

Special Report: Mexico

# OIL & GAS FINANCIAL JOURNAL<sup>®</sup>

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September 2012



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knows  
reservoirs**

## INSIDE

- Shale gas gold rush
- LNG boom in Australia
- Western US shale update
- Game changer for Unit Corp

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September 2012

## NuTech knows reservoirs



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NuTech Energy Alliance president and CEO Allen Howard. Cover photo and all NuTech photos by Andrea Creppel Photography.

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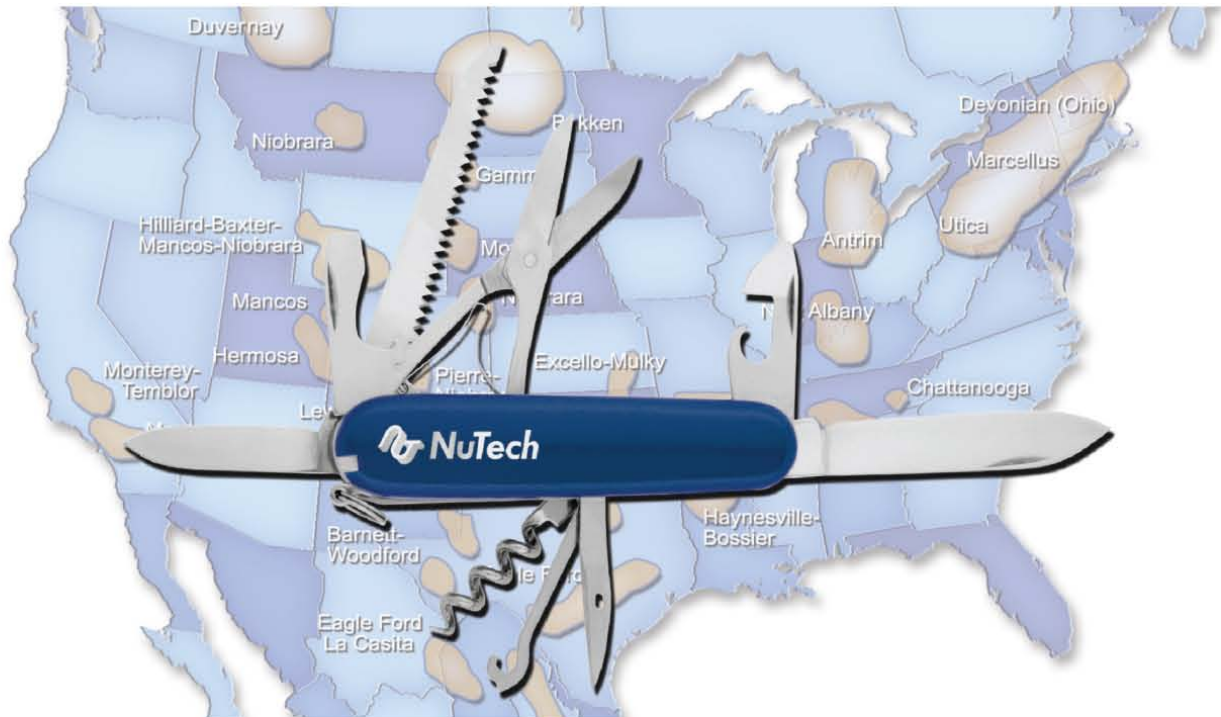
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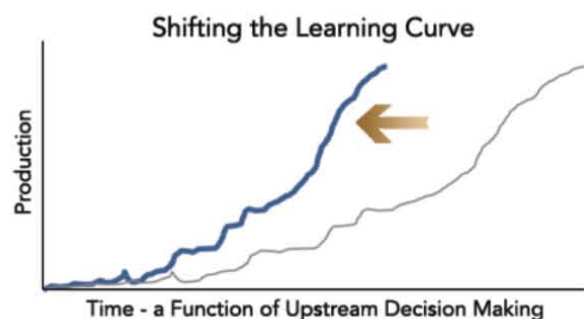
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## Editor's Comment

# Hays salary survey reflects growing industry confidence



**Don Stowers**  
Editor-OGFJ

**H**ays, the UK-based recruiting experts in the oil and gas industry, has released its Global Salary Guide for 2012, which includes an economic forecast. In general, it is reflective of an industry brimming with confidence being led by robust oil prices. Some of the results are worth summarizing here.

