

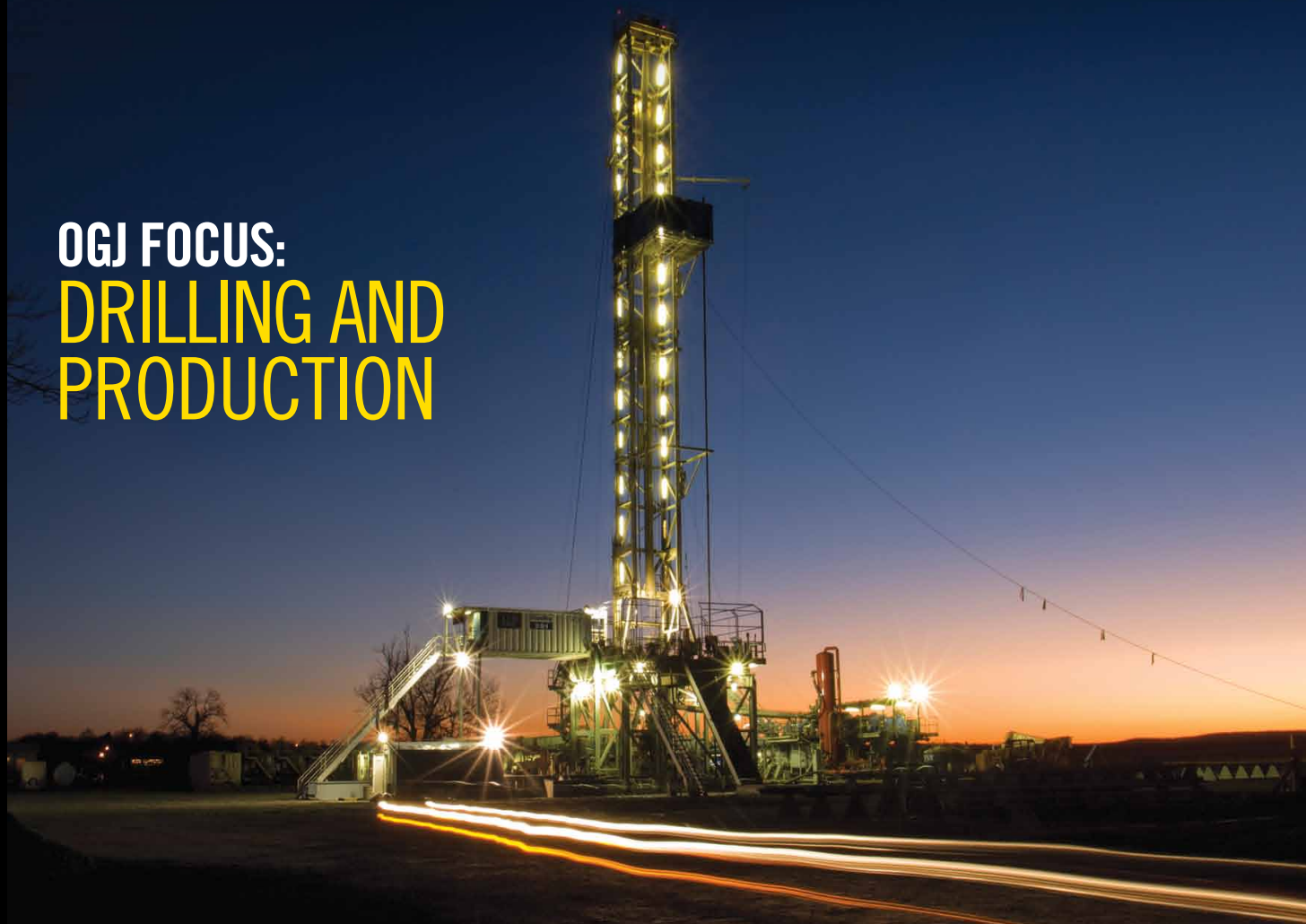
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OGJ FOCUS: DRILLING AND PRODUCTION



OFFSHORE TECHNOLOGY
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REASONS FOR
CASING WEAR

ALTAMONT, MONUMENT
BUTTE BEARS FRUIT

WEBCAST | *Unconventional Analysis in Unconventional Plays*



Optimized Formation Evaluation

The challenges associated with unconventional plays have driven the industry to find more cost effective formation evaluation solutions, forcing optimization at every step. On April 13th, Halliburton hosted a webcast aimed at helping operators achieve optimized FE. View the webcast at www.ogjonline.com, and learn how applying a comprehensive, yet fit-for-purpose evaluation approach throughout the development life cycle has helped operators maximize value and optimize production.

Presentation Highlights:

- How to achieve better reservoir understanding early on
- How to achieve better completion and stimulation designs
- How to design a fit-for-purpose formulation evaluation program

Webcast panel of Halliburton and industry experts, included:

- **Randall Cooper**, Manager of Operational Petrophysics, Marathon Oil Corporation
- **Mark Kittridge**, Manager, Petrophysical Analysis & Rock Physics, ConocoPhillips
- **Dan Buller**, Principal Petrophysicist, Southeast Technology Team, Halliburton
- **David Hinz**, Global Product Launch Manager, Halliburton Sperry Drilling

View this timely and informative webcast, now archived at: www.ogjonline.com (webcast section).

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**OIL & GAS
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GENERAL INTEREST QUICK TAKES

Industry forms forces to address offshore issues

The US oil and gas industry formed two task forces to address short-term and long-term issues involving offshore equipment and operating practices in the wake of the Gulf of Mexico crude oil spill, the American Petroleum Institute announced.

"This tragic incident requires that we redouble our commitment to continually improve safety and response practices," API Pres. Jack N. Gerard said. "Our industry accepts that challenge. We owe it to the workers who were lost and to the others, particularly along the Gulf Coast, bearing the burden of the accident. We also owe it to the nation that has placed its trust in us to responsibly develop oil and gas off its coasts."

Gerard said the offshore equipment task force will bring together equipment manufacturers, industry subsea equipment specialists, and deepwater contractors to focus on maintenance, response, and testing of blowout prevention equipment and remotely operated vehicles. The offshore operating procedures task force, meanwhile, will use offshore operators and service companies' expertise to strengthen practices related to drilling and completing deepwater wells. API looks forward to government participation on both task forces, Gerard said.

"The ultimate goal of these task forces is to improve safety and environmental performance by learning from any gaps identified from this tragedy," he said. In the very near term, they will bring relevant experts together to identify and further reduce risks of offshore operations, while working in conjunction with SWAT teams that BP PLC is assembling and help ensure that all response efforts are coordinated.

Gerard said in the longer run, the task forces will share lessons learned from investigations of the Deepwater Horizon explosion and fire and subsequent oil spill, and update API operating standards and recommended practices on an ongoing basis.

BLM seeks comments on Colorado development

The US Bureau of Land Management is seeking public comments on Antero Resources Corp.'s proposal to develop natural gas at a site 6 miles south of New Castle in western Colorado.

The Denver independent has proposed drilling as many as 284 wells from 16 pads over 5 years beginning this summer under its North Castle Springs master development plan, according to BLM's Colorado River Valley field office in Silt. The

US Department of the Interior agency said it is preparing an environmental assessment.

BLM said Antero also proposed construction of as much as 10.6 miles of new and upgraded access roads and 14.1 miles of new and replacement pipelines. The area proposed for development covers about 6,000 acres of federal land, with primary access provided by Garfield County Roads 311 and 335.

Comments on the proposed development will be accepted through May 31, BLM said.

Parnell wants Alaska to join permit effort

Alaska Gov. Sean Parnell (R) asked that the state be allowed to participate in ConocoPhillips's administrative appeal of a denied permit in the National Petroleum Reserve-Alaska.

The US Army Corps of Engineers denied the permit in early February, saying other technologies should be considered in developing the CD-5 project west of the company's producing Alpine field near Prudhoe Bay.

Parnell said the dispute involves ConocoPhillips's proposal for a vehicle and pipeline bridge across the Colville River's Nigliq Channel, which the Arctic Slope Regional Corp., the North Slope Borough, the Native Village of Nuiqsut, the City of Nuiqsut, and the state strongly support. The Army Corps of Engineers would rather see horizontal direction drilling used instead.

The parties said this approach also poses risks including pipeline corrosion, sedimentation, and slugging, along with other potential problems associated with a buried pipeline in the geo-technically unique and environmentally sensitive Nigliq Channel. A bridge would have fewer potential adverse environmental consequences, they maintained.

Parnell said that under the Corps' regulations, the opinions of the state, both as a permitting agency with jurisdiction and as the Nigliq Channel's property owner, are entitled to deference. **OGJ**

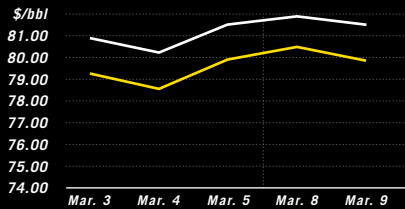
EXPLORATION & DEVELOPMENT QUICK TAKES

ADMA-OPCO developing Umm Lulu oil field

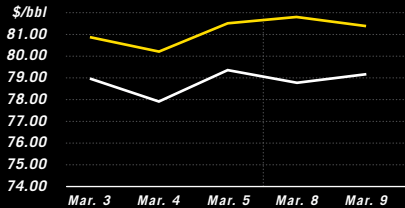
Abu Dhabi Marine Operating Co. (ADMA-OPCO) is developing another offshore oil field that will produce at least 100,000 b/d at peak.

