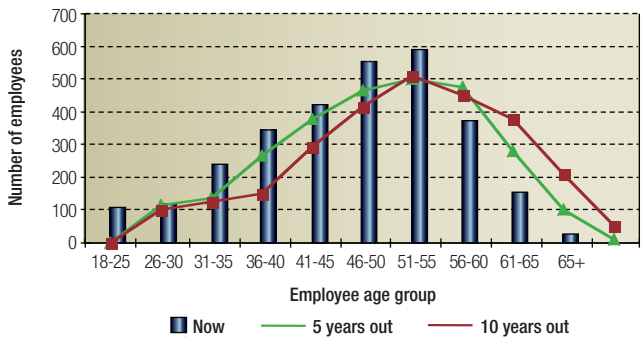
Retirements, restructuring, and technology changes are producing an accelerating exodus of expertise from the electric power industry. In this article, the authors review the major approaches to address that challenge: managing available resources, outsourcing, automating, recording, and educating. The approaches may all be used in a comprehensive strategy to overcome exiting expertise. Each approach has different implications for the resources needed to be successful. The responses to date have not been sufficiently comprehensive and of adequate scale to address the looming workforce losses. The authors contend that the needed leadership by executives, policymakers, and academia to comprehensively address the expertise exodus challenge will be enhanced by a better understanding of the diverse approaches and of where effective intervention with sufficient resources is needed.

The coming mass exodus of expertise in technicians and engineers in the electric power industry is a well-expected phenomenon. The loss has been the subject of workshops, conferences, and symposia. It has been the focus of work by industry professional societies, the National Academy of Engineering, and the National Science Foundation. A better understanding of the scale of workforce needs is being studied: IEEE's Power Engineering Society has begun a detailed study of the workforce environment in the electric power delivery industry in North America, as has already occurred in other countries.

Manpower issues are increasingly listed among top strategic concerns of industry executives. The principal reason for the expertise exodus is the aging workforce.

Fig. 1. The aging of the utility workforce



Source: KEMA analysis

Fig. 1 illustrates the distribution of ages in the utility workforce now and in 5 and 10 years. The Nuclear Energy Institute estimated that 73.2% of direct employment in the nuclear generation sector is between the ages of 43 and 57 and that 28% of those employees will retire within 5 years, with another 18% leaving for non-retirement reasons. The prediction by Keith Mueller is that the "tipping point" in accelerating retirements will come at the end of this decade. Some utilities report that as much as 40% of their employees will be eligible for retirement in the next 5 years; however, the average may be more on the order of 20% over the next 5 years and 50% over the next 10 years. Besides retirements, other reasons for the exodus include industry restructuring and internal reorganizations.

Actions being taken in response to the rapidly approaching tipping point are summarized in four approaches:

- Human resource management—identification and evaluation of knowledge and skills at risk and strategies to address the risk.
- Automating—applying technology to complete tasks.
- Recording—putting knowledge into accessible records.
- Educating—transferring knowledge to the next generation of engineers and technicians.

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The responses to date do not seem to be sufficiently comprehensive and of adequate scale to address the looming workforce losses. Technology deployment does not appear fast enough. University power programs face significant shortfalls in resources and faculty. In sum, the needed leadership by executives, policymakers, and academia to comprehensively address the expertise exodus will be enhanced by a better understanding of the diverse responses and of where effective intervention with resources can occur to make a difference in addressing the expertise exodus problem.

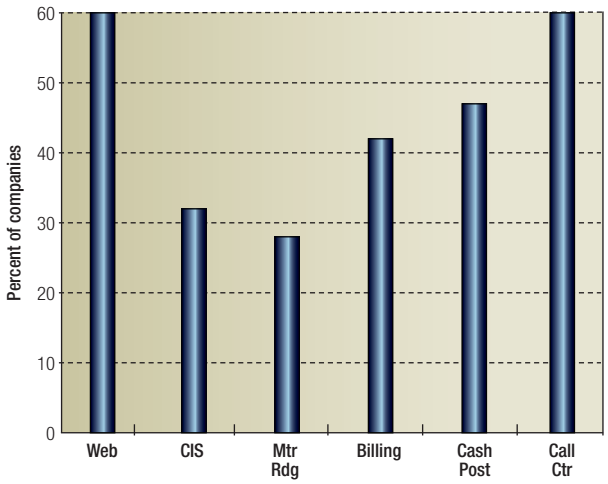
Human resources management

The human resources issues associated with an aging workforce require new practices and policies around recruitment, retention, and other traditional human resources concerns. For operations management, the challenges can require daily juggling of resources and priorities based on workload, emergencies, manpower availability, and many other variables. These are not new challenges for operations and engineering organizations; however, the added variables of shrinking workforce and diminished organizational experience compound current decisionmaking and prioritization challenges—and thus increase the probability of important work being done as a lower priority, to a lower standard due to lack of time and expertise, or at higher costs. These are not acceptable options, so risk mitigation is critical.

There are strong parallels to be made between the focus of the industry today on asset management strategies and the challenge the industry faces in managing the aging workforce. Both issues are fundamentally rooted in the need to develop operating strategies and practices that optimize the available resources. This could mean scarce financial resources for system expansion, improvement, and maintenance. It also could mean scarce human resources (and experience) for daily work management and task completion.