In analyzing global salaries and recruiting trends, Hays was very thorough. The firm conducted a survey that encompassed 24 discipline areas, 53 countries, 5,400 employers, and 14,400 total respondents. The number of respondents was up 30% over last year.

Last year's Global Salary Guide was downloaded by more than 150,000 people and another 10,000 hard copies were distributed at various industry exhibitions and conferences. Obviously it's compelling reading for many.

Here are some highlights:

- Nearly 50% of respondents saw a salary increase greater than 5% in the 2012 survey compared to less than 30% of respondents in the 2011 survey.
- More than 32% of respondents expect their salary to grow by more than 10% in 2012 compared to slightly less than 22% who expected a 10% salary bump the previous year.
- Salaries remained static for about 30% of respondents in 2012 in comparison with nearly 40% in 2011.
- Slightly over 4% saw their salary decline in 2012 compared to just over 10% who experienced a salary decrease the prior year.

The figure that jumps out at you in the survey is the average permanent salary across the whole sample (all countries, all occupations covered in the survey). It rose approximately 7% from US\$75,813 in the 2011 survey to US\$80,458 in 2012. This is a significant increase for salaries across such a large sample, says Hays, and reflects the general buoyancy of the market following the downturn of 2008-2009.

The survey noted that the year saw a flurry of activity from most corners of the globe as countries sought to take advantage of high oil prices and pushed through new developments and rejuvenated the old. The turnaround was significant both in its scale and its global coverage, and this drove up vacancies, hiring, and salaries.

Although the world was certainly not without its share of economic problems, such as the banking crisis in Europe, the petroleum industry was able to overcome these difficulties and continue to expand nearly everywhere. Only two major regions saw overall salary declines – Northern Africa and Mainland Europe. This demonstrates that on a regional level the industry is not immune to social conflict and economic pain.

Hays found the situation in Europe most troubling. The problems in Greece, Portugal, Spain, Ireland, and Italy, in particular, and whether those nations will need to be bailed out by the more robust economic powers such as Germany is currently weighing heavily on equity markets, which can constrain future growth prospects.

Looking at individual countries, the biggest disparity between local average annual salaries and imported (non-local) average annual salaries is in Papua New Guinea where the former is \$29,600 and the latter is \$189,900. By contrast, the local average in Norway is \$180,300 and the imported average is \$122,800. In

the United Kingdom, the local average is \$87,100 and the imported average salary is \$80,900. In Canada, the local average is \$128,700 and the imported average is \$123,300. In the United States, the local average salary is \$124,000 and the imported average is \$119,200.

If we look at salaries worldwide by company type, the best-paying jobs by average salary are with global super majors and other operators. The lowest-paying positions by average salary are with equipment manufacturers and suppliers and contractors.

If we take salaries around the globe according to discipline area, the best-paying jobs are with production management and subsea/pipelines with business development/commercial coming in just behind. The poorest performing discipline areas with respect to average salaries are logistics and mechanical.

As the market heated up in 2012, so did the concern for skill shortages. This has grown as a percentage of the overall sample from 28% last year to over 30% today. The shortage of skilled workers is the single largest concern expressed by employers in the survey. This is followed by "economic instability" (29%), "environmental concerns" (13%), "safety regulations" (10%), "immigration/overseas visa program" (7%), and "security/safety issues caused by social unrest" (8%).

Employer confidence in the employment market is on the upswing. In 2011, only 9.7% of employers were extremely positive and 45.1% were positive. A little more than 45% expressed a neutral or negative view. Contrast that with today. In the latest survey, 26.7% were extremely positive and 46.8% were positive. Only 26.5% were neutral or negative. **OGFJ**

For more information on the salary survey, visit [www.hays-oilgas.com](http://www.hays-oilgas.com).