It has let a front-end engineering and design (FEED) contract to Fluor Corp. for second-phase development of Umm Lulu field about 30 km off Abu Dhabi.

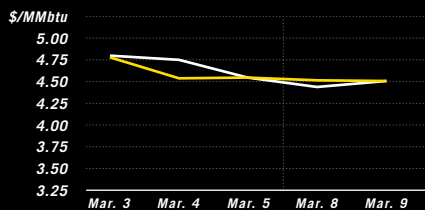
IPE BRENT / NYMEX LIGHT SWEET CRUDE



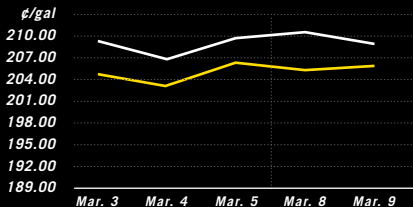
WTI CUSHING / BRENT SPOT



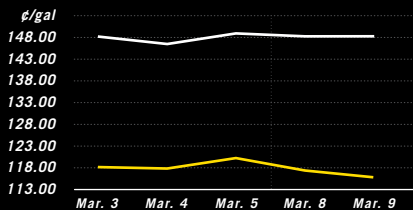
NYMEX NATURAL GAS / SPOT GAS - HENRY HUB



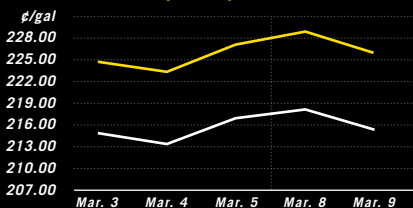
IPE GAS OIL / NYMEX HEATING OIL



PROPANE - MT. BELVIEU / BUTANE - MT. BELVIEU



NYMEX GASOLINE (RBOB)¹ / NY SPOT GASOLINE²



¹Reformulated gasoline blendstock for oxygen blending

²Nonoxygenated regular unleaded

US INDUSTRY SCOREBOARD — 5/10

Latest week 4/23	4 wk. average	4 wk. avg. year ago ¹	Change, %	YTD average ¹	YTD avg. year ago ¹	Change, %
<i>Demand, 1,000 b/d</i>						
Motor gasoline	9,211	8,931	3.1	8,879	8,821	0.7
Distillate	3,571	3,518	1.5	3,670	3,819	-3.9
Jet fuel	1,371	1,428	-4.0	1,348	1,389	-3.0
Residual	492	659	-25.3	592	620	-4.5
Other products	4,063	3,978	2.1	4,431	4,117	7.6
TOTAL DEMAND	18,708	18,541	1.0	18,920	18,766	0.8

Supply, 1,000 b/d

Crude production	5,476	5,237	4.6	5,480	5,235	4.7
NGL production ²	2,095	1,925	8.8	2,111	1,872	12.8
Crude imports	9,434	9,264	1.8	8,887	9,402	-5.5
Product imports	2,660	2,667	-0.3	2,630	3,009	-12.6
Other supply ³	1,821	1,767	3.1	1,832	1,661	10.3
TOTAL SUPPLY	21,486	20,860	3.0	20,940	21,179	-1.1

Refining, 1,000 b/d

Crude runs to stills	14,763	14,307	3.2	14,085	14,168	-0.6
Input to crude stills	15,209	14,549	4.5	14,425	14,470	-0.3
% utilization	86.2	82.3	—	81.6	81.9	—

Latest week 4/23	Latest week	Previous week ¹	Change	Same week year ago ¹	Change	Change, %
<i>Stocks, 1,000 bbl</i>						
Crude oil	357,820	355,857	1,963	374,653	-16,833	-4.5
Motor gasoline	223,685	224,925	-1,240	212,612	11,073	5.2
Distillate	151,820	148,883	2,937	144,105	7,715	5.4
Jet fuel-kerosine	44,177	42,561	1,616	40,188	3,989	9.9
Residual	44,885	44,386	499	36,282	8,603	23.7

Stock cover (days)⁴

Crude	24.2	24.4	-0.8	26.2	-7.6
Motor gasoline	24.3	24.6	-1.2	23.5	3.4
Distillate	42.5	41.6	2.2	39.1	8.7
Propane	38.4	31.2	23.1	45.8	-16.2

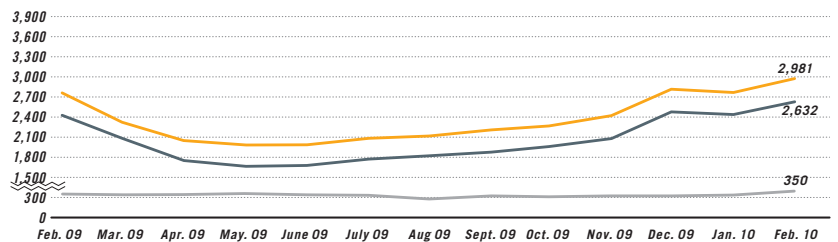
Futures prices⁵ 4/30

Light sweet crude (\$/bbl)	84.24	83.48	0.76	48.48	35.76	73.8
Natural gas, \$/MMBtu	4.13	4.05	0.08	3.46	0.67	19.4

¹Based on revised figures. ²Includes adjustments for fuel ethanol and motor gasoline blending components.

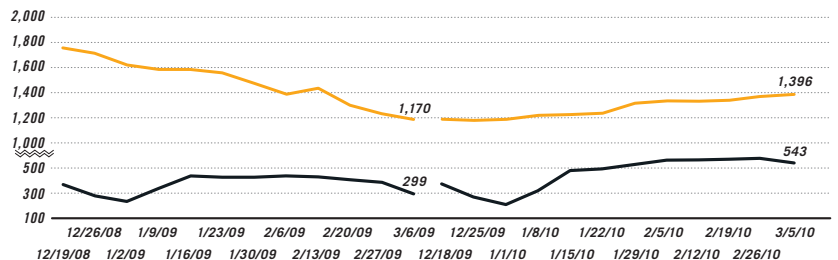
³Includes other hydrocarbons and alcohol, refinery processing gain, and unaccounted for crude oil. ⁴Stocks divided by average daily product supplied for the prior 4 weeks. ⁵Weekly average of daily closing futures prices. Sources: Energy Information Administration, Wall Street Journal

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

The first phase is an early-production system for 24,000 b/d of oil.

The second phase will push total production to 105,000 b/d. It will involve six wellhead towers, production facilities, living quarters, infield subsea pipelines, and an export pipeline to Zirku Island in the Persian Gulf.

Fluor said the Umm Lulu project ties into ADMA-OPCO's Satah Al Razboot (SARB) development, which will produce 105,000 b/d and for which it also holds a feed contract.

The work covers design of offshore wellhead facilities, subsea and in-field pipelines, and onshore facilities including receiving, processing, storage, and support equipment.

Pioneer pursuing Eagle Ford joint venture

Pioneer Natural Resources Co., Dallas, said it is pursuing a joint venture in the South Texas Eagle Ford shale play and expects to reach agreement by midyear.

The company's latest completion, its fifth successful well in the shale, made an initial 14.1 MMcf/d of gas and 255 b/d of condensate with 5,600 psi wellhead flowing pressure on a 2 $\frac{5}{8}$ -in. choke. Gas is 1,200 btu/Mcf.

The Chesnutt Gas Unit-1 in Karnes County had a 12-stage frac in a 4,100-ft lateral at 13,300 ft true vertical depth. Production is to start in this year's third quarter after completion of a Pioneer-operated condensate separation facility.

Pioneer has identified 1,750 potential development locations on its 310,000 acres, 70% of which are in the play's condensate window. It estimated the play's gross resource potential at more than 11 tcf of gas equivalent.

Pioneer has more than 2,000 sq miles of 3D seismic data, logs from more than 150 operated wells, proprietary core samples, and microseismic results.

It has two rigs drilling horizontal wells in Karnes and De Witt counties and one well awaiting completion. It plans to hike activity to six or seven rigs by yearend, ten rigs by the end of 2011, and 14 rigs by the end of 2012.

Sinochem further developing Colombia's Capella

Sinochem Corp. and Canacol Energy Ltd., Calgary, will spend \$42 million in 2010 delineating and developing Capella heavy oil field on the Ombu block in Colombia's Caguan-Putumayo basin.

Aside from developing Capella, in which it holds 10% interest, Canacol plans to explore two adjacent contract areas awarded in 2009 in which it has 100% interest. Total acreage exceeds 1.2 million acres.

Canacol, which discovered Capella in July 2008, has drilled six more successful wells in 2008-09. Shooting 185 sq km of 3D seismic at Ombu started in March.

Romero-A1 well, spud Apr. 28 and projected to Mirador at 3,250 ft, is the first of seven wells Canacol will drill at Capella in 2010. The next well, Capella F-10H, will be the field's first horizontal penetration.

