The future of exploration

By David Michael Cohen

Exploration will continue to drive upstream success, but technology and expertise will have to focus on minimizing geo-logic and drilling risk as targets become more challenging. That was the consensus of exploration experts at Monday morning’s OTC panel session “Changing the game bit by bit,” which sought to paint a picture of the future of exploration in a sea of price instability, resource nationalism and increasing industry focus on continuous resource plays.

Larry Archibald, senior vice president of ConocoPhillips, highlighted his company’s shift over the last few years from an emphasis on resource growth through mergers and acquisitions to a focus on organic growth, with a focus on “high-impact” wildcats.

“We believe there’s a lot of great exploration plays around the world, and the most cost-effective way to add resources is through exploration, and we don’t see that changing,” he said.

“So we are continuing to build our exploration and appraisal budgets relatively flat, even as we cut other things.”

He said he expects exploration budgets to shift toward “unlocking known resources in difficult basins,” though he also remarked on “how many deepwater basins have been lightly tested or not tested at all.”

Jim Demarest, Noble Energy director of international exploration, said his company’s 2010 exploration budget is its largest yet, even as Noble is in the process of bringing online its three largest fields, discovered in the last two years offshore Israel, West Africa and in the deepwater Gulf of Mexico.

Demarest emphasized the importance of a “learning culture” in Noble’s recent exploration success. “We put an enormous amount of effort into making predictions, measuring how well those predictions panned out, and when they didn’t pan out, finding out why. Where did we go wrong? Did we get the reservoir thickness right or wrong? If we under-predicted or over-predicted, why did we do it?”

His advice for companies unable or unwilling to invest heavily in exploration expertise: “Buy reserves and don’t even try to find them, because it really is a tough business to be in.”

Jim Farnsworth, CEO of Cobalt International, said his company’s growth in the last few years from owning no leases to holding several hundred in the Gulf of Mexico, West Africa and elsewhere, has been made possible largely due to the shift in exploration technology from the supermajors to service companies, which has “lowered the barriers of entry” to exploration.

However, according to Noble’s Demarest, the other side of the technology shift to service companies is that it makes it more difficult for exploration companies to maintain a technical

BP turns attention to lessons learned at Thunder Horse

By Jim Redden

What was billed as a BP-led discussion on the lessons learned during the installation and operation of the technically demanding Thunder Horse and Atlantis deepwater developments, quickly turned to the ongoing Deepwater Horizon trag-edy in the Gulf of Mexico.

“This incident is a stark reminder of the challenges we face every day in bringing energy to the US,” said Jackie Mutschler, BP vice-president of research and technology, during Monday morn- ing’s technical session. “We are facing a highly challenging period, but we want to assure everyone that everything that can be done is being done.”

The magnitude of the challenges we face are mirrored by the incredible sup-port we’ve received from the industry (and state and federal) governments,” Mutschler continued as the standing room only crowd listened intently. “Right now, we have more than 150 companies involved in the effort.”

With that, a trio of BP officials proceeded with the advertised topic, discussing the technical challenges and solutions that eventually resulted in the start of production from the Atlantis and Thunder Horse structures that began deepwater production in late 2007 and late 2008, respectively. Atlantis is produ-ducing from a moored semisubmersible at a rate of 200,000 bbl/day from 7,707 feet (2150 m) of water on Green Canyon blocks 699,700,742,743 and 744, while Thunder Horse is producing 250,000 bbl/day from more than 6,000 feet (1829 m) of water on Mississippi Canyon 778.

While Thunder Horse originally was to go on line first, a host of technical obstacles pushed its timetable back and

Why and how to save the Gulf

With the many major initiatives occurring since President Obama took office, the Interagency Ocean Policy Task Force may have been overlooked. The president charged the heads of executive departments and federal agencies to develop a national policy recommendation to ensure the protection, maintenance and restoration of oceans, US coasts and the Great Lakes.

This is not a partisan issue. It was President Bush’s US Commission on Ocean Policy that initially highlighted the inadequacies and inefficiencies of the management of oceans and marine resources. President Obama initiated the Interagency Ocean Policy Taskforce to develop strategies to improve manage- ment of the oceans, marine resources and the Great Lakes (see http://www.whitehouse.gov/administration/eop/ceo/initiatives/oceans/).

One output of this initiative is the promotion of a National Ocean Policy. The possibility of a true marine policy holds great promise for the future of US ocean resources. What happens in and to these resources greatly affects the nation’s economic and environmental health. The US has more ocean territory within its boundaries than land, and the fate of the Gulf of Mexico is of interna-tional importance.

The Gulf of Mexico is the most eco-nomically productive of the US ocean territories. The latest data on US ocean-sector industries reveals that more than 2 million jobs and over $128 billion in GDP annually results from just ocean tourism, recreation and fisheries. The Gulf of Mexico contributes over 90% of the nation’s offshore energy produc-tion. The offshore petroleum industry in the Gulf employs 55,000 workers and

See Gulf of Mexico, page 21

2-stage cementing tools for 4-alarm well challenges.

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Booth #3935

BP discussion, page 23
RLWI: a low-cost boost for subsea productivity

By Brian Skeels, FMC Technologies

Let’s say you’re operating a few mature subsea fields – which more and more operators are these days.

You’re losing pressure and pumping mostly water. You know there’s more oil in there, but you can’t quite figure out how to reach it. Now there’s an effective – and surprisingly cost-effective – way to squeeze more production out of your mature subsea fields. Think about using FMC Technologies’ Riserless Light Well Intervention (RLWI) technology.

Results without rigs. The main difference between RLWI and older well intervention methods is that it’s riserless and doesn’t require the use of an expensive rig.

Instead, it uses a purpose-built, dynamically positioned monohull vessel to perform well logging operations, gauging, plugging, downhole repair, scale removal, re-perforations and other workover activities to reduce flow restrictions and increase productivity.

With RLWI, you can customize the workover to a specific need at half the cost and in half the time of a traditional intervention. In fact, you can be in and out, with the job complete, in just about a week.

The payout can be enormous. At FMC Technologies, we saw overall oil recovery increase 46% from 28 North Sea wells on which we performed RLWI in 2006 and 2007. And now our technology is even more powerful.

Ready for deepwater interventions. FMC Technology’s RLWI Mark II system uses a compact, electric, ROV-style umbilical cable that can be disconnected quickly and safely without ROV assistance and stands up to rigorous heave compensation winches. Reconfiguration between wells and/or tasks is now much easier and faster than it used to be.

FMC Technologies has already proven the effectiveness of RLWI in the North Sea, and Mark II is making RLWI interventions feasible in deeper water by reducing weight, optimizing the size of pressure control and closure devices, and upgrading the control.

Brian Skeels is the Emerging Technologies Director for FMC Technologies and this year’s recipient of the ASME Outstanding Achievement in the Oil Industry award.

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has the tool – thoroughly field-tested in the North Sea – to boost production using less expensive, monohull vessels. It's called FMC Technologies’ Riserless Light Well Workover (RLWI) – it's a third-generation technology with numerous advantages.

Full control over the workover process with no rig required. RLWI workovers are performed using FMC Technologies' proprietary ROV-based RLWI technology, which utilizes a single monohull vessel with an umbilical that connects the well in the field to a state-of-the-art riserless workover control system. This system provides comprehensive pressure and temperature control, data acquisition, and analytics.

Flexible pipe integrity monitoring
Deepwater without borders
Debunking energy myths
Saudi Aramco expansion
Asset management

New seal breed
Subsea 7s Droshky project
Oilfield innovation
Cameron’s Technology Center
Embracing change

Inside this issue...