## Capital Perspectives



# Race to monetize shale gas assets

*Unconventional gas is coming online at a time when markets are struggling to manage the transition away from coal-fired power generation.*

Roger D. Stark and Dena E. Wiggins, *Ballard Spahr LLP, Washington, DC*

**W**ith several major shale gas players either signing or negotiating long-term gas contracts with electric energy producers, the race to monetize shale gas assets that promise to transform the US energy sector has begun.

Long-term contracts are the mainstay of project finance, and some of the unconventional gas producers appear ready to lead the field into the project development and finance fray. Equally important, unconventional gas reserves are coming online at a time when markets are struggling to manage the impending transition from coal-fired generation (thousands of megawatts of which are being retired) to more environmentally benign resources.

The development of electric generating facilities in the United States has been in a largely moribund state lately because of uncertainties created first by the financial upheaval of 2008, and then by the expiration of certain provisions of the American Recovery and Reinvestment

Act of 2009, which included substantial incentives for new investment in the energy sector. Equally important, the risk profile for electric power projects has worsened, owing to federal/state struggles over power purchase agreements and how to bid new generating capacity into wholesale markets operated by Regional Transmission Organizations (RTOs).

Long-term contracts with shale gas producers are only the latest confirmation that “unconventional” natural gas will likely produce transformational effects in US energy markets. According to some industry observers, there are sufficient unconventional gas reserves in the United States to last at least several decades, and perhaps close to a century. Equally important, the downward trajectory of natural gas prices and the advantages of gas over coal from an emissions perspective signal a paradigm change for US energy generators and consumers alike.

The next chapter of the unconventional gas revolution

## Capital Perspectives

will turn on three phases of implementation:

- First and foremost, the execution of long-term gas contracts that lock in fuel costs while maintaining sufficient price flexibility to avoid contract-busting tactics by parties on the wrong end of a market spike (up or down).
- Second, the provisions of such contracts will have to survive the scrutiny of project lenders who are eager to finance gas projects but are wary of “merchant” risk in projects with less than fully baked-in margins.
- Third, they will have to remain viable throughout a contract term that, based on prior experience, may range between 15 and 25 years.

There are sound reasons to believe that natural gas prices will remain substantially below the levels they occupied only a year ago. A significant portion of the unconventional gas being produced in the United States is actually a by-product of liquid hydrocarbons that are significantly more valuable in today’s marketplace. For example, a barrel of crude oil can produce dozens of products (multiple specialty fuels and petrochemicals, to name two of the larger categories) with a market value that exceeds comparable quantities of natural gas. Likewise, various constituents of “wet gas” (liquid hydrocarbons found with certain natural gas deposits) also have a market value that may exceed the value of the gas itself. Thus, significant quantities of unconventional natural gas are being produced as a by-product rather than as a commodity responding to its own independent price signals.

Moreover, two initiatives with the potential to “move the needle” on gas demand are unlikely to occur in the near term and, in any event, would require several years to fully implement. One proposed initiative—the conversion of transportation fleets from gasoline to natural gas—will require substantial capital commitments to implement, and any CAFÉ standard requiring such a change is unlikely to be considered before the November elections. The other proposal—permitting the export of substantial amounts of gas in the form of liquid natural gas—is even less likely to take hold in the near future and will likely be taken up by the administration that takes office after the election.

Market observers estimate that 40,000-60,000 megawatts of existing coal-fired capacity will be retired or mothballed by 2020. As a result of both economic and regulatory pressures, much of that lost coal capacity is likely to be replaced by new gas-fired generation. Thus, low-priced unconventional gas offers both the prospect of a smooth transition away from coal and the benefits of reduced emissions of greenhouse gases and hazardous air pollutants (e.g., mercury). Achieving these benefits will, however, likely require that gas producers provide long-term contracts.