One asset management philosophy, described by Richard Brown and Bruce Humphrey, identifies three primary areas of competency for a robust asset management structure: management, engineering, and information. Workforce management must consider people, processes,

Fig. 2. Outsourced utility functions in 2003



and technology. To optimize the human capability within the organization, that capability must be inventoried and evaluated. In addition, an assessment is needed of the business processes and technologies supporting those processes. This comprehensive evaluation offers both the challenge and opportunity to identify operational strengths and weaknesses and to prioritize the areas requiring immediate action. As with asset management, workforce management requires a comprehensive understanding of the current condition, the areas of greatest risk, and the timing of required actions.

Management skills

Operations management today faces the challenges of workforce attrition, aging physical infrastructure, rapidly changing technology, increasing customer expectations for reliable service, and continuing cost pressures to maintain acceptable financial performance of the company. Significant workforce attrition due to retirements is an additional factor to be addressed as part of a holistic management approach to business operations. Such a comprehensive approach involves the study and consideration of all tools available to management to meet the company objectives, not solely the human resources component. The business processes and technology currently in place combine with the human element to create a complete business operations and management system. When addressing a specific change in one element of the system, it is necessary to consider all elements of the system. Attrition due to an aging workforce can be a driver for improving overall operational efficiency through a comprehensive review of how people, processes, and technologies are used.

During the 1990s, in their efforts to contain costs and increase efficiencies, utilities endeavored to "reengineer" business processes, and replace or install information technology systems to support the newly designed processes. The practice of "reengineering" evolved to "business process management," and then to "operational innovation." The concepts underlying these practices have a place in the overall strategy to manage the aging workforce challenge. Activities such as codification of information, knowledge management system creation, business process redesign, work process automation, and outsourcing are all elements of a comprehensive strategy. The issue for management is how to best use these tools and activities.

Outsourcing

Utility companies have used outsourcing as a tool to supplement the permanent workforce and manage peaks in workload. Here, outsourcing refers to temporary employees and contract labor forces. For example, utilities often supplement construction and maintenance forces with line construction contract companies. The contractors can be used as workload dictates, and the company workforce can be used primarily for critical operations activities. Similarly, temporary workers have been used to supplement many operations functions when workload dictates the need.

As a temporary workload management option, outsourcing has been a normal operating process. But what about outsourcing work as a permanent operating practice? Can this be successful? Is it confined to specific functions, and what are they? How do we determine when and how to apply outsourcing as a primary tool for workforce management? These are all questions that should be answered for outsourcing to be a more permanent solution to workforce attrition due to aging.

Because retiring employees often have an interest in continuing their professions, outsourcing sometimes takes the form of contracting with former employees. This approach avoids significant loss of institutional knowledge, but it creates a change in the fundamental business relationship between company and employee. While this can be a non-issue, it must be addressed to ensure thorough understanding of the expectations of both parties. Complete outsourcing of selected business processes is an option in addressing exiting expertise. As illustrated in Fig. 2, certain administrative functions are already outsourced by many utility companies, and because the industry

spends an estimated $19.1 billion on selling, general, and administrative functions, there are many vendors who offer comprehensive outsourcing options. The outsourcing of engineering and operations activities is more complex, however, because those activities involve critical tasks associated with electric system integrity.

Task and skill analysis

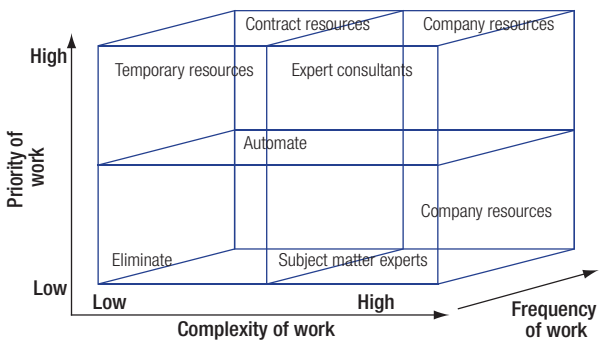
As utility companies evaluate their needs, resources, and capabilities, they ultimately consider the tasks to be performed within an organization and the skills required to proficiently execute those tasks. This is fundamental job-task analysis. Most often the existing paradigm is to base workforce planning on in-house execution of the expected or average work load and to manage workload peaks by exception, either through overtime, temporary personnel, or contractors. This is a tried and proven approach, but not necessarily the most effective approach when considering limited resources and lack of requisite skills in any given task area. The challenge is to consciously and actively evaluate specific job requirements to determine what workforce management philosophy best suits the needs of the company or offers alternatives that facilitate achievement of multiple operating objectives.

In the utility industry this may involve determining which operating tasks contractors can perform and which tasks company employees must always perform. The determinants may be issues of safety, security, knowledge, or skills, among other considerations. In an engineering organization, for example, this may involve decisions on whether company employees, contract engineers, or consultants should do design, planning, or forecasting tasks. The analysis also forces consideration of what skill level is required of in-house employees for specific processes and job tasks.

A structured approach to process analysis involves evaluation of the business process and tasks from several perspectives. One approach is a formalized job-task evaluation that includes assessment of what tasks are priorities, what skill

level is required, and how often a task is performed. Once these parameters are established, an evaluation can be made of what would be the most efficient and effective manner of task completion. Fig. 3 represents a model for evaluating tasks and options for completion.