Straight talk from an insider

As president of Shell Oil, John Hofmeister was known for his willingness to challenge business as usual. Now, as founder of Citizens for Affordable Energy, he is crossing the country in a grassroots campaign to change the way we look at energy. During Monday’s topic luncheon, Mr. Hofmeister offered an inside look into how major energy companies, special interest posturing and how politicians inflate energy costs in their own electoral interests. Borrowing a page from his new book, Why We Hate The Oil Companies: Straight Talk From An Energy Insider, Mr. Hofmeister details how misinformation is intended to hurt consumers. Below please find excerpted remarks from Mr. Hofmeister’s speech:

More recent price “wakeup” call delivered to the US during the period 2005-2008, policymakers have been unable or unwilling to address the nation’s energy security, economic competitiveness that comes from affordable energy, and the potential jobs creation initiatives that a sound energy policy would and should deliver. Given the current trajectory of an aging infrastructure, decades of restrictions on drilling, failure to tackle the obstacles that prevent both more nuclear plant and clean coal plant projects, frettering at the edges of renewable energy, and avoidance of other energy “hard choices,” within the decade the nation faces an unprecedented energy abyss.

By 2020, there will be inadequate supplies of liquid fuels and electricity taking the nation toward inevitable gas lines, brown-outs, black-outs and extraordinary high prices. The energy abyss will stick around for up to a full decade with all of the national decline, economic decline, joblessness and social malaise that accompany energy shortages in third world countries.

The energy industry, despite its technological, geological, chemical, physical, molecular, logistical, scientific and engineering expertise and capacity to deliver affordable energy in endless supply, given all of the natural sources of energy in this country, and the world, will be unable to supply the demand because of public policy constraints. Yet, it will bear the brunt of the blame for energy shortages. Today’s energy professionals will bear the reputational burden of our national decline and failure because who else is blameable? Are you prepared to accept that blame, or are there viable alternatives, things you can do, to change the nation’s current trajectory? Understanding the scope and depth of the energy system’s problems requires careful understanding of just how entrenched the obstacles are to sound enabling public policy. What do we do about “political time” dominance in the political process, up against “energy time” requirements to get projects launched and completed? How do you respond to the dysfunctional structures that our three independent branches of government have created over the course of time? Is it really necessary to have 3 executive branch agencies govern energy and the environment? Do we need 26 congressional committees and subcommittees writing legislation on energy? Should every federal district court have authority to delay and ultimately prevent citizens from having the energy they need because of the power of the judicial bench? How long can you tolerate the paralysis that ensues when right and left wing interest groups, demagogues and author- ity figures, elected as well as appointed, obstruct mainstream, centrist Americans, most likely the majority of citizens, from achieving needed policy objectives? Are you willing to accept zigzag efforts to move energy policy forward forever?

The nation has to come to grips with its energy future sooner, not later. The time is now or never. We can’t wait for a ninth president or 19th congress to promise us whatever it takes to get elected and then lead us down another failed path. We should have learned by now but we haven’t. So what can change and what can you do to make a difference as an energy professional and as a citizen of this or any country.

Opening Reception honors award winners

The OTC Board of Directors held its annual meeting on Sunday afternoon followed by an evening reception honoring the recipients of the 2010 Offshore Technology Distinguished Awards. The awards will be presented at a luncheon on Tuesday, May 4. The following awards are being presented to the award winners for their contributions in more than 53 years in the offshore oil industry, and Anadarko Petroleum, in recognition of the record-setting Independence Hub.

There were no formal speeches or presentations at the Sunday evening reception. The icebreaker event gave an opportunity for the board members to mingle with about a hundred select local and international guests, including conference speakers and panelists. The Greater Houston Convention and Visitors Bureau, Reliant Park and Aramark food service company served as the hosts for the exclusive reception.

Schedule of Events

For more detailed information about each day’s sessions and events, pick up an official OTC program or visit www.otcnet.org.

Tuesday, May 4

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<td>9 a.m.–5:30 p.m.</td>
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<tr>
<td>9:30 a.m.–12 p.m.</td>
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<td>10 a.m.–12 p.m.</td>
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Straight talk from an insider

Of course, there were no formal speeches or presentations at the Sunday evening reception. The first OTC event, given to board members who mingled with about a hundred select local and international guests, including conference speakers and panelists. The Greater Houston Convention and Visitors Bureau, Reliant Park and Aramark food service company served as the hosts for the exclusive reception.
To address issues surrounding the testing of flexible pipeline integrity, Total and Schlumberger developed the subC-racs riser annulus condition surveillance system for continuous monitoring of flexible riser integrity. The findings of the two companies were discussed in a Monday morning technical session. During the session, it was revealed that issues associated with previous testing methods included the high cost of vacuum and pressure tests, while conventional vent-gas monitoring does not provide reliable information on gas diffusion rates or water vapor emissions.

The primary issues for flexible risers are the status of the outer sheath and the presence of water in the annulus due either to condensation or by damage to the outer sheath. Prior to the subC-racs monitoring system, the only method to assess water tightness of the outer sheath and the quantity of condensed water in the annulus was to perform vacuum or pressure testing of the annulus.

"Total’s requirements for monitoring included an external system that can be retrofitted, avoidance of costly annulus vacuum and pressure testing, and the continuous monitoring of water levels in the annulus," said Jean-Philippe Roques of Total. "Additionally, it must also provide an alarm for outer sheath failures."

Additional operational parameters include the capability to measure or calculate the free volume of the annulus; allow for easy gas sampling; avoid the need for regular annulus testing; and it should be developed utilizing existing technology. No specific development had to be made to the sensors or equipment used within the system, Roques noted.

A prototype monitoring system was tested on a 6-in., 170m long flexible riser in Total’s facility at Pointe Noire, Congo. The test confirmed the good condition of the vent ports and that the annulus was free of restrictions. It also proved the ability of the model to predict the system's behavior.

"Good results were accomplished during the field test in terms of measurement," said Dominique Dion with Schlumberger. "The subC-rac was a useful tool to witness the integrity of the line."

Since the installation of the flexible pipe monitoring system on the MOHO field in December 2009, results have been within the companies’ expectations. The system's robustness and software reliability were also demonstrated during the test period. The results of successive measurements of the free volume showed good similarity with the free volume measurements performed during regular and planned annulus testing, Dion added, confirming that regular annulus tests would no longer be required for risers equipped with the subC-rac system. Additionally, an alarm system was implemented to allow operators to monitor the integrity of the risers and the connectivity of the annulus and vent ports on a daily basis.

Jean-Philippe Roques, Total SA, monitors flexible pipeline integrity.

A field test was implemented in the MOHO field that was developed utilizing a floating production, storage and offloading (FPSO) system that is operated by Total E&P Congo. Two subC-racs units installed on risers were in operation for six months, one on a 6-in. gas export riser and one on an 8-in. production riser. Water depth at the FPSO location is about 600m with each line about 1 km long. During the test period, data monitored and computed by the flexible pipe integrity monitoring system, including the riser temperatures and flow rates acquired by the floating production unit’s control system, were transferred from Congo to Paris for evaluation and follow up of the monitoring system’s performance.

New volume measurement was made every three days. After each measurement it took more than 1 ½ days for pressure to stabilize. Despite the stabilization time, repeatability was dramatic.

"By Jerry Greenberg"
Using geoscience to save lives

By Nell L. Benton

While natural disasters have occurred since the dawn of time, the recent string of disasters around the world have led many professionals to ask how they can use their expertise and collaborate with others to help those affected by these terrible tragedies.