The 2010 work program includes drilling four delineation

wells and three development wells, including Romero A1, shooting 3D seismic, starting a steam injection pilot at one well, building a 2,000-b/d early production facility and laying flow lines, upgrading roads and bridges, and drilling a water disposal well.

South Australia strat traps yielding wet gas

Drillsearch Energy Ltd., Sydney, launched an extended production test of the 2008 Brownlow wet gas discovery and plans to similarly test the Canunda wet gas discovery 11 km north of Brownlow in the Cooper basin of South Australia.

After a period at 10 MMcf/d with 120 b/d of condensate on a 24/64-in. choke, the choke was opened to 1 in. for a rate of 18 MMcf/d from Permian mid-Patchawarra.

The well is in PEL 106, 2 km north of the Middleton wet gas discovery, and 55 km northwest of Moomba, where the condensate will be shipped.

Drillsearch said Brownlow has the potential to be a large stratigraphic trap with three-way dip closure. Beach Energy Ltd., operator of the PEL 106 farmin block with 50% interest, drilled Brownlow as part of farmout obligations now fulfilled.

Drillsearch and Beach hold a large position in a western flank wet gas fairway and have indentified more than 20 prospects on stratigraphic traps that represent a combined best case prospective resource of as much as 200 bcf of sales gas and 8 million bbl of condensate. They plan more drilling as soon as flooding subsides and weather permits.

OMV finds gas at Latif North in Pakistan

OMV AG has made a natural gas discovery with its Latif North-1 well on the Latif exploration license in Pakistan's Sindh province.

The well tested at 44.7 MMscfd of gas from Cretaceous Lower Goru at 3,350 m. It is the best-performing Latif well to date, OMV said.

Latif North-1 is 3 km north of Latif gas field, which is producing a combined 29 MMscfd of gas from the Latif-1 discovery well drilled in 2007 and Latif-2 drilled in 2008. The gas is processed at the OMV-operated Kadanwari processing plant.

Latif North-1 test results indicate a substantial increase of recoverable gas reserves, OMV said. Based on this encouraging result, it said, the field development plan will include the drilling of more wells.

OMV operates more than 525 MMscfd of gas production in Pakistan, of which its net share is 101 MMscfd. It operates Sawan, Miano, Tajjal, and Latif fields and the Sawan and Kadanwari processing plants. **OGJ**

DRILLING & PRODUCTION QUICK TAKES

Marathon starts oil flow from Volund tieback

Marathon Oil Corp. has started oil production from Volund field in the North Sea off Norway.

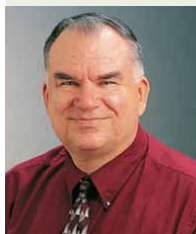
Volund, in Block 24/9, is a subsea tieback to the floating

Training wellsite geologists

Attracting younger people to the oil and gas industry has become a primary focus of large and small companies, operators and service companies, and US and international firms.

Sometimes the emphasis turns to educational institutions, but many companies have internal programs.

One such training effort is the idea of Horizon Well Logging LLC, Tulsa.



ALAN PETZET
Chief Editor-
Exploration

Raising standards

Mud logging has often been seen as a semiprofessional rather than professional service, Gino DeMarco, president of Horizon, told Oil & Gas Journal.

"We wanted to introduce technology and improve the quality of the individuals we put in the field," DeMarco said. He also wanted to raise the bar for mud logging services generally.

So Horizon launched a Field Geologist Development Program in late 2009.

An information brochure DeMarco distributes describes the effort this way:

"During its up cycles, the industry hired quickly in an attempt to keep up with a constantly expanding drilling program—geologists often began work with little or no field experience.

"The aggressive drilling program implemented during these up cycles also allowed very little time for an exploration geologist to spend time at the rig site as wells were drilled.

"During the down cycles, the industry had no budget for extensive field training programs or rig site visits. Geologists that kept their jobs between cycles were typically overloaded with day-to-day tasks and had no time for field work.

"The result of these cyclical swings was a large number of exploration geologists with limited wellsite experience, limited time, and limited budget who therefore had to rely upon the mud logger for critical field geology information."

Serving operators

DeMarco noticed that the industry cycles that prevented geologists from gaining field experience were also producing inexperienced and generally undereducated mud loggers.

"We believed that the information and service provided by the entire mud logging industry needed to be substantially upgraded in order to

provide exploration geologists in the office with the field geologic information they needed to perform their job well without spending extensive time at the rig site during drilling."

DeMarco wanted the exploration geologists employed by Horizon's clients to be able to rely on his mud loggers for critical, real-time geological information.

Horizon invested in infrastructure in 2009, worked with customers to develop documented processes and standards for professional field geology, and invented software, tools, and systems to deliver accurate, professional geological information.

Horizon also developed a training program to attract, educate, and retain talent to sustain its desired level of professional service.

Training program

To get younger geologists into the field where they could begin to see a career path, Horizon launched the FGDP in late 2009.

The timing was lucky in that the industry drilling bust of 2008-09 and general economic malaise resulted in a large pool of degreed geologists looking for work, DeMarco said.

Applicants spend one week in a classroom and then 4 months working 12 hr on, 12 hr off in the field as loggers. They repeat that cycle three times in a year, residing in rented corporate housing in Tulsa, Oklahoma City, Morgantown, W.Va., and soon San Antonio.

The training starts basic. The entrants learn general operating procedures, quality controls and assurance, and work flows of small and large operating and service companies. As they progress, they are taught organizational dynamics and leadership and advanced field geology and are given extensive training in quality and continuous improvement.

"The key was to get a core group of about 10 so that others would see they weren't taking a chance with something iffy," DeMarco said.

He was pleasantly surprised. The FGDP has a retention rate near 100% for those hired from its growing pool of more than 400 applicants. As of early May, 34 geologists from 28 schools are in the program. About 25% are at masters level and another 25% have two degrees, one in geology and another in petroleum engineering or another scientific discipline. The rest are at bachelor's level. **OGJ**

Image and reality

In the ecological calamity threatening the US Gulf Coast, image and reality, inevitably, diverge. The reality is unimaginably bad. It begins with the loss of 11 lives in a rig explosion and fire on a deepwater semisubmersible off Louisiana and continues with a menacing oil spill.

Image, however, is even worse. It is with image that the oil and gas industry forever must contend. Reality, insofar it is known at this writing, is that the Transocean Deepwater Horizon exploded and caught fire at about 10 p.m. CDT on Apr. 20 after the well it had finished drilling in 5,000 ft of water blew out. Of 156 workers aboard, 145 were rescued. On Apr. 22, the rig sank. By Apr. 24, leaks had become apparent.

Other realities are that BP and the government mounted an unprecedented spill response, fighting the oil with booms, controlled burns, and dispersants. Weather hampered the efforts and at first blew the spreading oil toward shore. As past spills have shown, however, nature provides its own cures. The hope in this disaster must be that nature helps more than hurts overall. Much time will pass before the full extent of real environmental damage is known. The initial mess is widespread and horrible.

Two thrusts

Image is simpler than reality. It has two main thrusts. One is that the offshore oil industry had an accident in deep water for which it was unprepared. The other is that an environmental disaster already has occurred. Image, not reality, will influence the oil industry's relationship with the public, and therefore the political climate of its work, for many years.

It's understandable that a shocked and characteristically reticent industry had its communications guard down when the tragedy occurred. Public statements by the principals, Transocean while the main event was a rig explosion, BP when attention turned to spill response, will be studied forever. Judgments will vary according to who's doing the judging. Judgment isn't the intention here.

What needs immediate attention is a question that, had it been answered promptly, might have

made an inevitably punishing image somewhat less painful: What is there about this accident that so thoroughly overwhelmed industry preparedness? At this writing, there isn't even an authoritative description of what happened.

Understandably, companies involved don't want to incite speculation—or weaken their legal defenses—by disclosing what they can be certain about. And it's too early to expect to know the tragedy's cause. But it's not too early to describe what happened in more than the sketchiest possible detail. The image is that, 2 weeks on, no one in an official capacity even knows what happened. The industry will pay for this void.

Without context, moreover, the response looks indecisive. BP has assaulted the leak on several fronts. It tried to close the blowout preventer with remotely operated vehicles. It made rapid preparations to drill a relief well. It expedited the construction and delivery of a vessel with which to capture oil above the wellhead and funnel it to the surface. It tested subsea dispersion.

The operational efforts have been heroic and commendable. They accommodate hard realities of deepwater blowouts: that the unpredictability of extreme operating conditions preclude standard responses and that the best response is the one, among all tried, that works.

The image, though, is that the only plan available for dealing with a deepwater blowout was experimentation with options invented more or less on the spot. The picture darkened when the federal government, understandably wanting to show decisiveness of its own, dispatched "SWAT teams" to inspect other deepwater rigs.

First steps

Image should be the least of BP's worries. Image should be the priority of industry in general. Trade associations, especially, should be straining to steer image closer to reality.