Fig. 3. Process evaluation model



For example, a low-complexity, high-frequency, high-priority process would be an excellent candidate for system automation. Consider remittance processing as an example of a process that meets this description. Every day, companies handle thousands of customer payments that require immediate handling to properly reflect the customer's payment as well as to optimize revenue collection for the company. This process was automated years ago in most utilities and has evolved to electronic payment capabilities to further accelerate the process. Automated meter reading is an example of a current generation business process that is being evaluated against these criteria with decisions being made on how to best allocate limited resources. In the past, a primary driver for initiating process change was improving the efficiency and reducing the cost of operations. With the aging workforce, the driver for initiating process change is different, but the manner in which the issues are addressed can be similar, if not the same.

As with all elements of work management and manpower planning, there is no one right solution for all operations. The framework for analysis, however, is useful in forcing discussion and rigorous consideration of all options available to management to meet overall business objectives. At the very least, the evaluation provides inputs to a business decision process addressing the optimal utilization of financial resources.

The evaluation of work processes, options for carrying out those processes, and overall effectiveness of the organization provides information for a business case analysis. Again, applying the premise that the objective is optimal resource utilization, the analysis must consider the question of effectiveness of resources consumed, or more directly, what "bang for the buck" is being achieved. Is it more effective to buy an employee's services with all the additional costs of training, benefits, and facilities, or is it more effective to buy services from a vendor? Or a third option may be to buy a technology to do the work. All of these issues carry different weights and priorities in different companies, and management must determine what best suits their culture, business model and service delivery objectives.

Automating

One of the process management options to be considered, as illustrated in Fig. 3, is automation or the application of technology to complete tasks. A comprehensive evaluation of technology available to support business processes is a fundamental element of process design and, in the case of replacing an aging workforce, technology can be an important element of a comprehensive strategy. Recent industry events as well as operating policies mandated by legislation demand more sophisticated technological tools and solutions in the industry.

As processes and operations become more dependent upon automated solutions, the importance of human skills to use and support the technology increases significantly. It is not enough to understand the business processes, rules, standards, procedures, or science associated with a job function. The employee must also have a working knowledge of the technologies or applications that are used to support or perform the job functions. Each technological innovation requires some new degree of skill by the employee using or depending on the technology. Even without an aging workforce issue, the increasing use of technology for operations and management demand new skills in the workforce

The aging workforce again may be the catalyst for automation that, until now, has been considered too expensive, too complex, or just too new. As the aging workforce "tipping point" approaches, management should consider what additional business functions or opportunities exist with the application of a particular information technology. With the automated meter reading example, if the intent is simply to perform the meter reading function as a cost-reduction initiative, the business case is generally weak; however, the business case is improved when management considers

that value of the expanded functionality available through the technology for load control functions, customer data gathering, and a number of other activities that could drive additional business revenue opportunities or reduce other costs in addition to the labor for reading the meter.

Utilities have over the past decade greatly increased the use of new technologies in operating processes. Automation expenditures—about $700 million in 2005—will fall into two principal areas: real-time automation and controls, and geospatial and field automation. Expenditure growth rates are on the order of 20–30% per year. Geographic information systems, substation automation (SCADA), AMR, mobile work management, outage management, load control systems, and CMMS are all widely deployed in the industry.

A common issue, however, is the integration of the various applications both from an information technology perspective and a business process perspective. Many automated systems have been implemented to support a narrowly defined process that is confined to one function or organization. The future need to address the exiting human expertise as well as the need to be operationally efficient and effective will drive an integrated approach to technology across all operational functions and organizations. This requires a high-level technology roadmap that identifies the overall strategy and direction for using automation in the organization. Developing the roadmap is another fundamental element of a comprehensive business operations plan.

The financial evaluations of new technology applications also require a slightly different approach compared with traditional methods. Cost-benefit analyses would show that the costs of many automated tools are still too high to justify their adoption. In using automation to replace aging workers, the analysis must go beyond the immediately identifiable costs and consider the implications of not implementing the technology for the future. The technology business case must quantify and evaluate this risk factor in order to fully address the issue.

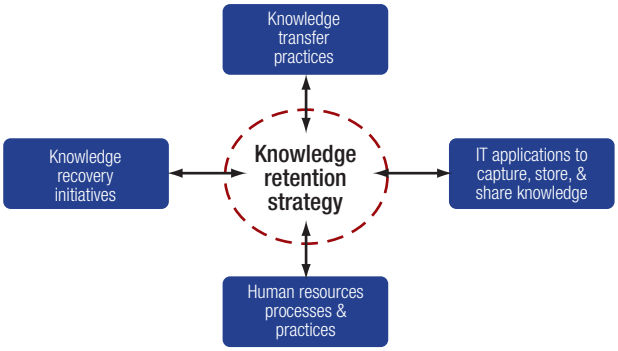
Implementation and operational reliance on technology or automation presents human resource issues in the areas of recruitment, retention, and employee skills. As companies work to recruit and retain new workers, they are continually competing for technologically savvy workers who do not think of the electric utility industry as a center of sophisticated technology applications. How much more successful can utilities be in recruiting and retaining workers if the technology used to engineer, operate, and maintain a power grid is leading-edge, both for the industry and in development of automated tools in general? It is safe to assume that the odds of attracting technical talent will be improved. There is no question that "Generation Y" workers expect to be involved with technology both as a tool for their work and as the subject of their work, so any business that does not have a high component of technology in their work will be less attractive to the best and the brightest employees of the future.