During a Monday topical luncheon, Craig Beasley, chief geophysicist for Western Geco, gave a presentation about bringing geoscience and engineering technology from the energy industry to humanitarian needs.

Beasley first imagined the concept of applying geoscience to humanitarian needs when, as the newly appointed head of the Society of Exploration Geologists (SEG) in 2004, he was inundated by dozens and dozens of emails from concerned members asking how they could help the relief efforts in tsunami-torn Indonesia.

This event lead Beasley to look at the bigger picture: how to get a larger population of those involved in science to collaborate on using geophysical knowledge to aid in humanitarian causes around the world. Thus, Geoscientists with Borders was born. Beasley contemplated how to connect students, companies, communities and organizations, while maintaining the goal of bettering the lives of those in need, Western Geco (now Schlumberger) offered $1 million to start up the foundation, in partnership with SEG.

Geoscientists with Borders began with a simple plan: to give awards to worthy projects twice a year by having applicants submit a one-half page proposal, explaining who there are, their idea is, what project will accomplish and how much it will. A short list of proposals was chosen, from which several were asked to submit a longer proposal outlining the significance of their project. Awards began at $50,000 per year, with the possibility of renewal for second year. Beasley explained, “To win an award, we asked for three simple things, primarily that the project be humanitarian in nature.” The proposals were also to involve both students and geophysicists in meaningful ways.

Hands-on field approach in northern Thailand. Students at Boise State University partnered with Chiang Mai University in Thailand, and SEG student chapters in Southeast Asia. The goal of the project was to teach a hands-on approach to applying geophysics to their homeland, an area plagued by very high levels of seismic activity for hundreds of years. Previously, the students had studied geophysics on a theoretical level, but never had the opportunity to apply it out in the field. The project’s intent was to help the students apply their knowledge of geophysics to the earthquakes, contents of ground water element and archeology.

The project results are available online and a second phase of the project is being prepared for next year.

Water crisis in rural India. The next project approved the collaboration of Clemson University’s Foundation for Economic Security (nongovernmental organization in India), Indian Institute of Technology-Bombay and communities in Salari, India to apply the knowledge of geophysics to the severe water crisis in India’s rural areas.

The proposal highlighted the severe shortages of potable water in rural parts of India. Water was so scarce that some villagers spent over one-third of the year collecting water and in some areas, 70% of women spend more than four hours a day collecting water. Overpopulation and deforestation had turned the water shortage into an alarming crisis.

The project’s goals were to locate underground water reservoirs with electromagnetic induction on the near-surface. The next part of the project called for a public outreach project, where as project teams held public talks, released publications and reports, developed and released protocols and software and got village-wide involvement in education others about the findings of the project.
Keith Rattie told a lunch audience on Monday that he was going to attempt what seems an impossible mission: that's try to have an honest conversation about America's energy future. Items within the realm of that conversation included global warming, energy policy and what proposed energy policies will mean for the next generation.

Rattie, chairman, president and CEO of Questar Corp., discussed "Energy myths and realities" with the estimated 500 in attendance during lunch. He noted that during his 34-year career in the energy industry he could not recall a time when the public discourse about energy has been so tortured with contradiction, bad math, hyperbole and wishful thinking.

“There may be no greater challenge facing mankind today than figuring out how we’re going to meet the energy needs of a planet that may have 9 billion people living on it by the middle of this century,” he said. “The magnitude of that challenge becomes even more daunting when you consider that of the 6.7 billion people on the planet today, over 1.6 billion people don’t have electricity—never flipped a light switch.”

Looking back on his career start with Chevron, he reminded the luncheon group that in the mid-1970s the "consensus" was that American and the world were running out of oil and natural gas. Ironically, in the 1970s some of the media were reporting a scientific consensus that the planet was cooling.

“It was all the fault of fossil fuels,” he recalled. “Unless we found alternatives to fossil energy—and fast—we were going to freeze to death.”

Rattie said the fear now is not just that we're running out of oil, but that we're running out of time. According to Rattie, the media long ago declared the debate over and that global warming is an emergency.

“I’m an engineer, so I tend to be skeptical when journalists hyperventilate about science,” he noted. “My research convinces me that claims of a scientific consensus about global warming misleads the public and policy makers, and often reflect another agenda.”

The Questar chairman told the group there is consensus on a few things. The climate is changing and has been changing for the past 4.8 billion years and that planet Earth has warmed slightly over the past 100 years.

“Contrary to the righteous certitude we hear from former vice presidents and crusading journalists, no one knows how much warming that does occur will be due to man, and how much to nature,” he said. “No one knows how warming will affect the planet, or how easily people will adapt to any warming that does occur.”

Taking aim at US legislation, he believes that Waxman-Markey is arguably the most "asinine" piece of legislation in American history. Using US Chamber numbers, he said Waxman-Markey promulgates over 1,500 new regulations and mandates involving 21 federal agencies.

Rattie said that an honest conversation about how to reduce CO2 emissions must begin with a few “inconvenient” realities. First, global demand for energy will likely grow by 30–50% over the next 20 years—driven by prosperity and population growth—and more than double by the time today’s teenagers reach their 40s.

The second reality is there are not any real alternatives to oil and natural gas, and coal. “Like it or not,” he said, “the world runs on fossil fuels, and it will for decades to come.”

Quoting a US government forecast, he noted that fossil fuels will supply over 80% of the world’s energy demand in 2030, or roughly the same as today. “It’s not about who is in the White House,” he stressed. “It’s not about who controls the gavel in Congress. It’s about thermodynamics, physics, economics and the enormous scale of mankind’s need for energy.”

Rattie said its arguable about whether global warming is a serious problem or not, but there is no argument about the consequences of “cap and trade” legislation. “It’s going to drive the cost of energy painfully high,” he said.
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Saudi Aramco will expand its upstream exploration programs to build a spare capacity of 1.5 to 2 million b/d cushion for its 12 million b/d oil production, as well as to support an increase in gas reserves of 5 tcf/year, according to Zuhair Al-Hussain, Vice president, drilling and work-over, Saudi Aramco. Mr. Al-Hussain revealed Saudi Aramco’s upstream challenges and plans at Monday’s topic al luncheon.

“In the last five years, an ambitious exploration and drilling program has added over 2,450 million b/d of oil production,” Al-Hussain said. “In 2006, Haradh-III Field added 300 million b/d. In 2008, two fields were brought into production: Khursaniyah with 500 million b/d and Shaybah with 250 million b/d. In 2009, Nuayym added 100 million b/d and the Khurais field provided a major expansion with 1,200 million b/d.”

“Khurais was the largest oil development in history,” Al-Hussain said. “Saudi Aramco drilled over 300 horizontal wells with total footage of 3.4 million. The field incorporates permanent monitoring with built-in downhole sensors and was completed ahead of schedule and below budget.”

Next on Saudi Aramco’s field development agenda is the Manifa field, the largest offshore development in history. “The field is being developed under strict environmental guidelines to protect the local shrimp industry to add 900 thousand b/d of heavy Arab crude,” Mr. Al-Hussain said. Due to the worldwide recession, Saudi Aramco has slowed the Manifa development to start production in mid-2013 and delay full production to subsequent years.

Saudi Arabia’s domestic gas consumption is increasing at the rate of 7%/yr. To support gas demand for electric power generation and local industrial growth, Saudi Aramco will bring into production the offshore Karan field with a capacity of 1.8 billion cfd in 2011 and the offshore Hasbah and Arabiyah fields with a combined production of 2.5 billion cfd by 2014. Saudi Aramco is also evaluating tight gas development through the delineation and characterization of fields in the northeast and offshore Red Sea. The company is conducting wide-azimuth 3D seismic surveys and funding research to solve challenges such as salt sequences, subsea volcanoes and HPHT conditions.