A potentially significant adverse effect of a shale gas boom also should be considered: low-priced gas has the

potential to increase energy price volatility and crowd out renewable energy resources. After 40 years of periodic oil shocks, the United States is only now beginning to reduce its dependence on highly price-volatile oil commodities. In this light, it makes sense to avoid the mistake of substituting a gas bias for an oil bias and to consider shale gas as one of many components of a US energy inventory.

Likewise, low-priced shale gas may have the effect of crowding out some renewable energy projects, owing to the absence of a carbon pricing, cap and trade, or other system that recognizes the value of zero-emission electricity production. Duke Energy CEO Jim Rogers has stated that we should avoid an “all gas, all the time” approach to electricity generation in favor of recognizing renewables as an integral component of an “all of the above” energy policy. In short, we should avoid trading one dominant/volatile fuel source for another.

The willingness of shale gas producers to negotiate long-term contracts with power project sponsors signals a transformational tipping point in the evolution of US power production. With suitable allocation of commercial and regulatory risks and with attention to maintaining a robust resource mix, negotiation of long-term gas contracts to support project debt are the next logical step toward embracing, and advancing, the shale gas revolution. **OGFJ**

### About the authors

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*Dena E. Wiggins is an Energy and Project Finance partner in the Washington DC office of Ballard Spahr. She represents clients in federal regulatory matters involving natural gas transportation and storage, crude oil, petroleum products, and hydropower. She has participated in numerous natural gas and oil pipeline rate proceedings and in rulemakings affecting FERC regulation of those commodities. She provides regulatory and transactional advice regarding natural gas storage and contracts, including precedent agreements and rate and tariff advice. She also advises clients on FERC enforcement and compliance.*



## Upstream News

### Marathon signs agreements for Kenya, Iraq exploration

In late July, Marathon Oil Corp. signed exploration agreements with two different companies for exploration in Kenya and Iraq.

On July 23, Marathon announced its farmout agreement with Africa Oil Corp. to acquire a position in two onshore exploration blocks amounting to more than 11 million gross acres in northwest Kenya. The transaction includes a 50% working interest (WI) in Block 9 and a 15% WI in Block 12A.

“With this transaction Marathon Oil gains entry into an emerging onshore oil play in Kenya that offers potential across a vast acreage position and fits with our liquids-rich strategic focus,” said Annell R. Bay, Marathon Oil’s vice president of global exploration.

Kenya’s Block 9 is approximately 7.5 million gross acres along a prospective Cretaceous Rift Trend. Africa Oil will operate the exploration phase, and Marathon Oil has the right to assume the role of operator if a commercial discovery is made.

Block 12A is approximately 3.8 million gross acres and is contiguous with Block 10BB to the north, which contains the recently announced Ngamia-1 oil discovery. Tullow Oil is the operator of Block 12A with a 65% WI and Africa Oil retains a 20% WI.

The companies expect to drill an exploration well on Block 9 in the second quarter of 2013. On Block 12A, 2-D seismic acquisition is expected to commence in the third quarter of 2012.

In addition, Marathon Oil and Africa Oil have agreed to jointly pursue exploration activities on an additional exploration area in Ethiopia, subject to host country Government approvals.

In consideration for the assignment of these interests, Marathon Oil will pay Africa Oil an entry payment of \$35 million which includes prior expenditures, and has agreed to fund Africa Oil’s working interest share of joint venture expenditures in these blocks anticipated to be spent over the next three years up to a maximum of \$43.5 million.

Then, on July 31, a subsidiary of the company, Marathon Oil KDV BV, announced the closing of its farmout agreements with subsidiaries of Total SA under which Total acquired 35% working (43.75% paying) interests in the Harir and Safen blocks in the Kurdistan Region of Iraq.

With the transaction, Marathon Oil reduces its stake to a 45% working (56.25% paying) interest in each of the two blocks while remaining operator of the Harir block and exploration operator of the Safen block. A Total subsidiary will become the operator of any development of the Safen block. The Kurdistan Regional Government

continues to have a fully carried 20% interest in each of the blocks.

The Harir block is approximately 174,000 gross acres and the Safen block is approximately 105,000 gross acres. Both blocks are located northeast of Erbil.