Recording

The retention of knowledge held by workers about to retire is an immediate concern and a challenge for utility companies. Before a knowledge retention program or activity can begin, the company must have some sense of what is critical knowledge and where it is held. The task to understand these issues is daunting and, in many companies, is without process or precedence. Some early mover companies have explored this issue for a number of years and have developed effective process models for determining what is critical knowledge and who has it. In most cases, the activity to address knowledge retention involves a comprehensive organizational survey activity, coupled with a well-defined process for recording, cataloging, and storing the information acquired through interviews and surveys. How this is done is a function of the culture and practices within the specific company. In all cases, however, there is a strong management commitment to provide the time and resources to make the process successful.

D.W. DeLong presents a four-pronged strategy for dealing with knowledge retention in an organization (as illustrated in Fig. 4). This model calls for a multi-dimensional

Fig. 4. Framework for organizational knowledge retention



approach to knowledge retention that is customized to the individual company's needs, capabilities, and culture and has the long-term commitment of management.

Perhaps most significant in DeLong's knowledge retention strategy is the component of knowledge recovery. The need for knowledge recovery initiatives recognizes that, regardless of systems and processes and procedures, some critical institutional knowledge will undoubtedly be lost with exiting workers. It is imperative that companies acknowledge this and have an active strategy to deal with lost knowledge. That strategy may involve hiring retired workers as consultants or contractors or using expert consultants to address specific issues. In any case, the company must be prepared with a strategy and action plan to mitigate the impact of knowledge loss. Technology can be a key component of an effective knowledge retention strategy. Various knowledge management programs and applications are available "off the shelf" today, as well as customized solutions. For operating utility companies, however, the most effective initiatives for knowledge retention will likely be in areas other than a technology for knowledge retention and management. The operating systems used in the business, as well as ongoing mentoring and training of new workers, will be the primary vehicles for retention of information for daily operations.

Education

Education is making a critical contribution to addressing the exiting expertise problem. Industry is enhancing in-house education capabilities and working with education organizations to develop new approaches to life-long learning and to educating the next generation of technicians and engineers. Universities are altering their curricula to respond to the new skill and knowledge requirements of today's engineering workforce.

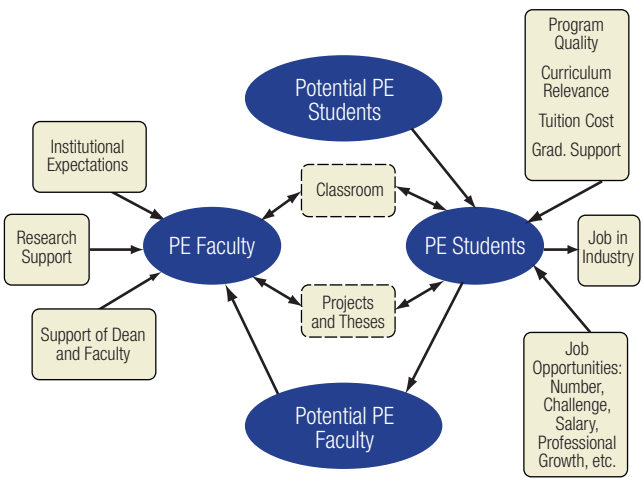
Yet major concerns remain about the sustainability of university power programs. The good news is that the number of undergraduate and graduate students has probably bottomed out or even started to grow after reaching a high in the early 1980s (although the recent growth in the number of graduate students at US institutions may be offset by declines in international student applications due to US visa barriers and preferences by international governments for their students to get graduate degrees in their home countries to avoid "brain drain"). The bad news is that the growth in students is probably insufficient to meet the coming demand.

Worse yet, the university infrastructure for supporting that growth is weakening. The major US power programs are not adding new young faculty members at a rate sufficient to make up for the anticipated loss of retiring faculty just at the time that major losses will be occurring in the workforce. The following section addresses the problem of sustaining university power engineering (PE) programs

Sustaining university power programs

To understand what is required to sustain university power programs, it is useful to understand the core decision influences affecting decisions to become a PE student or faculty member and interactions between faculty and students. A simple model of the interactions may be useful, as illustrated in Fig. 5. What this model shows is that universities, industry, and government can—or indeed must—contribute to sustaining university power programs.

Fig. 5. Model of university faculty and students: interactions and decision influences



Assuming for the moment that the objective is to fill Jobs in Industry (as shown in Fig. 5) to address the exodus of expertise, it is necessary that potential PE students consider PE as a career. Since the decision to enter into a power program, whether as an undergraduate or graduate student, has to be made in advance of actually going on the job market, perhaps by as much as 4 years, student perceptions of future Job Opportunities are important. They will consider the number of potential job openings, the challenge and career progression opportunities, salary, job security, among other factors. Ross Schifo outlined a comprehensive "professional core values model" that describes factors that someone might consider in choosing PE as a career.

Potential PE students will also consider the quality and cost of the education that they will get. Will the tuition be worth it? Three basic considerations will be the perceived Program Quality, Curriculum Relevance, and Tuition Cost. For a potential graduate student, the availability of Graduate Support will be a prime consideration.

Students taking a Job in Industry will help with the expertise exodus problem directly. However, sustaining power programs requires new faculty. Graduate students at the doctoral level may also consider the possibility of becoming PE faculty members and enter the pool of Potential PE Faculty. This pool is also composed of people in industry with doctorates who want to go back to academia.