Valuable first steps would be an authoritative description, in simple language, of what happened, updated as more becomes known; an explanation about why preparedness failed; and assurance that a multifaceted response yields the quickest solution to complex and dynamic problems and does not represent evidence of a lack of forethought. **OGJ**

OTC speakers highlight offshore industry's future

This report was reported and written by Bob Tippee, editor; Steven Poruban, senior editor; and Paula Ditricks, senior staff writer.

Deepwater oil and gas exploration will remain one of the world's "pillars of supply" for its energy needs despite its high-risk exposure to remote locations and commodity price volatility, said industry panelists at the 41st annual Offshore Technology Conference in Houston.

Offshore fields have yielded nearly 70% of the major oil and gas discoveries in the last 10 years, said Bob Fryklund, a director with IHS CERA and a panel moderator.

Major discoveries "are still being made" around the globe, said panelist Jim Demarest, director of international exploration for Noble Energy Inc.

These discoveries are being found through the use of ever-advancing seismic technology among other things, Demarest said. These advances have shown industry "things we never thought possible," he said.

Demarest noted, however, that technology largely resides in service companies and quickly becomes available to everyone, making it difficult for E&P companies to maintain a "technical edge."

Access to acreage also continues to challenge industry, Demarest said. Higher commodity prices have created pressure for a "larger slice of pie" for governments, he said, speaking of rights to access acreage, particularly in sovereign nations. He said countries with a solid track record of "sanctity of contract" will continue to attract investment.

Demarest said Noble's exploration budget for 2010 is the largest in the company's history. But the company has a disciplined approach to acquisitions, not "buying resources for resources' sake," he said.

'Excel,' or 'buy'

As for where exploration is headed, Demarest said technology will continue to improve, but he believes targets will continue to get smaller. At the same time, companies' success rates will continue to improve. "On average, the size of fields will go down, but will remain profitable," he said.

In short, Demarest said, if industry players do not excel at exploration, they should "buy, don't try." He noted exploration

companies must have several core competencies including dealing with market volatility, having the technological know-how, and exercising financial discipline.

Being a "first mover" is risky, but "you better not be far behind," he noted, adding, "It is not about luck."

ConocoPhillips, meanwhile, has changed its direction in recent years to organic growth, said Larry Archibald, senior vice-president. The major chooses to expand through exploration and "high-impact wildcats," he said. "There's lots of running room in resource plays." The company intends to continue expanding its footprint in deepwater plays, he said.

Archibald said there are many deepwater plays that remain lightly tested. Other areas have been off-limits because of being tied up in boundary disputes.

Overall, Archibald said, "The revolution has been in horizontal drilling and completion."

World consumption growing

"The world is consuming a major deepwater Gulf of Mexico field every day," observed Frank Patterson, vice-president, international, Anadarko Petroleum Corp. The average discovery in the gulf is about 83 million boe, Patterson calculates, and the world consumes about 85 million bo/d. Of that total, the US consumes about 20 million bo/d. The average global field size (in 2000-09), meanwhile, is about 22 million boe, he said.

Anadarko is looking for oil internationally and has had "a good run on exploration in the last few years," Patterson noted. Good technology is key, he said, but how that technology is applied is just as important.

In short, Patterson said, exploration is "not about unconventional resources" but "about unconventional thought."

Like other panelists, he agreed access remains a challenge. Patterson pointed out, "Fields do not abide by political and geographical boundaries."

Other strengths of Anadarko include consistent and efficient investment as well as alignment with the right partners. "It can be contentious at times," between partners, but it's about "communication, communication, communication," he said.

Regarding technology, it is most important to use "the right tool, at the right time, at the right price," Patterson said.

In the end, he said, companies need to remain "committed to the process."



Advances in the computing environment has been one of the major developments behind the improvement of seismic technology and imaging, said Jeff Spath, president, reservoir management, Schlumberger.

Advances in technology used to measure and log while drilling, for example, allow for companies to have the “ability to image where we’re going, and while we’re going.”

‘Impossible’ to ‘reality’

With perseverance and technology, the oil and gas industry advances by turning ideas once deemed impossible into reality, said Chuck Davidson, chairman and chief executive officer of Noble Energy Inc., at the OTC awards luncheon.

OTC gave the individual distinguished-achievement award to Hugh Elkins, retired from National Oilwell Varco Inc., who worked for many years with Hydril, and a corporate award to Anadarko Petroleum Corp. and Enterprise Field Services for their work on Independence Hub in the gulf.

The industry learned to drill and complete wells profitably in the Barnett shale then expanded into other shale plays by applying an aggressive attitude that Davidson described as “lease it, and ask questions later.”

Development of unconventional oil and gas reservoirs, he said, shows how the industry can turn problems “truly viewed as impossible into stunning reality.”

A North American gas supply structure that is “radically changing” because of shale-gas development was among key industry changes Davidson addressed.

Others were a shift in operators’ emphasis from gas to oil drilling in the US, improved producer access to capital, a “long, long list” of recent oil and gas discoveries, and reassessment by oil and gas companies of traditional business models.

Technology, creativity, and a “belief in possibility” combine to form a “new reality,” he said.

Discoveries are rewarding companies that have taken advantage of recently elevated oil and gas prices to test new exploration and development concepts in what Davidson called “R&D drilling.”

The challenging Lower Tertiary play in the deepwater gulf developed from “never taking the status quo as a given,” Davidson said. Referring to the Deepwater Horizon tragedy and oil spill, he acknowledged, “[W]e do live under a dark cloud this year.”

Offshore safety questioned

The blowout was a general topic of conversation at OTC although official speakers wouldn’t say much with so few facts yet available.

Officials from BP PLC cancelled at least one planned appearance at the conference so they could concentrate on spill-response efforts.

However, officials from Northwest Territories and Nova Scotia said Canadians are questioning the safety of offshore drilling in the Beaufort Sea and on the Canadian Outer

OTC: Saudi Aramco emphasizing exploration, natural gas

Bob Tippee

Editor

Saudi Aramco is shifting its upstream emphasis to exploration and natural gas development after adding 2 million b/d to oil production capacity during 2004-09, according to Zuhair Al-Hussain, vice-president, drilling and workovers.

Al-Hussain said at the Offshore Technology Conference that the company plans to increase total raw-gas plant capacity to 15.5 bcfd by the end of 2014 from the present 11.2 bcfd.

Gas production will start soon from three recent discoveries in the Persian Gulf.

Karan field will come on stream in 2011 at about 500 MMcfd, Al-Hussain said. Its output will increase to 2.8 bcfd in 2013.

The other two offshore discoveries, Hasbah and Arabiyah fields, will produce a combined 2.5 bcfd to the Wasit gas plant in 2014, he said.

Al-Hussain said Aramco also is evaluating gas in low-permeability reservoirs.

Increased gas production will supply a domestic market expanding at about 7%/year.

Exploration targets

Aramco’s exploratory effort targets increases in gas reserves of 5 tcf/year and replacement of oil production, requiring additions to reserves of 3 billion bbl/year.

Saudi Arabia currently estimates reserves at 160 billion bbl of oil and 275 tcf of gas.

Al-Hussain said Aramco has expanded exploration geographically into the northeastern part of Saudi Arabia and the Red Sea.

The northeastern area recently yielded a gas discovery, he said.

In the Red Sea, Aramco is shooting a 3D seismic survey over water as deep as 1,000 m. In addition to deep water, the Red Sea complicates work with subsurface salt, subsea volcanoes, and high temperatures and pressures.

Al-Hussain said Aramco plans to keep an average of 100 rigs busy in the next 5 years, half drilling for gas and half for oil. This year it will complete about 300 development wells and 50 exploratory wells.

During the oil-centered program that raised production capacity to 12 million b/d in 2009 from 10 million b/d in 2004, the average rig count was 130.

Oil development

Al-Hussain said development of offshore Manifa oil field, delayed by the global economic downturn of 2008, will proceed—but at a slower pace than originally planned.

He said production will start in mid-2013 but will not ramp up quickly to the original target of 900,000 b/d of Arab heavy oil. Development will use extended-reach drilling from man-made islands linked by a 41 km causeway in an area of shallow water that supports shrimp fishing. **OGJ**

Uinta area between Altamont, Monument Butte bearing fruit

Operators are establishing oil and gas production in the large, less-explored area between Utah's giant Altamont-Bluebell and Monument Butte fields.

The initial work indicates substantial shallow oil and deeper gas potential in this part of the Uinta basin.

Harvest Natural Resources Inc., Houston, said it appears to have made a commercial oil discovery south of Altamont-Bluebell and added \$13.5 million to drill five wells nearby in Duchesne County.

The Harvest Bar F 1-20-3-2 discovery well, in 20-3s-2w, stabilized at 900 b/d of 42° gravity yellow wax crude and 650 Mcfd of gas at 1,400 psi flowing surface pressure from six commingled intervals in Lower Green River and Upper Wasatch at 8,200-9,600 ft.

The company hydraulically fractured the six intervals, which yielded more than 4,000 bbl of oil in the first 5 days of production while still cleaning up. Tests are to continue for 1-2 weeks, and production will start as soon as tanks and a gas flowline can be built.

Deeper gas potential

Branta Exploration & Production LLC, The Woodlands, Tex., another participant, noted that the Bar F well went to a total depth of 17,566 ft and also appears to have established the presence of a multitrillion cubic feet, long-term gas resource that could be held by production from developing the shallower oil formations.