A 2-D seismic program on both blocks is ongoing and expected to be completed by the end of the third quarter of this year. The first exploration well on the Harir block began drilling July 30, 2012 and will be exploring Mesozoic fractured carbonates with main reservoir objectives in the Cretaceous, Jurassic and Triassic formations. The first exploration well on the Safen block is planned for the first half of 2013.

### Noble Energy completes Dumbarton, Lochranza sale

Noble Energy Inc. has closed the previously announced sale of the Dumbarton and Lochranza properties in the North Sea to Maersk Oil North Sea Ltd. Proceeds from the transaction were \$117 million and included final closing adjustments from the effective date of January 1, 2012.

### Chevron makes gas discovery offshore Western Australia

An Australian subsidiary of Chevron Corp. made a natural gas discovery in the Greater Gorgon Area of the Carnarvon Basin, offshore Western Australia in late July.

The Pontus-1 exploration well encountered approximately 97 feet of net gas pay. The well is located in the WA-37-L permit area in the Greater Gorgon Area gas fields, approximately 40 miles northwest of Barrow Island. The well was drilled in 690 feet of water to a total depth of 16,581 feet.

Chevron Australia is the operator of WA-37-L and holds a 47.3% interest in the permit. Exxon Mobil and Shell Development Australia both hold 25%, Osaka Gas holds 1.25%, Tokyo Gas holds 1% and Chubu Electric Power holds approximately 0.42%.

### Apache’s second well increases Bacchus Field production

On August 2, Apache Corp. noted that a second successful horizontal well has increased production at the Bacchus Field in the United Kingdom sector of the North Sea to 12,900 barrels of oil per day.

The latest horizontal well, Bacchus West, penetrated Jurassic-aged Fulmar reservoir sandstones and logged 889 feet (measured depth) of net pay in three sections. The

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## Upstream News

well currently is producing approximately 8,500 barrels of oil per day.

The first well on the field, Bacchus South, commenced production in May at approximately 6,000 barrels per day; it currently is producing approximately 4,400 barrels per day. Apache has a 50% working interest in Bacchus, which is a subsea tie-back to Apache's Forties Alpha platform.

Following completion operations at Bacchus, the Rowan Gorilla VII jack-up drilling rig is scheduled to move to appraise Apache's Aviat shallow gas discovery.

### **CNOOC makes discoveries, starts gas field production**

In August, CNOOC Ltd. began production on the Yacheng 13-4 gas field and made two discoveries in the Pearl River Mouth Basin.

Yacheng 13-4 is located about 72 kilometers southwest of Sanya, Hainan Province, in the north part of the South China Sea with an average water depth of about 85 meters. The project was designed to share the existing facilities of the Yacheng 13-1 gas field and build new subsea production equipment for overall development. Three development wells have also been arranged. Yacheng 13-4 is expected to hit its peak production of 0.35 billion cubic meters per annum in 2013.

CNOOC holds a 100% interest in the independent gas field and serves as operator.

On August 20, the company noted two new exploration discoveries in Luda 6-2 and Lufeng 15-1.

Luda 6-2 is located in the Liaodong Bay in Bohai with an average water depth of about 31 meters. The company has successfully drilled Luda 6-2-4 and Luda 6-2-5 this year and encountered 40 and 147.6 meter thick of oil pay zones, respectively. The average daily production was tested to be around 850 barrels.

In addition, Lufeng 15-1 is located in the Pearl River Mouth Basin with an average water depth of 283 meters. Lufeng 15-1-2 drilled in 2012, encountered 26.8 meter thick of oil pay zones and was tested with a daily production of around 800 barrels.

### **BP makes additional gas discoveries in Egypt's Nile Delta**

BP Egypt announced August 26 the Taurt North and Seth South gas discoveries in the North El Burg Offshore Concession, Nile Delta. These are the fourth and fifth discoveries made by BP in the concession following Satis-1 and Satis-3 Oligocene deep discoveries and Salmon-1 shallow Pleistocene discovery.