A graduate student's decision to actually pursue a PE Faculty position will be influenced by a number of factors. Foremost, there have to be PE faculty positions available. There are few such positions opening up for entry by young faculty. The Support of Dean and Faculty engineering programs has been difficult to obtain in recent years; they are cutting back on power programs because of greater research funding opportunities in other fields, reduced stature of PE as an engineering field due to the misperception that significant new innovations are not needed or anticipated, and perceptions about low student interest in the field.

Even if a position is available, a Potential PE Faculty member must consider the likelihood of getting tenure. That likelihood is based on the understanding of the Support of Dean and Faculty, anticipated opportunities for Research Support, and Institutional Expectations regarding teaching load and tenure requirements, among other considerations. Without Research Support, the young faculty member will not be able to establish the research and publishing record necessary for tenure. And that research support needs to be sufficient to carry graduate students through their own program: the young faculty member-graduate student relationship is synergistic, with each relying on the other for reaching their separate objectives: tenure and graduation. Faculty need to be able to attract quality students for the graduate programs, and the ability to provide Graduate Support is a critical decision factor for the potential graduate student.

The fundamental interactions among faculty and undergraduate and graduate students occur either in the Classroom or on Projects and Theses. It is those interactions that determine the quality of the education experience. And the higher the quality of the education experience, the greater will be the contribution that student will be able to make in restoring expertise in the industry—and the greater the likelihood of success of a graduate student as a PE Faculty member. There is an axiom that says, "What goes around, comes around." In this case, a quality education breeds quality teachers that in turn produces quality education. In this circle, research provides support of faculty and graduate students but also enhances the education experience.

What then is the fundamental basis of a sustainable power program? It is the stature of the program in the eyes of the Dean, fellow faculty members, industry, and students. Major drivers of that stature are:

- Ample R&D funding, particularly of a nature that gives graduate students support through their program and produces new knowledge that both solves industry challenges and advances the quality of education.
- Ample attractive positions in industry that motivate students to take PE courses and enter into PE graduate programs.
- High quality and affordable cost of the education.

Producing next PE generation

Using the model given in Fig. 5, it is possible to see where focus needs to be given to increase the number of PE graduates to address the exodus of expertise.
Based on the model, a comprehensive strategy to attract more students to the PE field would:

- Increase the number of Potential PE Students
- Improve power Program Quality and Curriculum Relevance.
- Control Tuition Costs, perhaps providing targeted tuition assistance when needed to advance diversity.
- Increase Graduate Support.
- Improve Job Opportunities.
- Improve the quality of interactions among faculty and students in the Classroom and in Projects and Theses.

To get more PE Faculty to sustain power programs, the model suggests such objectives as:

- Increase Research Support.
- Increase support by engineering Deans and Faculty.

- Equitable and reasonable Institutional Expectations, particularly of new faculty.

Importantly, the model reveals that industry, government, and universities all have a role to play. For each objective, strategies can be identified for each of the three vested interests. For instance, more Research Support is needed from industry and government to support faculty and to enhance classroom and project learning experiences; universities also need to look at new models of industry-government-university interactions to make that support attractive beyond simply supporting power programs.

To get more PE Students requires that industry make Job Opportunities more attractive relative to other fields, that industry and government help support Tuition Cost and Graduate Support, and that universities ensure that they are offering the best possible education at an affordable Tuition Cost.

Thus there exists a need for greater attention to the problem of sustaining power programs while increasing interest in PE education. A comprehensive strategy is needed with collaboration among industry, government, and universities to develop a plan for educating the next generation of power engineers. As Schifo noted, such collaboration needs to articulate a "compelling mission," but with the realization that industry, government, and university all have something to bring to (and take from) the table.

Conclusions

The exodus of technical expertise is accelerating in the electric power industry. Of the four approaches to addressing this exodus described in this article, utilities are probably most frequently relying on short-payback, low-cost solutions, such as operations management improvements, outsourcing with previous employees, and in-house training programs. It is necessary to view the exodus not as a short-term problem, but as a long-term opportunity to rebuild the companies around the next generation of engineers and technicians. Decisions on investments in people are just as important as the decisions on investments in the aging infrastructure.

A priority investment in people should be in the current and potential organization leaders who demonstrate the skills, capability, and forward thinking to envision and create an organizational capability for self-renewal through knowledge retention and transfer. This capability may occur through direct human interaction and training, various technological solutions, or most likely a combination that supports the organization knowledge base.

The urgency for the investments in people is felt in professional engineering meetings and in the workplace. But the public discourse among executives and policymakers does not reveal the same sense of urgency. This is also seen in the declining level of research funding of universities even though research is the lifeblood of the research and education mission of universities.

The exiting workforce, the limited labor pool for experienced workers, and the diminished pipeline of newly educated engineers to fill vacant positions challenge all electric power interests to evaluate new educational methods and practices, new work processes, new technology, and new methods for knowledge retention. At all levels of the issue there is a need for comprehensive strategies to address attracting and retaining more power engineering students, to evaluate and integrate new technologies into daily utility operations, and to develop innovative operating models that incorporate the best of people and technology to optimize the effectiveness of scarce human and financial resources. —EW

References

American Public Power Association, "Utilities Face Brain Drain, Consultant Warns," Public Power Weekly, September 29, 2003.

Bridgers, Mark, "The Aging Workforce: The Facts, The Figures, The Future," presentation at the EEI Transmission, Distribution, & Metering Spring 2005 Conference, Tampa Bay, Fla., April 3-6, 2005.

Brown, Richard E., and Bruce G. Humphrey, "Asset Management for Transmission and Distribution," IEEE Power and Energy Magazine, Vol. 3, No. 3., May/June 2005, pp. 39-45.