Bar F flowed at rates of 1.5 to 2 MMcfd from various individually tested intervals in basin centered, overpressured Mesaverde tight sands at 14,000-17,400 ft after an eight-stage hydraulic frac program. The tests didn't conclusively determine commercial potential in Mesaverde, Branta said.

"The Bar F established the fundamentals for long-term natural gas drilling including an interval of 3,000 gross ft of

Six of the wells have combined output of more than 115,000 bbl of oil since December 2009, and two are shut in until processing facilities are expanded.

tight sands with natural gas, overpressure, evidence of natural fracturing, and confirmation of the utility of hydraulic fracturing," Branta said. Branta has interests in more than 64,000 gross acres in the Antelope gas resource.

Branta said the Bar F well is 7 miles south of Altamont-Bluebell field and that another operator has recently completed two other southerly extension wells northeast of Bar F.

Altamont-Bluebell has produced more than 373 million boe from 792 wells.

Harvest said the well's results indicate that much of its 65,000 gross acres (39,000 net acres) in the basin is prospective for appraisal and potential development targeting the intervals tested in the Bar F well. Branta has interests in more than 90,000 gross acres in the southerly extension area and plans to drill four delineation wells this year.

Monument Butte extension

Branta also said it has participated since December 2009 in eight oil wells known as the Moon wells in the South Myton Bench extension area of Greater Monument Butte oil field, including some of the highest initial producing rate wells drilled to date in the field.

Six of the wells have combined output of more than 115,000 bbl of oil since December 2009, and two are shut in until processing facilities are expanded. The Moon 3A-29 well is making 350 b/d after an initial flow of more than 1,900 b/d.

Outside of South Myton Bench, several wells drilled by other operators to delineate the Monument Butte north extension area are capable of producing at rates in excess of 100 b/d. One well 14 miles northeast of the Moon wells produced at 100 b/d, and another well 11 miles to the west made 400 b/d.

Branta has interests in 24,000 gross acres in the Monument Butte northerly extension area and plans to drill 5 to 10 development and stepout wells in 2010.

Harvest also approved \$2.6 million to drill five more appraisal and development wells targeting Green River oil on the southern part of its Antelope land position in Duchesne County near Monument Butte field. The drilling will occur on land adjacent to a successful eight-well drilling program carried out in late 2009 and early 2010.

Greater Monument Butte field, discovered in 1964, and has produced about 68 million boe from more than 1,600 wells. **OGJ**

Several UK North Sea development plans solidify

French energy authorities have officially awarded shale gas exploration permits after some delay due to the number of companies that competed for licenses in the southeastern part of the country.

Charles Lamiriaux, chief geologist at the Environment and Energy Ministry in charge of exploration permits, divided the prospective area into smaller parcels (OGJ Online, May 27, 2009, and June 15, 2009).

Total E&P France and a unit of Devon Energy Corp., Oklahoma City, were awarded Montelimar Permit for 5 years and an outlay of €37.8 million. The 4,327 sq km awarded is 60% of the original surface requested. Geological and geochemical studies will be followed by drilling if warranted.

Devon decided at the end of 2009 to focus on North America, and Total E&P France has acquired Devon's French affiliate, pending ministerial approval.

Acreage sought by Schuepbach Energy LLC, Dallas, Dale Gas Partners LP of Texas, and Franco-Belgian GDF Suez, was split in two. The Villeneuve-de-Berg Permit covers 931 sq km,

and the Nant Permit covers 4,414 sq km. Both are awarded for 3 years.

For Berg the outlay is €39.9 million for seismic reprocessing, shooting 30 line-km of new seismic, and drilling two wells to 2,000-3,200 m, the last 1,000 m laterally with a hydraulic frac in the shale. The Nant program is €1.7 million for seismic reprocessing, shooting 30 line-km, and drilling a 500-m well.

The ministry awarded the Navacelle Permit, whittled by one-third to 216 sq km, to Egdon Resources (New Venture) Ltd. of the UK, Eagle Energy Ltd., and YCI Energy Ltd. for 5 years, seismic surveys, and one well at a cost of €3.6 million.

Mouvoil SA of Switzerland won the Bassin d'Ales Permit for 5 years and €1 million for seismic and drilling of one well.

Bridgeoil Ltd. and Diamoco Energy were awarded the 503-sq-km Plaine d'Ales Permit for 4 years. Work program is €1.5 million for seismic reprocessing and drilling a new well or reentering a 1949 well that found heavy crude. **OGJ**

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Gas Dehydration System

150-MMSCF triethylene gas dehydration system is immediately available for sale "as is." Equipment condition is NEW. Drawings are available on request.

Propak-built Used Refrigeration Plant

Built in 1988, this southwest Wyoming plant is rated for 45mmscf/d with a maximum of 53mmscf/d and a minimum 10mmscf/d treated. The plant has achieved a -50°F temperature to allow for higher propane/ethane recovery. Liquid recovery averaged 30-45,000 gal/day. Skid-mounted facility has 1,000 psi MAWP.

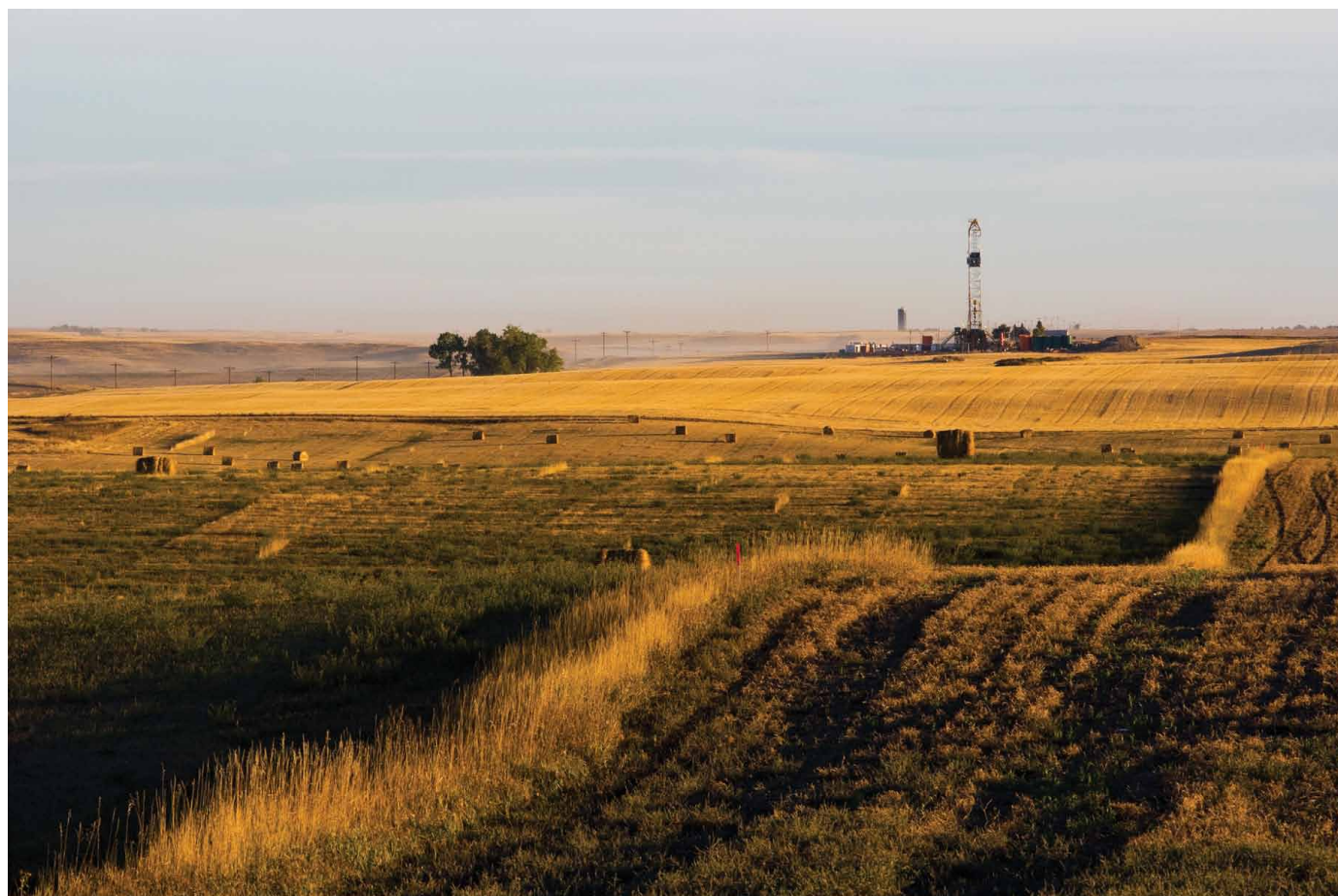
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Refrigerated Propane Chiller System

This used gas plant near Gillette, Wyo., has a wet gas processing capacity of 15 mmscf/d and 6,000 bbl/d of liquids of 1,600 BTU/gas. The process provides full fractionation for stripping ethane, propane, butane and natural gasoline. Heat medium is hot oil circulation. Plant's electrical power is self generated. Field volumes are transported in high- and low-pressure streams.