The two wells were drilled by IEOC on behalf of con-

cession operator BP, using Scarabeo 4 (mid-water semi-sub) rig in water depths of 361 and 256 feet (110 and 78 meters) respectively. The wireline logs, fluid samples and pressure data confirmed the presence of gas in one Pleistocene interval in Taurt North and two Plio-Pleistocene intervals in Seth South. Options to tie both discoveries to nearby existing infrastructure are being studied.

Hesham Mekawi, President and General Manager of BP Egypt stated, "The discoveries show our commitment to develop the remaining potential of the shallow reservoirs within the Nile Delta and make the best use of the existing infrastructure."

The parties to the North El Burg Offshore Concession agreement are: BP (operator 50%) and IEOC (50%).

### **Colombia's National Hydrocarbons Agency selects Ingrain for characterization study**

Houston-based digital rock physics lab Ingrain has been awarded a contract by the Colombian government's National Hydrocarbons Agency (ANH) to digitize and characterize the high-volume of core they have in storage.

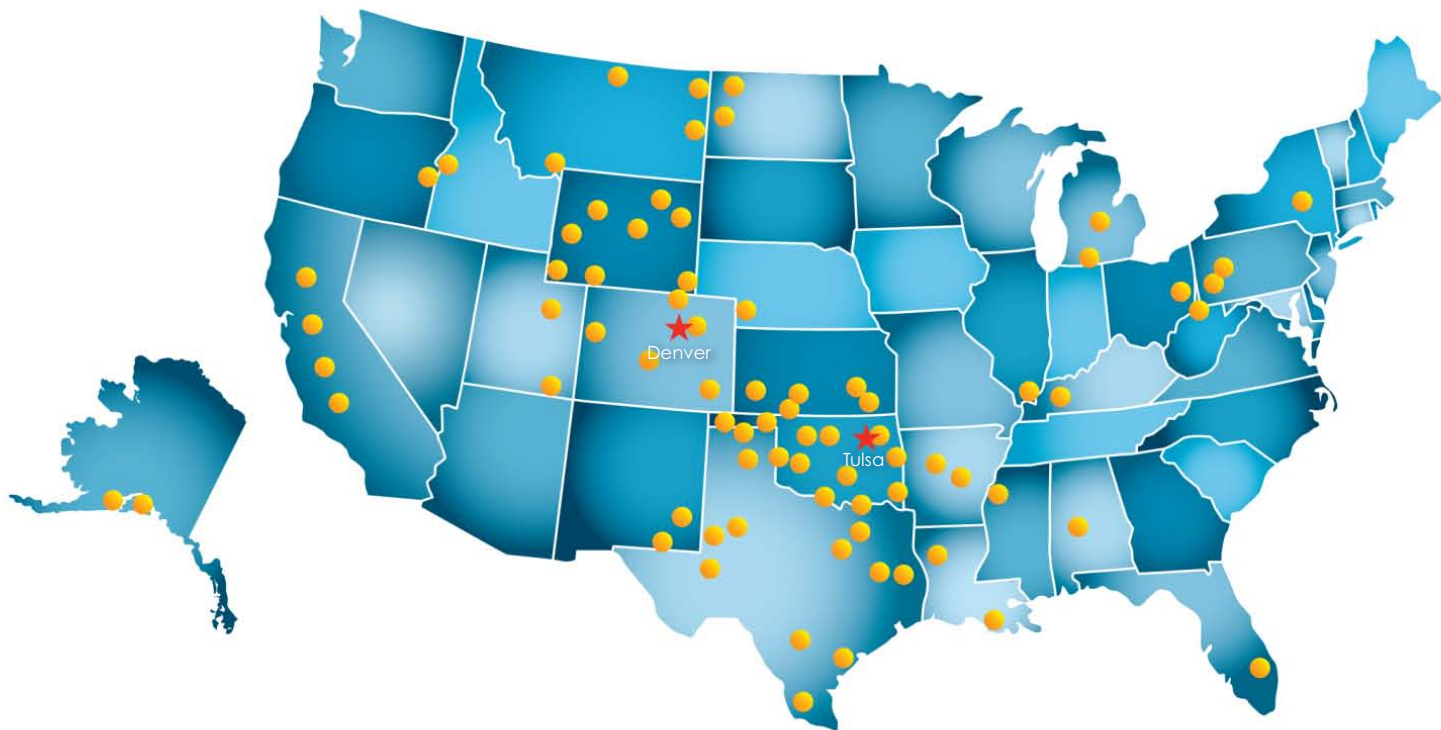
Ingrain's technology will provide the ANH with knowledge of the sedimentary basins of Colombia in order to better assess the hydrocarbon potential. Utilizing latest-generation technologies, expertise in reservoir rock analysis, and equipment from Carl Zeiss, Ingrain will characterize thousands of meters of whole core currently being stored at ANH's National Core Repository (Litoteca Nacional de Colombia).