Crow, Mariesa, "Supportive University Relationships Help Companies Find Bright Engineering Graduates," IEEE Power and Energy Magazine, January/February 2005, pp. 34-37.

Davis, R., "The Aging Utility Workforce: Increasing Pressures on Resources, Costs, and Productivity," KEMA, Inc., March 2005.

DeLong, D.W., Lost Knowledge: Confronting the Threat of an Aging Workforce, Oxford University Press, New York, 2004.

Gosbell, Vic, and Duane Robinson, Assessing the Future of Electrical Power Engineering: A report on electrical power engineering manpower requirements in Australia, Engineers Australia, April 23, 2005.

Gujral, Rahul, "SG&A Expenses Best Outsourcing Opportunity for Utilities," Everest Group, October 2004.

Heydt, G.T., and Vijay Vittal, "Feeding Our Profession," IEEE Power and Energy Magazine, January/February 2003, pp. 38-45.

Heydt, G.T., S.S. Venkata, G.A. Gross, and P.W. Sauer, "Promoting the Power Engineering Profession Through the IEEE Power Engineer Society," IEEE Power Engineering Review, January 2000, pp. 17-21.

Joós, Géza, "Training Future Power Engineers," IEEE Power and Energy Magazine, Vol. 3, No. 1, January/February 2005, pp. 38-47.

Marullo, Michael, "The Growing Power of Automation," EnergyBiz, Vol. 2, Issue 1, January/February 2005, pp. 38-41.

Mueller, Keith, "Envision the Utility of Tomorrow," Public Utilities Fortnightly, June 2004, 62-66.005, pp. 39-45.

Mayer, William, "Outsourcing Trends," presentation at EEI Supplier Diversity Workshop, New Orleans, January 2005.

Muson, Howard, Keeping the Talent Pipeline Filled in the Energy Industry, The Conference Board, No. E-0008-04-RR, July 2004.

National Science Foundation, Directorate of Engineering, Engineering Education and Centers Program, www.nsf.org.

Nuclear Energy Institute, 2003 Workforce Survey, Findings, and Recommendations, January 2004, www.nei.org.

O'Dell, C., Grayson, C.J. Jr., "If Only We Knew What We Know," The Free Press, New York, 1998.

O'Donnell, Arthur, "Brain Drain: Our Graying Utilities," EnergyBiz, Vol. 1, Issue 1, November/December 2004.

Pahwa, A., D.M. Grenbacher, S.K. Starrett, and M.M. Morcos, "Distance Learning for Power Professionals," IEEE Power and Energy Magazine, January/February 2005, pp. 53-66.

Püttgen, Hans. B., "PES Goals for 2005," IEEE Power and Energy Magazine, January/February 2005. 14-17.

Ray, Dennis, and Frank Wayno, "Collaboration to Facilitate Research and Education in a Transitioning Electric Power Industry," International Energy Journal, Vol. 6, No. 1, Part 4, June 2005, pp. 4-151 to 4-164.

Reder, W., "Managing the Aging Workforce with Technology and Process Improvement," presentation, EEI Fall Conference, Minneapolis, 2004.

Sauer, Peter W., Mariesa Crow, and Mani Venkata, "Manpower Development," IEEE Power and Energy Magazine, January/February 2005, pp. 30-33.

Schifo, Ross, "Got Power?" IEEE Power and Energy Magazine, Vol. 3, No. 1, January/February 2005, pp. 48-52.

UTC Research, Aging Workforce and Utilities Report, March 2004, www.utc.org.

Utility Workforce Planning Network, http://www.ubec.org/workforce/network.php.

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Dynegy, Inc.
Minooka, Illinois
Job Id: 12046875

Import Export Compliance Specialist
Siemens
Orlando, Florida
Job Id: 13906916

Natural Gas Buyer/Trader
Washington Gas Energy Services
Herndon, Virginia
Job Id: 13418860

Oil and Gas Exploration Manager
Galp Energia
Lisbon, Portugal
Job Id: 13187457

Oil Sands IT Business Analyst - Infrastructure
Shell
Scotford, AB
Job Id: 14328622

Supervisor - Energy Acquisition - Scheduling/Settlement
PPL Corporation
Allentown, Pennsylvania
Job Id: 14271287

Vice President Mergers and Acquisitions
Shell
Job Id: 13910911

Engineering & Design

Associate Electrical Engineer
New York Power Authority
White Plains, New York
Job Id: 14247406

Civil QA Specialist
Canadian Natural Resources Limited
Fort Mcmurray, Fort Mcmurray, AB, CA
Job Id: 14223665

Combustion Turbine Controls Engineer
Siemens
Alpharetta, Georgia
Job Id: 14088659

Drilling Engineer
Occidental Petroleum Corp.
Oman
Job Id: 6722979

Drilling Engineers (Experienced Professionals)
EnCana
Dallas, TX
Job Id: 13469717

Engineer
DNV
Dublin, OH
Job Id: 14304572

Engineer
Siemens
Multiple Locations
Job Id: 13906995

Engineer - Senior Project Req. No. 2008-4410
Dynegy
Houston, Texas
Job Id: 14064328

Engineer Drilling
Occidental Petroleum Corp.
Houston, Texas
Job Id: 6722945

Engineer/Reservoir Advisor
Subsurface Consultants & Associates, LLC
Houston, TX
Job Id: 6641728