“Saudi Aramco’s Upstream Research Center is conducting over 100 technology projects on topics ranging from 3-D seismic to reservoir simulation,” Al-Hussain said. Among the high-technology projects includes the use of reservoir nano technology for monitoring reservoir fluid properties. Its Resbot reservoir nanotechnology project won the 2008 World Oil New Horizons award as a game-changing technology.

“Saudi Aramco’s Upstream Research Center is conducting over 100 technology projects on topics ranging from 3-D seismic to reservoir simulation,” Al-Hussain said. Among the high-technology projects includes the use of reservoir nano technology for monitoring reservoir fluid properties. Its Resbot reservoir nanotechnology project won the 2008 World Oil New Horizons award as a game-changing technology.

Saudi Aramco also sees a human resources challenge with the retirement of its senior staff. “We’re building a world class E&P training center to educate more than 500 professionals each year in exploration and production technologies. An intensive, immersive program will shorten the cycle time for turning new hires into full contributors,” Al-Hussain explained.

Al-Hussain expressed his fondness for Houston and the annual OTC. “For me and Saudi Aramco, it is a second home,” he said. •
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Next generation asset management

The challenges facing today’s oil and gas producers are complex and extensive: rising global demand, harsher and riskier exploration and production environments, declining production from older fields, consolidation of operational assets, increased safety, environmental and economic constraints, a shrinking pool of knowledgeable personnel and constant demands to reduce operating expenses while boosting uptime.

Improvements in predictive technologies hold the promise of enabling energy companies to deal more effectively with many of these challenges. Leveraging the latest technologies, asset performance management (APM) can help oil and gas producers improve overall asset availability.

APM technologies include process safety and critical control solutions, process condition and asset monitoring, detailed network architecture planning, federated data strategies, tracking and trending software, collaborative dashboards and automated production reporting. These solutions offer companies an effective and efficient means of automating the integration, gathering and analyzing of vital data from across production facilities to simplify network analysis for operators. As a result, companies can improve asset reliability, minimize downtime and decrease operation expenses.

An additional benefit of applied analytics operating in well-designed APM systems shifts companies from reactive and costly repair-focused asset-maintenance plans to proactive and preventative reliability-focused maintenance plans. This reduces overall maintenance costs and boosts production uptime, giving these companies a competitive advantage. In fact, 22% of companies that implemented APM solutions saw maintenance costs decrease by more than 10%, according to a study by the Aberdeen Group. Companies not using these solutions averaged only 81% for on-time deliveries and just 58% for overall equipment effectiveness.

Offshore, the challenges are always tougher. And the need for reliability in equipment couldn’t be more critical. ITT is up to the task, every day. Providing pumps, agitators, valves, desalination equipment, electrical feedthrough systems, composite piping, switches, vibration isolation systems and more. The truth is, offshore oil and gas simply couldn’t be produced without us. For more information, and to receive our Oil and Gas catalog, visit ResourceITT.com.
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Although they’ve been around for a while, traditional O-Rings, compression packings and mechanical face seals continue to deliver acceptable performance in many oilfield applications, as long as hardware, surface finish, material selection and other factors are properly addressed. However, today’s creeping pressures and accelerated speeds can occasionally prove too much for them. The result can be unexpected failure, productivity loss and, in some cases, serious environmental impact.

In light of this fact, a growing number of oilfield design engineers are evaluating the benefits of a multi-component approach to sealing. This approach leverages the unique properties of several materials and seal configurations to deliver better reliability and predictability. The concept isn’t exactly new. Seal manufacturers have been combining elastomers, polymers, even organic materials, for decades. But recent advances in material formulation, design and machining technology have produced a new breed of seal that can take all the heat, pressure and speed some oilfield applications can dish out—and then some.

One example of just such an innovative amalgam can be found in the LKS Seal, which will be formally launched at this year’s Offshore Technology Conference. Described by its manufacturer, Bal Seal Engineering, Inc., as a High PV (pressure and velocity) seal, the LKS consists of a spring-energized, graphite-reinforced PTFE sealing ring coupled with a high-temperature engineered thermoplastic anti-extrusion element and a metal locking ring.

Each of the components has its own unique role to play. The metal locking ring prevents outer diameter of the seal from dynamic movement, minimizes friction/heat and prolongs seal service life. At moderate speeds, the graphite-reinforced sealing ring retains the ability to seal in high-temperature, high pressure service conditions while providing a high level of extrusion resistance due to its long-wearing properties and built-in lubricity. The thermoplastic anti-extrusion element minimizes seal jacket extrusion, provides longer sealing life, forces wear to occur at the lip contact area (not the hinge point), and extends seal performance range at low and high temperatures (-94°F to +550°F). The Hastelloy Canted-coil spring exerts uniform sealing force against the shaft, reducing heat build-up and extending seal life while providing excellent corrosion resistance and chemical compatibility, according to the company.

The LKS Seal represents a novel take on problem-solving because it deals in capabilities rather than limitations. Its design considers how the high-temperature behavior of PEEK (which becomes more flexible at 180°F) will complement the lubricity of PTFE, and how the force exerted by a spring can help the whole package provide longer service life.

Multi-component solutions, such as Bal Seal Engineering’s LKS Seal, enable engineers to leverage the best properties of several materials.
Subsea 7, one of the world’s leading subsea engineering and construction companies, is pleased to announce the completion of the Gulf of Mexico Marathon Droshky project – the first project to be delivered utilizing its new North American spool base at Port Isabel, Texas.

The project, managed from Subsea 7’s Houston office, involved the fabrication and installation of two 8-in. flow lines totalling 58km (36 mi) for Marathon Oil Corporation’s Droshky field development.

Pipeline production took place at the Port Isabel spoolbase between June and October 2009 and offshore operations commenced afterwards with the arrival of the Seven Oceans pipelay vessel, to start spooling the first of three offshore pipelay campaigns.

Ian Cobban, Vice President–North America for Subsea 7 commented: “Nearly one year since our Port Isabel opening, I’m pleased that we have proven the spool bases’ capabilities with the successful delivery of the Droshky project. Our ability to fabricate and install high-quality pipelines locally is an important competitive edge for Subsea 7 and these are very exciting times for the region as we build upon our presence here.”

In addition to the fabrication and installation of the pipeline for the Droshky project, Subsea 7 also conducted the engineering, fabrication and installation of two 580m (1,900 ft) 8-in. risers, four termination pipeline end structures and two initiation pipeline end manifolds.

The scope also included metrology, fabrication and installation of three rigid jumpers as well as pre-commissioning of the entire Droshky pipeline system. The Seven Oceans’ pipelay workscope was split into three campaigns due to the significant length of the two pipelines. The Skandi Neptune pipelay and construction vessel was utilized to install the jumpers.

The Droshky field development, with a water depth of 900 m (2,950 ft), serves five subsea wells via two 29km (18 mi) insulated pipelines. The development is a life extension of the Bullwinkle platform, which has seen decreasing production in recent years. This is Marathon Oil Company’s first Gulf of Mexico project in 14 years as well as its first ever deepwater Gulf of Mexico project.

The Port Isabel spool base was officially opened in July 2009 and enables Subsea 7 to offer a deepwater rigid pipelay service to clients in North America. Located in Port Isabel, about 11 km (7 mi) from Brownsville, Texas, it is 1.5km (0.9 mi) in length (1.2km stalk rack and 0.3km fabrication building). The base employs up to 100 people when working at normal capacity.