### **Total enters exploration in Bulgaria with Khan Asparuh offshore license**

Paris, France-based Total has signed with Bulgarian authorities for an exploration contract concerning the offshore Khan Asparuh license. The 14,220 square kilometer block was awarded under the licensing round that opened last January 31. The block is located nearly 80 kilometers offshore in the Black Sea in water depths between 100 meters and 2,000 meters. The company has signed an agreement to allow Austria's OMV and Spain's Repsol to work on the permit with a 30% interest. Total holds the remaining 40% stake.

"Following French Guiana, Uruguay, Cote d'Ivoire and Mauritania, Total continues to build strategic positions in ultra-deepwater abrupt margin plays." He noted that the license "marks the first time that this type of highly promising play will be explored outside the Atlantic basins," said Marc Blaizot, Total's senior VP, exploration. According to Blaizot, the license contains a number of both oil and gas prospects. **OGFJ**

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# US lawmakers challenge CNOOC, Nexen deal

*Despite concerns, deal expected to close*

Mikaila Adams, Senior Associate Editor — OGFJ

Since 2007, China has been steadily increasing its outbound energy mergers and acquisitions as a way to shore up oil and gas assets and grow the expertise needed to develop its own vast reserves of shale gas and other unconventional reserves. The latest move is a \$15 billion deal to acquire Nexen, a company knee-deep in tar sands assets and the expertise to get it, and other unconventional hydrocarbons, out of the ground.

However, a growing number of lawmakers are asking the US government to halt approval of Chinese National Offshore Oil Corporation's (CNOOC) takeover of Nexen Inc.

As one can find in many a press release regarding pending transactions, the news about CNOOC Ltd.'s \$15.1 billion offer for Canada's Nexen came with a disclaimer: completion of the transaction is subject to customary closing conditions.

The deal, if approved, would mark the biggest foreign acquisition ever by a Chinese company and prove no small feat for the company forced to abandon its \$18.5 billion bid for California-based Unocal after opposition from US lawmakers in 2005.

While the Nexen board has already granted its approval and Canadians and other industry observers believe the deal will close, regulatory challenges by relevant authorities in the US may cause a bump along the way. Roughly 10% of Nexen's assets are in the US Gulf of Mexico (GOM), subjecting the deal to US approval.

One such authority is the Committee on Foreign Investment in the United States (CFIUS), of which

US Treasury Secretary Timothy Geithner is chairman. CFIUS is charged with reviewing deals involving the sale of US interests to foreign firms as a matter of national security.

On July 27, days after the deal was announced, Senator Charles Schumer of New York sent a letter to Geithner asking him to withhold approval of the acquisition as a way of pressuring China "to consent to economic reforms it has resisted for years."

"At some point, we have to put our foot down over China's refusal to play by the rules of free trade," Schumer continued.