Engineering Specialist
Brunel Energy
Houston, Texas
Job Id: 14197540

Execution Engineer
Brunel Energy
Calagary, Alberta, Canada
Job Id: 14315165

Field Commissioning/ Start up Engineer
Siemens
Orlando, Florida
Job Id: 13938741

Gas Turbine Principal Engineer
Siemens
Orlando, Florida
Job Id: 13937991

Mechanical Plant Engineer
Dynegy
Moss Landing, California
Job Id: 14064300

Nuclear Engineer III - Electrical
Dominion Resources Services, Inc.
Richmond, Virginia
Job Id: 13888621

Nuclear Quality Engineer
Hitachi America
Basking Ridge, NJ
Job Id: 12583912

Nuclear Simulator Software Engineer
Southern California Edison
San Clemente, California
Job Id: 13834891

Optimization Engineer
Shell
Houston, TX
Job Id: 14328603

Petrophysicist Sr.
Subsurface Consultants & Associates, LLC
Houston/West, TX
Job Id: 10299819

Predictive Maintenance Engineer
Dynegy
Newburgh, New York
Job Id: 14064303

Principal Engineer / Process Safety
Siemens
Houston, Texas
Job Id: 13907570

Principal Specialty Engineer
Xcel Energy
Minneapolis, Minnesota
Job Id: 13423133

Reservoir Engineer
Shell
Port Harcourt, Nigeria
Job Id: 14328610

Reservoir Engineer
Occidental Petroleum Corp.
Bakersfield, California
Job Id: 9230434

Reservoir Engineers (Experienced Professionals)
EnCana
Dallas, TX
Job Id: 13469714

Reservoir Engineers (several levels)
Noble Energy, Inc.
Houston, Texas
Job Id: 14099687

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Risk Engineer
Canadian Natural Resources Limited
Fort Mcmurray, Fort Mcmurray, AB, CA
Job Id: 14223690

Senior Drilling Engineer
Chesapeake Energy
Oklahoma City, OK
Job Id: 11446364

Senior Facilities/Process Engineer
John M Campbell & Co.
Norman, Oklahoma
Job Id: 13938019

Senior Petroleum Engineer
Petroleum Development Corporation
Bridgeport, West Virginia
Job Id: 13903572

Senior Petrophysicist
Shell
Rijswijk, Netherlands
Job Id: 13910929

Sr Staff Reservoir Engineer
El Paso Corporation
Houston, Texas
Job Id: 14148435

Sr. I&E Engineer
Brunel Energy
Houston, Texas
Job Id: 14156953

Staff Drilling Engineer
Petro-Hunt LLC
Dallas, Texas
Job Id: 14063073

Staff Drilling Engineers
Chesapeake Energy
Oklahoma City, OK
Job Id: 9700703

Subsea Completions Engineer
Brunel Energy
Houston, Texas
Job Id: 14157332

Subsea Engineer-Open Water
Shell
Houston, TX
Job Id: 14328613

Subsea Pipeline Flowline Engineer
BP
Houston, TX
Job Id: 14129091

Substation Engineer IV
City of Lakeland, Florida
Lakeland, Florida
Job Id: 13409369

Thermal Performance Engineer Analyst
Granite Services International, Inc.
Atlanta, Georgia
Job Id: 14090670

Transmission Line Senior Engineer
GO Jobs, Inc.
Fort Worth, Texas
Job Id: 14092855

Utility Engineer
University of Illinois
Urbana, Illinois
Job Id: 13408090

Well Integrity Engineer
Bruenl Energy
Houston, Texas
Job Id: 14196777

Field Operations

Construction Lead
Brunel Energy
Calgary, Alberta, Canada
Job Id: 14315119

Drilling Manager - Syria (staff)
SPC International Recruitment Consultants
Damascus, Syria
Job Id: 13185598

Electrical Technician – Power Industry
Granite Services International, Inc.
Multiple Locations
Job Id: 13826280

Facilities Engineer
Occidental Petroleum Corp.
Bakersfield, California
Job Id: 9230439

Facilities Engineer - Mid-Continent Midstream Services
EnCana
Dallas, TX
Job Id: 14059797

Field Operator
Canadian Natural Resources Limited
Fort Mcmurray, Fort Mcmurray, AB, CA
Job Id: 14223724

Field Service Engineer
Siemens
Pittsburgh, Pennsylvania
Job Id: 14088602

Field Service Engineer (59836)
Siemens
Braintree, Massachusetts
Job Id: 13941665

Instrumentation Technologist
EnCana
Denver, CO
Job Id: 13198659

International Field Engineers
Geoservices
United Kingdom
Job Id: 14035347

Manager Nuclear Quality
Hitachi America
Basking Ridge, NJ

Manager-Transmission Compliance Integration
Dominion
Richmond, Virginia
Job Id: 13526729

Mechanical Tooling Technician – Power Industry
Granite Services International, Inc.
Multiple Locations
Job Id: 13826303

NDE Field Service Technician
Siemens
Pittsburgh, Pennsylvania
Job Id: 13911778

Plant Engineer
Siemens
Pryor, Oklahoma
Job Id: 13529342

Pumper
Chesapeake Energy
Medicine Lodge, KS
Job Id: 14103634

Rig Supervisor
Brunel Energy
N'Djamena, Chad
Job Id: 14156950

Roustabout
Chesapeake Energy
Kingfisher, OK
Job Id: 14103635

Slickline assistant operator
Geoservices
United Kingdom
Job Id: 14035330

Station Director
STM Associates
Chicago, Illinois
Job Id: 13903467

Utilities Generation Test Technician
City of Riverside, CA (Apply at: www.riversideca.gov/human)
Riverside, California
Job Id: 13384510