The investment in the spool base, in excess of $30 million, has allowed the company to expand its presence and capabilities in the North America and Mexico regions, and forms part of a global $1.2 billion asset and equipment investment programme which has also seen the introduction of eight new vessels, the last of which, the Seven Pacific pipelay and construction vessel, is expected to be delivered later this year.

The facility is equipped to weld any steel line pipe material from traditional carbon steel to duplex and clad pipe. In addition, the base is able to complete the fabrication of plastic-lined pipelines, pipe-in-pipe systems and SCRs. When in full production the base can hold about 18,000 tonnes of pipe stalks.

Further information is available, including the Droshky datasheet, Port Isabel datasheet and photos of the Seven Oceans at Port Isabel. Visit Subsea 7 in Booth 3873 or go to the website, www.subsea7.com.
GE exec discusses oilfield innovation

Claudio Materazzi is Chairman of Nuovo Pignone S.p.A., a subsidiary of GE Oil and Gas.

Q: Does GE Oil & Gas find that many potential clients are making procurement decisions largely on the basis of initial cost? Should more marketing effort be diverted to changing customers’ attitude?

Obviously, economic conditions have caused customers worldwide to reevaluate project economics much more closely. However, it is not necessarily the case to say that customers consistently opt for “lowest cost” as the prime factor affecting procurement decisions. There is a wide range of criteria that differ according to project and equipment specifications.

We believe that the best value must be achieved in terms of both capital and operating expenditures at the front end of the procurement decision, but also critically as a visible factor throughout the extended lifecycle of the equipment. A strong example of this best-value approach is Shell’s first-order acquisition of our new VetcoGray S-Series SVXT shallow-water subsea tree for jackup drilling operations.

When designing the new SVXT tree, the actual brief to our engineering team was to keep both operator capital and operating expenditures equal across front-of-field, and push the boundaries in high-performance efficiency, without compromising safety and reliability. That’s important to the design engineering process is the partnership approach we have in place with a number of key customers. When we set to work on designing the SVXT, Shell’s teams in the UK and the Netherlands were heavily consulted; in fact, we engaged every week for a period of six months, ensuring that the common goal, one system to suit a vast variety of differing well characteristics, was realized.

Q: What are the technological barriers that still need to be broken in order to unlock the optimum potential from deepwater resources?

There are very tough technical challenges ahead, from handling sour and acid gas and optimizing existing reservoirs, to reducing CO₂ emissions, refining lighter products from heavier crude oil, and generating lighter from heavier crude.

New technology shouldn’t mean new problems. With Canrig’s SureGrip™ CRT, a new automated casing running tool from Canrig. With a patented ball-and-taper gripping mechanism, it’s strategically designed for improved:

- Drilling Efficiency
- Operational Safety
- Pipe Condition
- Equipment Integration

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- Drilling Efficiency
- Operational Safety
- Pipe Condition
- Equipment Integration

New technology shouldn’t mean new problems. With Canrig’s SureGrip™ CRT, you can count on a casing process that is more effective, trustworthy, less damaging to casing and better incorporated into your existing equipment. Running casing has never been more efficient or safer.

What this all adds up to is drilling efficiency. That’s important because when push comes to shove, it’s not casing you’re putting downhole, it’s money.

GE Oil & Gas will spend more than $500 million on R&D that includes subsea compression technology is being considered? According to John Butcher, the world’s first subsea compressor driven by a gas-filled, high-speed electric motor tested in a vertical orientation and packaged in a single sealed housing designed to withstand high hydrostatic pressure. The solution combines robust design and sophisticated materials to deliver reliable, unattended operation at over 2,950 ft below sea level, boosting raw gas with power up to 15 MW.

Blue-C is currently being piloted for the Ormen Lange project to exploit huge natural gas fields off the Norwegian coast at 2,952 ft below sea level without using conventional offshore platforms. Extensive testing in GE facilities will be followed by two years of testing in a dedicated pit in Norway before final installation on the seabed in 2014.

GE Oil & Gas to changing customers’ attitude? More marketing effort be diverted to changing customers’ attitude?
The Delta State Government in partnership with Chevron Nigeria and The State of California invites you to the

DELTA STATE GREEN ECONOMY INITIATIVE INVESTMENT ROUNDTABLE EVENT

- Unveiling The Emerging Investment Opportunities Within The Delta State Green Economy Initiative
- In-Depth Information On The Delta State / NNPC Gas Based Industrialization Agenda
- The Warri Industrial Park Investment Opportunities
- Understanding The Delta State Global Partnerships In Developing A Green Economy
- Opportunity To Participate In High Level Engagement With Key Top Officials

Venue – Omni Hotels, Houston Galleria, Tx 77056, USA
Date – Wednesday, May 5, 2010
Time – 9.30am prompt (Registration starts at 8.00am)

To register, go to www.governoruduaghan.org

Round Table Panelists
Dr. Emmanuel Uduaghan
Delta State Governor
Mr Odein Ajumogobia (SAN)
Honourable Minister of Foreign Affairs, Nigeria
Ambassador Richard H Jones
Deputy Executive Director, International Energy Agency, Paris
Mr John Odey
Honourable Minister of Environment, Nigeria
Alhaji Shehu Ladan
Group Managing Director, Nigerian National Petroleum Corporation
Secretary Linda Adams
Secretary, California Environmental Protection Agency
Mr Andrew Fawthrop
Managing Director, Chevron Nigeria Limited
Mr Mutiu Summonu
Managing Director, Shell Petroleum Development Company
Mr Phillippe J. Najim
ED / Group Manager Projects,
Shaw Energy and Chemicals Group
Anthony Lewis
CFO, Aquamation Inc
Sanusi Lamido Sanusi
Governor, Central Bank of Nigeria
With the introduction of the Technology Center from Cameron’s Process Systems division, a new level of process services are now available to customers. The Technology Center combines people and processes, facilities and technologies, experience and expertise under one roof to develop the optimal solution to challenges customers face in the field. This dedicated state-of-the-art facility brings together leading R&D experts with the processing industry’s most advanced equipment in a true, full-scale production environment that enables customers to reduce risk and solve problems on “Cameron’s turf and time,” rather than the other way around.

One-of-a-kind advantages. The only one of its kind in the world, the facility is the most comprehensive process resource ever built. It offers the best technologies in the world for fluids separation, the most advanced fluid loops anywhere for processing studies and the expertise of credentialed processing experts.

In one room together with the customer, Cameron explores and showcases each challenge in depth. Through visualization and demonstration hardware, and working models and animations, those challenges come to life, enabling the development of a hands-on, customized solution.

Unparalleled testing capabilities. The Technology Center houses the world’s most robust array of testing equipment, which mimics processing scenarios encountered in real-world production. In this complete and controlled setting, a wide range of gas, oil and water separation and treatment processing scenarios are tested and analyzed. Using proprietary testing equipment, better and more economical solutions to process challenges are gained to optimize customer success in the field.

Comprehensive and supportive. While technology is a key driver at the Center, the human aspect is equally as valuable. Here again the Technology Center delivers. From development to administration to maintenance, customers have access to the Product Management Group (PMG) and the Research and Development Group, which provide comprehensive service. Customized training is also offered to help customers apply their solutions effectively in the field. And, to help identify the most economical and technically viable solutions to each separation and processing challenge, Cameron’s Process Systems division offers the Process Solutions Group (PSG). Staffed by engineers and chemists with broad experience in process and vessel design and in oil, water and gas treating, the PSG operates as an external consulting service for Cameron customers, applying their experience and expertise to solve field processing problems.