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DRILLING MARKET FOCUS

Independents accelerate US horizontal oil drilling

Paula Dittrick
Senior Staff Writer

A growing number of independents plans to accelerate development of crude oil and liquids-rich plays, driven largely by horizontal drilling results in the Eagle Ford shale of South Texas and by growing production in North Dakota's Bakken formation.

Carrizo Oil & Gas Inc. and Goodrich Petroleum Corp. each announced plans to acquire bigger stakes in the Eagle Ford, while EOG Resources Inc. reaffirmed its commitment to oil shale, citing discoveries in Texas, North Dakota, and Colorado.

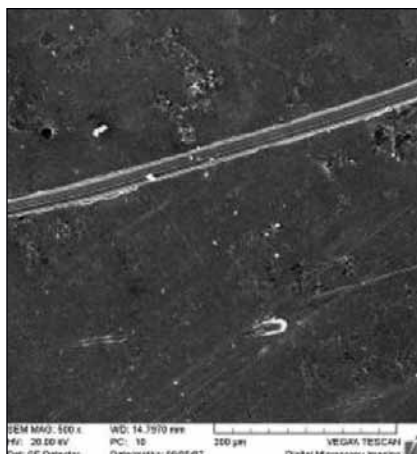
Mark G. Papa, EOG chairman and chief executive officer, told analysts Apr. 7 that he believes horizontal oil wells in unconventional rock will prove to be "a North American game changer."

He expects Eagle Ford discoveries could be among the largest US oil discoveries in 40 years. The play also produces gas, natural gas liquids, and condensate.

Oil development from shale plays is an outgrowth of the shale gas revolution, Papa said. He sees US independents as having three choices in their "big oil" quest: horizontal oil onshore in unconventional plays, Canadian heavy oil, or deep water.

EOG Resources Inc. executives say they are rapidly advancing horizontal technologies to boost recovery rates from US oil plays. EOG recently increased its estimated recovery potential from its Bakken acreage. Photo from EOG.

The polishing micromorphology shows no casing wear (Fig. 4).



In Test 4, the casing wear mechanism was mainly polishing wear. Fig. 4 shows the polishing wear microstructure. The soft surface of a rubber protector had a role in polishing the casing surface. The casing did not wear, and the wear debris rarely formed when polishing wear occurred.

The wear factors for machining, galling, grinding, and polishing were 230×10^{-10} /psi, 48.3×10^{-10} /psi, 7.67×10^{-10} /psi, 0.1×10^{-10} /psi, respectively.

The wear factor measured in the wear mechanism test was consistent with the wear factor range in Maurer's classification of wear mechanisms.¹ Table 2 describes the wear debris morphology and wear debris for Maurer's classification of wear mechanisms.

From these test results, we determined that the field should try to avoid machining wear and galling, and change these two types of serious wear types into grinding wear and polishing wear during the drilling process.

Lateral load effect

The conditions for testing the effect of lateral loads on casing wear were:

- 1,000 lb/ft, 3,000 lb/ft, 5,000 lb/ft lateral force.
- 9 $\frac{5}{8}$ -in. casing.
- TP-110 and TP-140 steel grade.
- Drilling fluid composition provided by Tarim oil field.
- Tool joints welded with XT100 wear-resistant belts.
- 8-hr test time.
- 158 rpm tool joint rotary speed.

Fig. 5 shows the effect of the lateral force on casing wear. The tests under different lateral forces found that the measured parameters of casing wear rate, wear factor, and friction coefficient varied greatly.

The casing wear rate, wear factor, and friction coefficient increased nonlinearly with an increased lateral force. Grinding was the wear mechanism under different lateral forces according to the wear factor.

With the lateral force increasing, a microbulge produced distortion, the contact area increased, and the friction coefficient increased.

The casing wear was different for different steel grades. The wear resistance of TP140 was better than that of TP110 in the tests.

The lateral force was an important factor on casing wear; therefore, drillers should strictly control dogleg severity to reduce the lateral force between the drill pipe and casing, particularly at shallower depths.

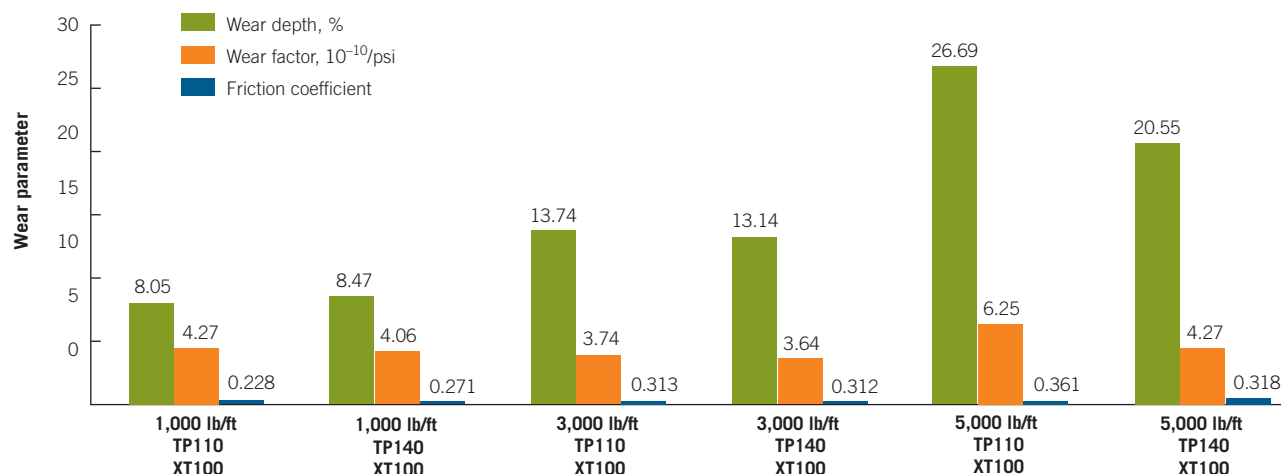
FOUR TEST CONDITIONS

Table 1

Test conditions	Lateral force, lb/ft	Casing grade	Drilling fluid	Tool joint
1	4,000	P-110	Water	Tool joint with welded rough WC wear-resistant
2	4,000	P-110	Water	Steel tool joint
3	3,000	P-110	Mud	Tool joint with welded Arnco 100XT
4	3,000	P-110	Mud	Tool joints with rubber protector

LATERAL LOAD EFFECTS

Fig. 5





Canaport LNG is the most recent LNG receiving terminal to start up in North America. Located in Saint John, NB, it is the first LNG terminal in Canada with maximum sendout capacity of 1.2 bcf/d. Serving both Canadian and US Northeast markets, the terminal stands to be somewhat less affected by the rush of shale-gas production coming on stream in the Lower 48 states. Canaport LNG is owned by Repsol (75%) and Fort Reliance (25%); photo from Canaport LNG.



Asia-Pacific LNG capacities, plans to move ahead in 2010

Warren R. True

Chief Technology Editor-LNG | Gas Processing

This article will set the backdrop for the future of global natural gas demand, production, and reserves. Then, it will review recent events and current status of major projects in the Asia-Pacific region.

Global LNG capacities and trade moved into unfamiliar and unsettling territory in 2009-10. As recession has driven down global energy demand, not least for natural gas, progress on approving, building, and commissioning yet more LNG plants and terminals has barely paused.

Nowhere was this more evident than for Asia, the world's largest LNG producing and marketing region and historically the center of the LNG world. There, recession seemed to land only glancing blows, depending on which economy you looked at. And the region has seen in the past year approvals of projects whose scale only a few years ago seemed daunting to many planners.

Large production projects for Australia and nearby Papua New Guinea moved from proposed to planned to construction in the past year. More are expected in 2010. Major markets, especially in China, have continued to approve and build terminals, anticipating little if any lag in demand growth and sensing the need at least to begin to reduce energy production from dirtier hydrocarbon sources than natural gas.

Global view

Natural gas demand worldwide will resume its rise in 2010, according to the International Energy Agency's 2009 World Energy Outlook. The pace of that growth, however, depends not only on the strength of economic recovery and growth but also on the strength of global climate policy action, the IEA report said late last year.



US gas market well-supplied: LNG or shale gas?

Chuck Yost
Merlin Associates
Houston

Expanding natural gas production from indigenous sources poses the most serious threat to imports of natural gas as LNG into North America, primarily the US. For North America, increased natural gas production is only likely from unconventional plays, mainly shale gas. Since 1999, net US proved natural gas reserves have increased every year. Since 2006 this is largely attributable to the growth in shale-gas discovery and development.

There are at least 24 substantial shale-gas reservoirs in North America with recoverable reserves in the US alone estimated to be as much as 824 tcf. Some reports say shale gas can be produced economically at wellhead prices ranging \$3.50-7.50/MMbtu. The variation is primarily a function of reservoir characteristics.

Estimated US shale-gas production grew to 6.5 bcfd in 2009 from 800 Mcfd in 1998. The growth in US proved natural gas reserves is based on currently economically recoverable reserves.