GeoScience

Exploration Geologists/ Geophysics
Brunel Energy
Houston, Texas
Job Id: 14157335

Exploration Geoscientist – Prospect Evaluator
Shell
Houston, TX
Job Id: 13858645

Geologist – Modeling
Shell
Calgary, AB, Canada
Job Id: 14190669

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Geologist, Core Logging
Canadian Natural Resources Limited
Calgary, AB, Calgary, AB, CA
Job Id: 14223714

Geophysical Advisor
Subsurface Consultants & Associates, LLC
Houston, TX
Job Id: 6641774

Geoscience Technician - WTX
EnCana
Denver, CO
Job Id: 13198695

Geoscientist
Subsurface Consultants & Associates, LLC
Houston, TX
Job Id: 6641748

Geotechnical Engineer
Brunel Energy
Calgary, Alberta, Canada
Job Id: 14315461

HR Generalist - New Iberia, LA
NATCO
New Iberia, LA
Job Id: 14327404

Organic Geochemist
Shell
New Orleans, LA
Job Id: 14078975

Petroleum Geologist
Petro-Hunt LLC
Dallas, Texas
Job Id: 14063074

PHLLC Senior Geophysicist
Petro-Hunt LLC
Dallas, Texas
Job Id: 14281608

Senior Geologist
Goodrich Petroleum
Houston, Texas
Job Id: 13408091

Senior Geologist - East Texas
Chesapeake Energy
Oklahoma City, OK
Job Id: 9700730

Senior Geoscientist
Galp Energia
Lisbon, Portugal
Job Id: 13187490

Structural Geologist
BP
Houston, TX
Job Id: 14314822

Health & Safety

HES Specialist
Occidental Petroleum Corp.
Carlsbad, New Mexico
Job Id: 7588106

Process Safety Consulting Engineer
Siemens
Houston, Texas
Job Id: 13527808

Project Safety Advisor
Brunel Energy
Calgary, Alberta, Canada
Job Id: 14315118

Safety Manager
Holcim (US), Inc.
Holly Hill, South Carolina
Job Id: 10352999

Safety, Health & Environment (SHE) Coordinator
DNV
Houston, TX
Job Id: 14304566

Senior Safety and Health Specialist
Cramer-Krasselt
Phoenix, Arizona
Job Id: 13264756

Performace & Reliability Engineer

Gas Turbine Thermal Performance Engineer
Siemens
Orlando, Florida
Job Id: 13423146

Long Term Optimization Engineer APS
BP
Whiting, IN
Job Id: 14032751

Manager, Engineering and Reliability PCPS
TransAlta
Fort McMurray, Alberta, Canada
Job Id: 14104849

Reliability Specialist
TransAlta
Duffield, Alberta, Canada
Job Id: 14106521

Project Management

Oil Sands Project Integration Engineer
Shell
Job Id: 14283965

Project Engineer
BP
Houston, TX
Job Id: 14129092

Project Engineer, Mechanical, Gas/Hydro
TransAlta
Calgary, Alberta, Canada
Job Id: 14105685

Project Manageer - Utility Generator Engineering
Siemens
Charlotte , North Carolina
Job Id: 13429743

Project Manager
Dynegy
Houston, Texas
Job Id: 14064327

Project Manager III
NATCO
Houston, TX
Job Id: 14327399

Project Planner/Scheduler
Brunel Energy
Job Id: 14157341

Sr. Project/Applications Engineer
FMC Corporation
Philadelphia, Pennsylvania
Job Id: 13214895

Reservoir Engineer

(Senior) Reservoir Engineer - Research (NL)
Shell
Rijswijk, Netherlands
Job Id: 13910930

Reservoir Engineer
Shell
Rijswijk, Netherlands
Job Id: 14190659

Reservoir Engineer
RCI
Casper, Wyoming
Job Id: 13392944

Reservoir Engineer
Goodrich Petroleum Corporation
Houston, Texas
Job Id: 13526706

Sales & Marketing

Account Executive - Utilities
ESRI
Minneapolis, Minnesota
Job Id: 13861866

Business Development Manager
Metal Systems
Multiple locations
Job Id: 14177675

Equipment Sales Specialist
Tampa Armature Works, Inc.
Tampa, Florida
Job Id: 14202481

Marketing and Sales Manager
John M Campbell & Co.
Norman, Oklahoma
Job Id: 13435697

Oil & Gas Key Account Manager
Endress+Hauser
Houston, Texas
Job Id: 14247399

Regional Sales Manager North Central US
Hitachi America
Basking Ridge, NJ
Job Id: 11990588

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Sales Engineer - Refinery & Petrochemical
Company Confidential
Netherlands
Job Id: 14120991

Sales Engineer - Refinery & Petrochemical
TriStar Global Energy Solutions
Germany
Job Id: 14121040

Sales Manager- MAPSearch
PennWell Corporation
Houston, Texas
Job Id: 14198200

Sr. Business Development Coordinator
Epic Energy Resources
Job Id: 14086281

VP of Business Development
Shell
Houston, TX
Job Id: 14328602

Training & Education

Sr Training Coordinator - International
Noble Energy, Inc.
Houston, Texas
Job Id: 14094277

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