Simply put, the Technology Center provides everything customers require for success—now and into the future.

For more information, please visit Cameron in Booth #1656.
By Diane Langley

If there is a phrase to describe the industry’s future, it is that change is eminent. An energy phase change is underway and we will look forward to a series of rolling crises as the need for energy for the world’s population and transportation networks increases, according to Chris Ross, a consultant for Charles River & Associates. Ross spoke before a sold-out breakfast session Monday morning.

The session was titled, “The shape of the industry to come: Changing roles and responsibilities.” Ross is the author of a book, Tera Incognita, that explores the post-modern oil company.

The industry has experienced a double peak in the years leading up to 2010, a symbol of higher demand. What’s next? “We don’t know, so what that means to the industry should be very interesting,” said Ross.

Technology pathways to new energy supplies are still unclear now that there is oil resource scarcity. The expanding range of gas and the 200 years of supply uncovered changes everything. “We’re developing oil sands (tar and shale), looking at the possibilities of sequestration for coal and biomass has jumped the cue,” Ross said. “It’s not ready to prime time.”

The phase change opens up new value chains and business models. According to Ross, nuclear stands out as having a major role to play in the future of energy because of its scalability. Regarding traditional oil and gas, during the crisis period that will exist over the next 30 years, technological advances will continue to open up new resources (gas for instance) and new supplies will require increased capital intensity. This is a time where extraordinary leadership will be needed and players will need to research all alternatives, Ross said.

Natural fields of play are emerging for IOCs, independents and their national counterparts. Who will the players be? Ross said the players will remain the NOCs, INOCs, IOCs, independents and majors. IOCs will need to focus on difficult resources; independents and majors will continue in their current roles.

Questions to ask for future industry growth include:

• Do we have tailored value propositions?
• Are processes and capabilities sufficient to assure delivery?
• Is the organization conducive to reliable, safe, low-cost operations?

While there may not be a clear view of what to expect in upcoming decades, there are signs of what it will take to be successful in reaching company and industry goals.

Industry embracing change

See what performance looks like...

The new LKS High PV seal, a free mobile app download, and the coolest sport bike on the planet. Do you need another reason to stop by?

A FEW THINGS A PETROLEUM ENGINEER SHOULD KNOW WHEN EXPLORING A CAREER WITH SAUDI ARAMCO:

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Enrich your life.
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TUESDAY 4 MAY 2010 – PAGE 17
Schlumberger introduces mobile testing discharge treatment

Schlumberger announced the release of its ClearPhase testing discharge treatment. The new system, designed specifically for mobile testing treatment, features: 1) a lower cost than traditional treatment discharge rate and real-time monitoring with an audible record of output quality. The system includes a back-up system to reduce oil-in-water concentration to less than 20 ppm, and has been successfully tested in Azerbaijan and Brazil. ClearPhase uses RPA reusable petroleum absorbent from ProSep Inc. so that it can be reused after treatment.

First 15,000-psi drill-through and completion system for jackups

Argus Subsea has introduced the AZ-15 subsea tree and wellhead system. Specifically designed for jack-up mobile drilling units, it is the world’s first purpose-built system that allows operators to drill and complete wells up to 15,000-psi working pressure without special riser systems or temporary abandonment. It provides an easier installation with less manpower than conventional mudline suspension systems using wellheads adapted for horizontal or vertical tree completions.

Deep Down to acquire Cuming Corp.

Deep Down Inc., an oilfield services company specializing in products and services for the deepwater oil and gas industry, has entered into a definitive purchase agreement to acquire Cuming Corp. Founded in 1980, the privately held Cuming Corp. is a manufacturer of buoyancy and insulation products for the oil and gas, defense, scientific and industrial sectors. Deep Down expects to acquire 100% of the stock of Cuming for about $37 million in a combination of cash and Deep Down shares, and to assume about $15 million of net liabilities. In 2009, Cuming generated revenues of about $22 million and profits of about $3 million. As of March 31, 2010, the business had contracted backlog and signed letters of intent for about $11 million per share ($82 million of order backlog, respectively, the majority of which are scheduled for production in 2010. The closing of the transaction will also include the repayment of $25 million of net indebtedness. The new company will continue to be led by Cuming’s President and CEO, Mr. Ray Guer地图。 the appointment of Gay Stanley Mayeux as VP and CFO of the company. Former Chairman of the board, Mr. Will Down, is stepping down as Executive Chairman. Ms. Mayeux has over 25 years of financial management experience in the energy sector. She has served as VP Finance and Treasurer of Willbros Group.

Boskalis awarded pipeline rock protection project

Boskalis Westminster N.V. has been awarded a letter of intent to install rock on the 1,220-km Nord Stream gas pipelines running through the Baltic Sea, connecting Russia to Northern Germany. The contract value will amount to about €100 million ($130 million), Boskalis’ share amounting to about €60 million ($70 million). In January 2009, Boskalis acquired the contract for seabed preparation prior to the installation of the two 48-in. gas pipelines. This subsequent contract requires the company to install rock berms at critical sections along the centerline of the hull. Structural design challenges are driven by the increase in the size of terminal hulls, shallow water load effects, frequent partial filling, oiling operations and critical interfaces between the hull and topside structure and between the hull and position monitoring system. FLGT concepts have been used to develop the possibility of hull structures up to 750 m in breath, which would make them the largest ship-shaped units to be built. With the hull structure so large, designs with strictly modular construction are being proposed to minimize the internal load effects, particularly from sloshing within the partially filled tanks during loading and discharge operations.

The onsite environment is typically close to shore, so shallow water effects, which can place more severe environmental loadings on the hull structure, need to be considered. Frequent partial fillings is also an important factor in establishing adequate strength to resist the dynamic loads from sloshing. Two other critical factors are the offshore operations and the hull and topside interface. Offshoaling operations, either side-by-side or in tandem, can have an impact on an FLGT’s response motions because of the coupling effects and relative motions between the terminal’s hull and offshore vessel.

2010—Better than feared, but tough times not over

A new study from Subsea UK reveals that the outlook for 2010 is not as grim as was forecast, but the growth curve will not rise in the near future. Supported by Scottish Enterprise and unveiled at OTC, the study shows that the high levels of uncertainty which plagued the sector in 2009 have abated. It is likely that 2010 will be more positive than many feared, but the market is forecast to remain flat into 2011. Subsea UK commissioned a series of studies to provide an inde-
and reflect on the renewed confidence, a barometer of the confidence of the market. Just how confident the market is about the future.

Recent statistics reveal that the number of oil and gas job in the United States has risen by more than 50% in the first quarter of 2010. The rise in vacancies in the US oil and gas sector was recorded between January and March of this year and comes with a significant global increase in vacancies, reports OilCareers.com.

Analysis of job postings on the energy recruitment site shows particular increases in vacancies (and surges of significant growth in the US market, by the downturn, sales, marketing, human resources and IT, have also seen a strong recovery with growth more than 100% since December 2009. A surge in Q1

By Jerry Greenberg

One of Monday morning’s technical sessions focused on the fact that Petrobras is working to develop and deploy methods for armor wire rupture detection in risers that are already in operation and reaching the end of their design life. “Failure in armor is often caused by mechanical deterioration or more wires that have been placed into service that were installed in 1977. Today, the company operates a 7,800 km network of flexible pipes including more than 1,200 risers, Braga noted. Some of these risers are reaching the end of their design life. As a result, the ability to detect appearance and growth of structural damage has become a significant concern in order to assure their integrity and extend their service life.