The growth exceeds ongoing production volumes, suggesting lower future demand for imported natural gas, mainly LNG. In addition, the ongoing global economic decline beginning in 2008 has reduced natural gas consumption, further reducing demand.

Chesapeake Energy has been one of the most active companies pursuing US shale gas. This Nomac Drilling LLC rig is working in the Fayetteville shale. Nomac is a wholly owned affiliate of Chesapeake. (Photo from Chesapeake)

Growth of unconventional

So-called conventional natural gas reserves have steadily declined for many years. Since 1998 natural gas production from unconventional sources has increased to 8.9 tcf/year in 2007 from 5.4 tcf/year. Unconventional natural gas reserves include coalbed methane and "tight gas" from sandstone and carbonate formations. Coalbed methane is the least expensive to produce of the unconventional sources of natural gas but is only a fraction of unconventional reserves. Tight-gas reserves are projected to be as much as 60% of the available US unconventional resources.

Shale gas is a large portion of the tight-gas reserves, and production has been increasing rapidly as technology has developed since 2004. The initial breakthrough in shale-gas production was stimulated by water-fracturing completion techniques and then boosted with application of horizontal drilling.

Shale formations serve as the source and the reservoir for natural gas. Shale is a sedimentary rock consisting of clay and silt-sized particles consolidated with simultaneously deposited organic materials. The deposits are compacted by subsequent additional sedimentary deposits into thinly layered shale rock. The layers have limited horizontal permeability and extremely low vertical permeability. Ultimate hydrocarbon recovery is about 20% of initial gas in place.

Horizontal drilling has been in use for a long time in development of conventional hydrocarbon production sources. The deposition process of shale rocks makes using horizontal drilling particularly attractive.

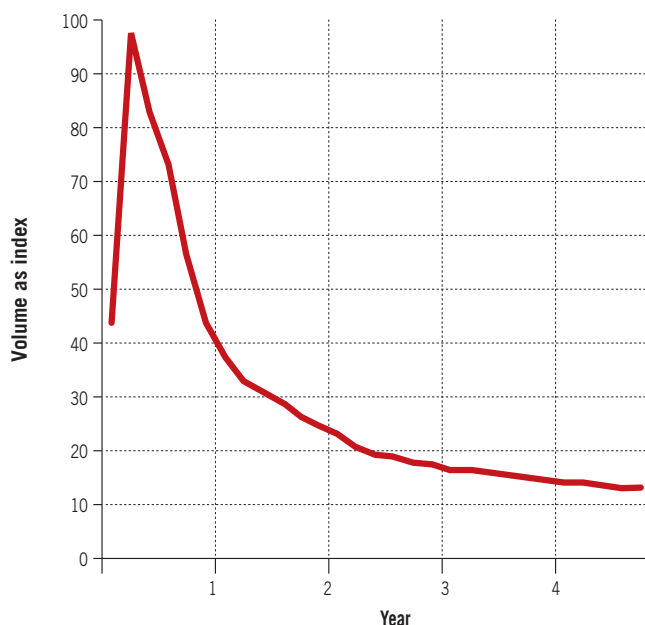
Horizontal drilling is especially effective for reservoirs that exist largely in the horizontal plane. A horizontal well may penetrate 2,000-6,000 ft or more of a formation, while a vertical well will only expose the thickness dimension of the reservoir. Far more vertical wells are needed to achieve the same level of producible reservoir formation.

Horizontal drilling reduces the number of wells, thus reducing the impact on the surface environment. A typical shale-gas development will require six to eight wells/sq mile, while at least 16 vertical wells would be required for the same potential production rate. In addition to simply having fewer wellsites, the horizontal well development will require fewer access roads, pipeline routes, and production facilities.

Shale-gas hydraulic fracturing uses primarily water with sand to act as a proppant with 2% or less chemical enhancers. Average water consumption is about 4.5 million gal/well. The minimum regulatory requirements for hydraulic fracturing are still under debate at both state and federal levels. It appears certain that well development using significant hydraulic fracturing will only be approved with a drilling plan that protects existing and future subsurface and surface water production reservoirs and streams.

The composition of hydraulic fluids will probably have to be reported before use in order to obtain governmental approvals. A full disposal plan and, perhaps, cleanup pro-

SHALE-GAS WELL TYPICAL PRODUCTION PROFILE Fig. 1



grams for the recovered hydraulic fracturing fluids will ultimately probably have to be provided for review and approval before proceeding with the project. The primary impact on the project is extended timing for approvals with associated increased costs.

Shale-gas potential

Shale-gas production activity is occurring in many places but the primary current production is in Texas from the Barnett formation near Fort Worth, Arkansas from the Fayetteville formation, Louisiana from the Haynesville formation, the Marcellus formation in Pennsylvania, New York, Ohio, and West Virginia, and the Antrim formation in Michigan.

Barnett shale production is expected to reach 3.5-4 bcfd by yearend 2011. Total US shale-gas production was estimated to be near 6.5 bcfd at yearend 2009. Canada also has very large shale-gas potential in British Columbia in addition to already producing coalbed methane projects.

Shale-gas production technology is on a steep development curve and further improvements will certainly enhance the economics of shale gas. Fig. 1 shows the typical shale-gas well production profile.

Initial production levels range from 1.5 MMscfd to as much as about 8 MMscfd with a few wells showing levels of more than 20 MMscfd. The decline curve varies greatly from well to well. Most developers expect wells to maintain average production of about 1.5-3 MMscfd for 4-6 years with an estimated ultimate recovery on the order of 3.5-5 bcf/well.

Drilling costs are clearly a function of formation depth, surface conditions, and formation impacts on horizontal drilling techniques. Projects in the Barnett development report combined drilling and completion costs ranging \$3-5 million/well. Projects in the Marcellus generally report com-

IMPORTS OF CRUDE AND PRODUCTS

	— Districts 1-4 —		— District 5 —		Total US	
	4-23 2010	4-16 2010	4-23 2010	4-16 2010	4-23 2010	*4-24 2009
	1,000 b/d					
Total motor gasoline.....	843	718	142	38	985	841
Mo. gas. blending comp.	704	565	82	38	786	680
Distillate.....	252	106	0	0	252	123
Residual.....	447	567	0	53	447	386
Jet fuel-kerosine.....	84	91	7	8	91	56
Propane-propylene.....	100	69	5	7	105	168
Other.....	22	607	135	12	157	366
Total products.....	2,452	2,723	371	156	2,823	2,879
Total crude.....	8,616	8,493	1,065	1,120	9,681	9,613
Total imports.....	11,068	11,216	1,436	1,276	12,504	12,444

*Revised.

Source: US Energy Information Administration

Data available in OGI Online Research Center.

PURVIN & GERTZ LNG NETBACKS—APR. 30, 2010

Receiving terminal	Liquefaction plant					
	Algeria	Malaysia	Nigeria	Austr. NW Shelf	Qatar	Trinidad
	\$/MMBtu					
Barcelona	8.42	5.98	7.52	5.86	6.80	7.43
Everett	3.35	1.15	2.96	1.23	1.70	3.65
Isle of Grain	3.79	1.71	3.18	1.60	2.28	3.20
Lake Charles	1.73	-0.22	1.49	-0.05	0.19	2.40
Sodegaura	5.65	8.17	5.90	7.85	7.08	4.92
Zeebrugge	7.04	4.75	6.35	4.63	5.39	6.41

Definitions, see OGI Apr. 9, 2007, p. 57.

Source: Purvin & Gertz Inc.

Data available in OGI Online Research Center.

CRUDE AND PRODUCT STOCKS

District	Crude oil	— Motor gasoline —		Jet fuel, kerosine 1,000 bbl	— Fuel oils —		Propane-propylene
		Total	Blending comp. ¹		Distillate	Residual	
PADD 1.....	11,967	56,377	40,730	11,993	58,997	16,790	2,787
PADD 2.....	91,528	53,406	26,072	7,427	28,323	1,221	14,110
PADD 3.....	185,125	73,331	45,042	14,868	49,369	22,002	16,508
PADD 4.....	16,779	6,952	2,431	642	3,275	187	1,640
PADD 5.....	52,421	33,619	28,195	9,247	11,856	4,685	—
Apr. 23, 2010.....	357,820	223,685	142,470	44,177	151,820	44,885	34,045
Apr. 16, 2010.....	355,857	224,925	143,422	42,561	148,883	44,386	30,798
Apr. 24, 2009².....	374,653	212,612	126,734	40,188	144,105	36,282	43,119

¹Includes PADD 5. ²Revised.

Source: US Energy Information Administration

Data available in OGI Online Research Center.

REFINERY REPORT—APR. 23, 2010

District	REFINERY OPERATIONS		REFINERY OUTPUT				
	Gross inputs	Crude oil inputs	Total motor gasoline	Jet fuel, kerosine	Fuel oils	Propane-propylene	
	1,000 b/d				Distillate	Residual	
					1,000 b/d		
PADD 1.....	1,143	1,126	2,392	80	421	70	57
PADD 2.....	3,100	3,079	2,267	195	854	32	273
PADD 3.....	7,971	7,658	2,623	781	2,111	259	773
PADD 4.....	562	556	342	32	184	7	171
PADD 5.....	2,865	2,537	1,581	419	593	130	—
Apr. 23, 2010.....	15,641	14,956	9,205	1,507	4,163	498	1,174
Apr. 16, 2010.....	15,110	14,678	9,396	1,440	4,057	483	1,173
Apr. 24, 2009².....	14,612	14,334	8,790	1,442	4,153	476	1,005
	17,584 Operable capacity		89.0% utilization rate				

¹Includes PADD 5. ²Revised.

Source: US Energy Information Administration

Data available in OGI Online Research Center.

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



OGJ CRACK SPREAD

	*4-30-10	*5-1-09	Change	Change,
		\$/bbl		%
SPOT PRICES				
Product value	94.22	56.92	37.29	65.5
Brent crude	85.84	50.04	35.80	71.5
Crack spread	8.38	6.89	1.50	21.7

FUTURES MARKET PRICES

One month				
Product value	96.98	58.91	38.07	64.6
Light sweet crude	84.24	51.07	33.17	64.9
Crack spread	12.75	7.84	4.91	62.6
Six month				
Product value	96.58	59.66	36.92	61.9
Light sweet crude	89.96	56.45	33.51	59.4
Crack spread	6.62	3.21	3.41	106.0

*Average for week ending.

Source: Oil & Gas Journal

Data available in OGI Online Research Center.

online

THE EDITOR'S PERSPECTIVE

Hate derivatives? How can you like cap-and-trade?

Political gyrations over financial and energy reform camouflage a wicked hypocrisy.

Financial reform legislation in the Senate treats derivatives as demonic. Derivatives are tradable financial instruments linked to physical commodities. Some are traded on centralized exchanges subject to regulation, others less formally in a hazy realm known as "over the counter" (OTC).

OTC derivatives receive much of the blame for the financial system's unraveling in 2008. Reform legislation would require that many derivatives now traded OTC instead be traded on regulated exchanges.

by **Bob Tippee**, Editor
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ONLINE APR. 30, 2010

Attention to derivatives, with the purpose of tightening regulation of them, no doubt is in order. But the pressure on Congress to overreact is strong. Financial industry representatives say the Senate legislation goes too far.

Indeed, senators are just acting in character if they're using derivatives as a scapegoat. They'd like voters to forget their own roles in the financial crisis, such as encouraging imprudent mortgage lending. To crack down on existing derivatives while creating another one, moreover, seems wildly inconsistent. The new derivative would be the tradable emission credit central to cap-and-trade systems for managing greenhouse gases.

Legislation passed by the House made emissions trading its centerpiece. The Senate has been wary of the House approach and may be in no mood to take up climate-change legislation before elections in November. But Sens. John Kerry (D-Mass.), Lindsey Graham (R-SC), and Joe Lieberman (I-Conn.) have written a bill that retains the cap-and-trade approach at least for utilities. Prospects for their proposal are cloudy. While many senators don't want to address the issue now, supporters of aggressive climate-change responses think now may be their best chance to ram a bill into law.

The push lost momentum when Graham threatened to withhold support after Senate Majority Leader Harry Reid, in what many see as an act of political opportunism, made immigration reform his priority.

Political intrigue thus diverts attention from questions about a tradable financial instrument anchored to a license to emit greenhouse gases, the value of which would be determined by the government.

As derivatives go, nothing in existence now is more deserving than that of suspicion.

MARKET JOURNAL Tight pockets, surplus pools

The US oil market has become "a combination of pockets of tightness and pockets of surplus, with a series of contrasting regional and product quality distortions to boot," said Paul Horsnell, managing director and head of commodities research at Barclays Capital in London.

"While gasoline demand is at a record high for April, distillate demand is more than 15% below its April record. There is currently very little in the dynamics of the US oil market that is even or consistent," he reported Apr. 28.

He noted a period of "very strong" oil prices in late April, with a whole series of new 18-month highs being set. On Apr. 26, the Organization of Petroleum Exporting Countries' basket of 12 benchmark crudes reached a new 18-month high in both dollar and euro terms. "Indeed, the OPEC basket has risen significantly faster in euro rather than dollar terms this year," Horsnell said. "Last year there was a fairly common thread of analyst comment that said rising dollar prices were primarily due to dollar weakness, but this year's very different price dynamics seem to have firmly refuted that idea."

Also on Apr. 26, the length of the North Sea Brent futures price curve "all the way from the prompt month to 4 years out" reached a new 18-month high, as did all the traded months of the yen-denominated Tokyo Commodity Exchange's Dubai-Oman average contract, he said.

Despite regional distortions and pressure at the front of the market, most of the West Texas Intermediate curve also reached a new 18-month high. "The section from the 3rd to the 16th contract did so on Apr. 26, and the section from the 17th to the 50th contract did so again on Apr. 27," Horsnell said.

"The one piece that has not fit the general pattern has been the very front of the WTI curve, which has resulted in a string of prompt distortions. The weakness at the front of the WTI curve is due to the build-up of crude at WTI's pricing point at Cushing, Okla.," he said.

In the 5 weeks leading up to Horsnell's report, US crude inventories increased 6.5 million bbl in absolute terms. US crude inventories usually rise from the end of December through to the beginning of May.

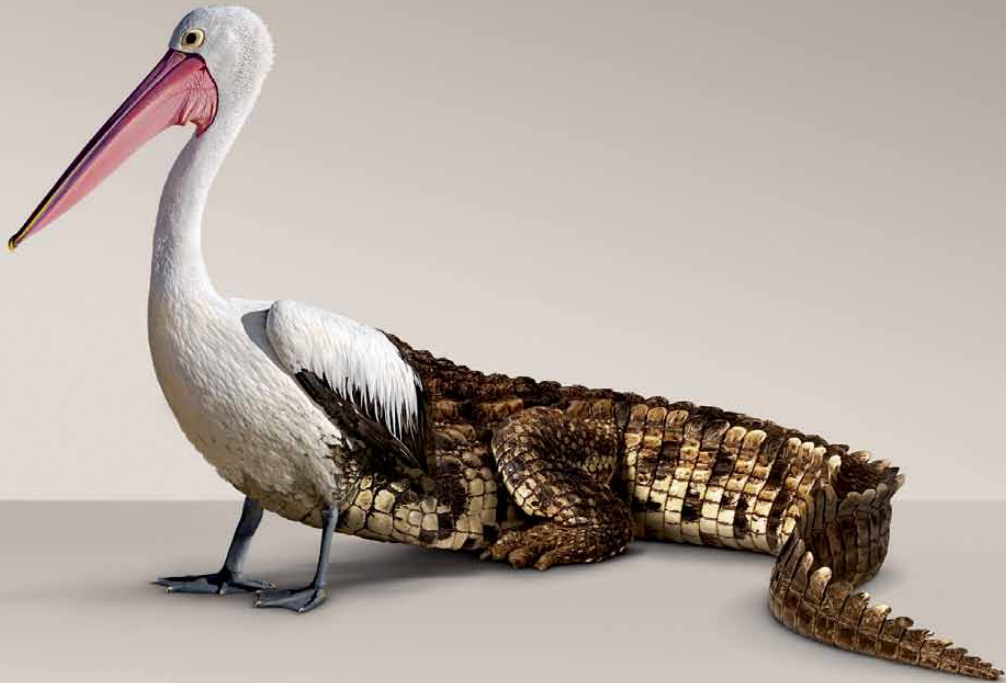
However, the average change in inventories for comparable 5-week periods over the past 5 years is an increase of 10.9 million bbl. So the increase of 6.5 million bbl in the latest 5 weeks remains short of the seasonal pattern. "In other words, the actual rise in US crude oil inventories of 6.5 million bbl means they have actually fallen relative to the seasonal pattern over the past 5 weeks, with the overall surplus of inventory above the 5-year average falling from 21.9 million bbl to 17.5 million bbl over that period," he said.

Midwest surplus

Horsnell sees "no unusual supply imbalance at the margin" of the crude market. Instead, there has been "a lower-than-normal seasonal stock-build and a whittling away of the existing overhang of crude oil inventories." By separating the Midwest "as if it were another country within the US data," some striking differences emerge. "Midwest crude inventories have risen by 6.9 million bbl more than is seasonally normal, and those in the rest of the US have fallen by an enormous 11.3 million bbl relative to the normal seasonal pattern, Horsnell said. "While crude inventories are now 18 million bbl higher than their 5-year average in the Midwest, they are 500,000 bbl lower than the 5-year average in the rest of the US."

The US crude market is still tightening at a steady rate, but all of the overhang is now concentrated in the Midwest. "All of the surplus crude is now in the one area that constitutes the locus for the pricing of WTI. The imbalance has in turn deepened the contango and, thus, further increased the incentive to move oil into the Midwest and to get it into Cushing storage in particular," said Horsnell.

However, he cautioned analysts "not to draw more general conclusions on the basis on prompt WTI dynamics alone." He said, "The Midwest flows should sort themselves relatively quickly out through some normalization of flows from Canada, higher regional [refinery] runs, some pipeline start-ups requiring line-fill, and because of a higher bid from the rest of the country now that inventories are lower than usual in other US regions. Until all that comes through, however, prompt WTI is likely to remain distorted."



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