Several methods of inspecting and monitoring armor wire are being developed based on acoustic emissions, measurement of residual magnetic fields, optical sensing or visual monitoring via cameras. Among those techniques, Braga noted, the system deploying fiber optics has provided the best results to date. The MODA system, an acronym in Portuguese for Optical Direct Wire Strain Monitoring, was developed to provide an alarm for armor wire rupture and to monitor the progression of this type of damage in flexible pipes. The system consists of Fiber Bragg Grating (FBG) strain sensors attached to all wires in the external tensile armor layer, one or more FB temperature sensors, an interrogation unit, and optical cables.

The first full scale laboratory tests were performed in a sample of 6-in. ID riser with 73 and 71 wires, respectively, in the external and internal tensile armor layers. The wire had been in service for several years. The initial expectation was to detect an instantaneous change in the strain state of the broken wire, however, after the first wire ruptured, no significant change in strain was noticed. Only after a new load sequence was initiated was the change in strain state of the first failed wire able to be visualized. Having not detected wire rupture immediately could have been caused by corrosion present in the wires of the sample pipe used in the first test.

A second group of tests were performed on a sample of new flexible pipe that had not yet been placed into service that contained 45 and 43 wires respectively in the external and internal tensile armor. With the sample of new unbounded pipe, where friction between neighboring wires or layers is still low, tests were able to instantaneously detect ruptures of the wire.

“Two systems were deployed successfully in the Campos Basin,” Braga said. “Including one for more than nine months. We were able to detect wire rupture almost instantaneously.”

The first field trial was conducted on an 8-in. riser in July 2009. A second test was conducted in April 2010. From July 2009 to January 2010, there were no indications of failure in the 54 wires that were monitored. In January 2010, a damaged cable was replaced following which all 69 wires (rather than only 54 wires due to damage) in the external armor layer of the export riser could be monitored. The interrogation unit was connected to Petrobras’ network and the data sent to the company’s R&D center in Rio de Janeiro. After processing, the results are displayed in real time accessible to any user logged on to the secure Petrobras network.

Although MODA was developed to detect wire rupture, the data delivered by the system may offer valuable information to the operator. MODA showed “great” potential for some of the implementation of riser monitoring systems, Braga noted. For Petrobras in particular, he explained, MODA will reduce operational risks and provide early warning as well as allow timely mitigation of progressive damage in the armor layer of some of the flexible risers operated by the company that are reaching their designed lifespan.

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CIMC RAFFLES

ANNOUNCEMENT

Yantai CIMC Raffles Offshore Ltd
Yantai CIMC Raffles Shipyard Co., Ltd

Yantai Raffles Offshore Ltd, a subsidiary of Yantai Raffles Shipyard Limited, has formally changed its company name and Logo as follows.

The original Chinese name “烟台莱佛士海洋工程有限公司” has changed to “烟台中集来佛士海洋工程有限公司” and the English name has accordingly changed from “Yantai Raffles Offshore Ltd” to “Yantai CIMC Raffles Offshore Ltd”.

The original Chinese name “烟台中集来佛士船舶有限公司” has changed to “烟台中集来佛士船舶有限公司” and the English name has accordingly changed from “Yantai Raffles Shipyard Co., Ltd” to “Yantai CIMC Raffles Shipyard Co., Ltd”.

The logo has changed to CIMC RAFFLES

CIMC RAFFLES Offshore Ltd offers total solutions to our customers and focuses on reliability, commitment to excellence, versatility and quality. Our quality solutions are reinforced by our engineering capabilities and innovative software which are unrivaled in the Offshore & Shipbuilding industry. We have significant expertise and experience in the construction of various marine and offshore projects which include jack-up drilling rigs, semi-submersible drilling rigs, floating production storage and offloading vessel, heavy lift vessels, pipe lay vessels and other prototype vessels.

About CIMC

China International Marine Containers (Group) Ltd (“CIMC”) is the largest container manufacturer in the world with a dominant market share of 56%. CIMC is also the largest steel consumer in China and employs more than 20,000 welders. CIMC Group has over 100 subsidiaries and 47,000 staff worldwide, including China, North America, Europe, Asia and Australia. CIMC focuses its mission to be customers’ partner for modern transportation. CIMC is dedicated to the manufacturing and supplying of containers, trailers, tank equipment and airport equipment.
Prysmian Cables & Systems produces a wide range of high-tech cable systems for the oil and gas industry, both for onshore and offshore applications, as well as submarine power cables, umbilicals and flexible pipes. In addition to its current production of both steel and thermoplastic umbilicals, the group will begin full production of flexible pipes for the offshore oil and gas industry later in 2010 at its expanded production facility in Vila Velha, Brazil. Production operations in the new plant follow an investment of 6-in.-dia pipes, and the completion agreement signed by Prysmian in 2008 with Petrobras called for the design and supply of a wide range of dynamic risers and static flowlines, covering up to 6-in.-dia pipes, and the completion of a prototype to be installed in the Marlim Field, near Petrobras opened in early 2007. A four-year frame contract for testing, design and construction was signed by Petrobras with FMC late August 2009, and consists of a qualification program that started December 2009 and is planned to end in June 2010. The installation is planned to the third quarter of 2011.

System description. The system consists of a high-pressure separator together with a tubular liquid separator and it is designed to operate in pressures ranging from 50 bar to 60 bar and temperatures between 52°C and 60°C. It is equipped with an eleven stage centrifugal pump for separated water reinjection, opening the possibility of an increase of the oil production from other wells.

Challenges. The key challenge of this system is to meet the reservoir tolerance for the correct specification of the separated water that will be reinjected. Also, the very stable emulsion (up to 80% water in oil) character, the slurry deposits and the provision of chemicals to guarantee free water on the separator are items of concern.

Also, the system will present some novelties, such as level control on a tubular gravity separator, subsea hydrocyclones and ejectors for water treatment and multi-phase desander.

Separator Concept. Petrobras decided for a tubular three-phase gravitational separation concept for its first deepwater-heavy oil separator, because of its higher capability of granting a robust solution for such scenario. The contract for testing, design and construction was signed by Petrobras with FMC late August 2009, and consists of a qualification program that started December 2009 and is planned to end in June 2010. The installation is planned to the third quarter of 2011.

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System description. The system consists of a high-pressure separator together with a tubular liquid-liquid separator and it is designed to operate in pressures ranging from 50 bar to 60 bar and temperatures between 52°C and 60°C. It is equipped with an eleven stage centrifugal pump for separated water reinjection, opening the possibility of an increase of the oil production from other wells.

Challenges. The key challenge of this system is to meet the reservoir tolerance for the correct specification of the separated water that will be reinjected. Also, the very stable emulsion (up to 80% water in oil) character, the slurry deposits and the provision of chemicals to guaran-tee free water on the separator are items of concern.

Also, the system will present some novelties, such as level control on a tubular gravity separator, subsea hydrocyclones and ejectors for water treatment and multi-phase desander.

Separator Concept. Petrobras decided for a tubular three-phase gravitational separation concept for its first deepwater-heavy oil separator, because of its higher capability of granting a robust solution for such scenario. The contract for testing, design and construction was signed by Petrobras with FMC late August 2009, and consists of a qualification program that started December 2009 and is planned to end in June 2010. The installation is planned to the third quarter of 2011.
moved Atlantis to the forefront. Most of the panel dis-
cussion focused on Thunder Horse, where the problems began in the summer of 2005 when the topsides were found to be listing 30° after the platform had been evacu-
at ed, as Hurricane Dennis bore down on the Gulf. It was
found to be listing 30° after the platform had been evacu-
a ted. The problems with the subsea system, which delayed the project
began in the summer of 2005 when the topsides were
essentially was rebuilt. The problems with the subsea
welds, he said, were directly related to an unusually hos-
tile downhole environment even for the deepwater Gulf
of Mexico. The Thunder Horse project holds 12,300
psi of pressure with bottom hole temperatures up to
270°F (132°C), while most deepwater projects in the
Gulf, he noted, have no more than
10,000 psi pressure.
 “This system was designed for sour service, but with the
water floods we had the potential for H2S which
would lead to significant corrosion,” added Jim Burk,
BP Gulf of Mexico materials and corrosion technical
“advisor. What we found after hydrostatic testing was
incidents of hydrogen embrittlement that impacted the
integrity of the welds.”
Buck said in redesigning the subsea system, BP turned
to high strength alloys to eliminate both corrosion and
thermal fatigue. “All in all, this project was highly chal-
enging and interesting from a technical perspective. To
correct this and ensure it does not occur again, required
an enormous team effort from both our designers and
the corrosion community,” he said.
A common thread in the panel discussion was the ef-
forts taken to enhance the safety standards on the twin
platforms. “During the installation, we developed a safe-
ness program where after 10 million manhours of work, we
did not have one lost time incident. Insofar as operations are
concerned, the US Minerals Management Service
recognized the development with a SAFER award. Safety is
good business. Long gone are the days when we put
productivity ahead of safety.”
“The onshore and offshore collaboration on these
projects was world class and enhanced with our advanced
collaboration initiative. In addition, these [Thunder Horse]
well's were very difficult to complete, but we were
able to deliver first rate completions on these projects,”
Todd added. “What these projects also taught us was that
the fantastic is feasible.”

While the panels focused mainly on the Thunder
Horse project, it was clearly obvious that the cata-
straphic Deepwater Horizon explosion and ensuing mas-
ive oil spill was not far from everyone’s mind.

Hodd added. “What these projects also taught us was that
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BP discussion continued from page 1

is the economic underpinning of many coastal communities. Royalties from the production of offshore oil and gas are the government’s second-largest source of income. At the same time, the Gulf yields 69% of the shrimp and 70% of the oysters of the US.
Over 41% of the US drains into the
Gulf via the Mississippi River and con-
tributes to the annual creation of a “dead
zone” that can extend up to 7,000 square miles. Four Gulf Coast states (Alabama, Louisiana, Mississippi, and Texas) among the five states responsible for the greatest surface discharge of toxic chem-
icals. Even if oil production continues, the Gulf’s waters cannot be renewed. BP annually produces more fishfin, shrimp and shellfish than the South and Mid-
Atlantic, Chesapeake and New England areas combined. Additionally, Gulf rec-
recreational fisheries generate $5.4 billion annually in economic benefits. Recre-
ated 54,000 new jobs a year to the Texas economy from 2001 to 2006, according to US Fish and Wildlife Service reports. The Gulf of Mexico is a place where economies and the environ-
ment both coexist and content.
The balance of economic and environ-
mental health and productivity we now
enjoy is not sustainable under the current paradigm of resource management. The
Gulf of Mexico is a shallow subnautical sea, and, as such, is the US body of water most vulnerable to the effects of climate change. Rising sea levels, warming tem-
peratures, ocean acidification and stam-
peding invasive species, exacerbated by growing populations and expanding re-
source demands, will overpower the Gulf of Mexico’s remarkable resilience unless we change the paradigm of management.
The current tangle of more than 140 dif-
ferent and sometime conflicting laws and regu-
lations, administered by 20 federal agencies, is not a recipe for success.
The draft national policy calls for the formation of a National Ocean Coun-
cil to coordinate the various agencies. If this can be more than just another layer of bureaucracy and actually break down
traditional walls between federal agen-
cies, it will be of benefit. If a National Gulf of Mexico Council tries to implement a one-
size-fits-all policy over diverse coastal regions, it will be an uninformed disas-
ter. There exist regional models of ocean governance that hold great potential to achieve the stated goals of a national ocean policy. The Gulf States Alliance is one such model that has been emulated in other coastal regions. The Gulf States Alliance holds promise as a vehicle to craft national policies into regionally effective ones. It is an integrative and adaptive legal frame-
works to achieve a sustainable balance be-
tween environmental and resource con-
servation and a robust economy.
Coastal and marine spatial planning (CMSP) has been proposed as a central concept of a National Ocean Policy. It is a process for analyzing and managing ocean space for specified commercial, recreational and environmental pur-
poses. CMSSP alarms many of the key stakeholders in the Gulf of Mexico. Oil and gas interests are concerned that it will be used to preclude their activities. Fishing interests are concerned that it will be used to establish no-fishing zones. These fears are not unfounded, but they do not have to be realized. CMSSP can be a powerful tool to en-
sure both the economic and the envi-
ronmental health of coastal oceans if it is regionally directed, if it provides all stakeholders a place at the table, and if the process recognizes that economic
and environmental health are inexora-
bly linked.
Ocean territories are critical to the US and its citizens. These marine re-
source embodies the quality-of-life ele-
ments that we want for generations to
come. A national ocean policy can be the
core framework to guide us through a
challenging future and help assure the
economic and environmental health of the Gulf of Mexico.

Gulf Publishing Company cordially invites you to attend the World Oil High Pressure
High Temperature Drilling & Completion Conference to be held 29-30 September 2010 in Houston, Texas. In pursuit of reserves more than 18,000 feet below the earth’s surface in conditions with temperatures reaching beyond 350°F and unprecedented pressure levels, operators are confronted with unforeseen drilling and completion challenges. This conference will offer you a forum to discuss, share and learn about these types of drilling conditions.

Drilling and Completion Conference

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Gold sponsor:

Coffee Break sponsor:

SEE BOOTH #2805 for more information.
Scenes from OTC 2010

During the Sunday evening reception, Anthony Jones, OTC board member and Charles Richards, past OTC chairman, took the opportunity to catch up.

Don Freeman, chairman of Freeman Co., and Arnis Judzis, former OTC chairman, share a moment.

Past and present leaders of the OTC unite: Dennis Gregg, former OTC chairman, and James Pappas, SPE board member.

Gamal Hassan, Baker Hughes, Dan Smith, Mustang (2011 OTC program chairman), Jane Smith, Mustang, and Sandeep Khurana, 2010 OTC program chairman (Devon Energy) are captured at Sunday’s reception.

Among the attendees at Sunday evening’s reception were: Alain Labastie, president elect, Society of Petroleum Engineers (SPE), Lawrence Stale, SPE, Martha Pappas and James Pappas, Research Partnership to Secure Energy for America.

The band at the Gulf Publishing Company party played a tasteful mix of jazz standards.

Gulf Publishing Company hosted a pre-OTC customer appreciation party at the Grove on Sunday afternoon. In this picture, the ladies from National Oilwell Varco meet with the president and senior sales representative for Gulf Publishing. Left to right: Jennifer Kent, Kirsten Kluepfel, Gulf Publishing President John Royall, Becky Byrd and Don DePugh.
Improved Horizontal OH Logging
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At GE Oil & Gas we deliver real world solutions through our combined experience and knowledge. Our goal is to give our customers a clear competitive advantage by helping them solve even their toughest challenges and by keeping innovation flowing across the entire oil and gas value chain. Our mission is to be a technology leader, a reliable partner and to always be close to our customers. Innovation Now is our way of achieving this.

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