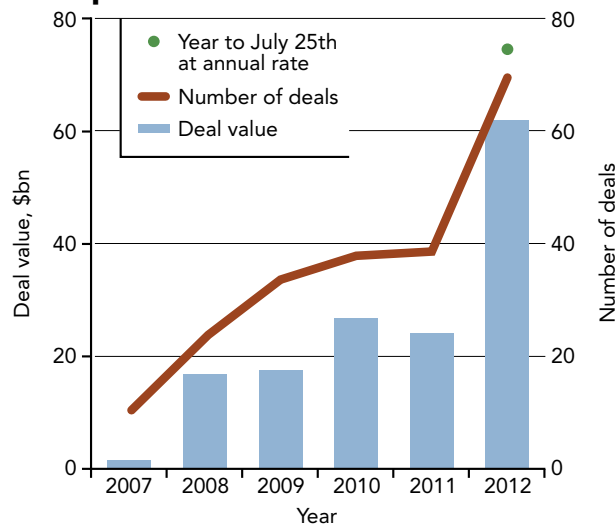
Then, a second legislator, Representative Edward Markey of Massachusetts echoed Schumer's request to put the would-be record breaking deal on ice.

Referring to royalty relief offered to oil companies by the US Interior Department when energy prices were remarkably lower, Markey contends that Nexen owes large sums of money for 32 million barrels of oil and 34 million cubic feet of natural gas drilled in the GOM through 2012, and that unless China agrees to pay the royalties, the US government should block the deal, Reuters reported July 30.

"Giving valuable American resources away to wealthy multi-national corporations is wasteful, but giving valuable American resources away to a foreign government is far worse: it has the potential to directly undermine American economic and national security," wrote Markey in his letter to Geithner.

The review by CFIUS is expected to take 75 days once all of the transaction details are gathered. **OGFJ**

## China's outbound energy mergers and acquisitions



Source: Dealogic



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## Editor At Large

Understanding **LIBOR***Lie-BOR: What happens when the referee is also a player.*Larry Hickey, FRM, *Aneris XTRM, London*

**W**hen I was a midshipman at the US Naval Academy, a lot of guys wanted to be fighter pilots. If they were allowed to choose based purely on class rank, the best and brightest would be lured into the sexy world of aviation when the Navy had more mundane but pressing needs. So the Navy decided that midshipmen must have perfect vision to fly. There was no operational need for this requirement. If an aviator's eyes went bad after the Navy had spent millions on his training, he could still fly. The requirement existed solely to prevent a "brain drain" into aviation and the eye exam became a high stakes barrier to entry for those dreaming of gold wings.

Doctors administered the eye exam. But what if they instead simply asked each midshipman to report his vision on the honor system?

Don't laugh. That's akin to the arbitrary mechanism by which Libor is set. And now, like the piano player at a cathouse, we are shocked, shocked to learn what has been going on. There are allegations of cheating.

Libor is the London Interbank Offered Rate. It is the rate that banks expect to pay on USD loans. Other currencies and a range of terms are also included, but we'll focus on a single USD rate here. Libor is derived from self-reported rates from a group of banks. It is only an indication. No actual borrowing has to take place. So there is ample room for judgment, bias, and the usual panoply of human foibles.

Here's how it works. At 11 am each weekday, 18 banks send estimates of what they would have to pay to borrow money to Thomson Reuters. The numbers are lined up from top to bottom. The top and bottom four are discarded and the rest are averaged. Libor is that average and it is used as a benchmark rate – reflecting only interbank credit risk – for other USD rates. Libor is published daily at 11:30 am under the auspices of the British Banker's Association.

**Skin in the game**

Just as aspiring aviators desire perfect vision, banks want to appear healthy. Banking is a very risky business with a structural flaw. Long-term assets (loans) are

funded by short-term liabilities (deposits), which can be withdrawn at any time. The mere hint of weakness could trigger a sudden withdrawal, called a run on the bank, which would necessitate either a bailout or collapse. Perception can quickly become reality. The interest rate at which other institutions are willing to loan the bank money is a measure of the bank's perceived health, its creditworthiness. So the lower the rate, the better.

**Who did what?**

Barclays was the first name to pop up, paying a \$450 million penalty and bidding adieu to their top brass. Between 2005 and 2009, Barclays traders made 257 requests to fix Libor and Euribor, according to the UK's Financial Services Authority (FSA). Before the banking crisis, the manipulation was in both directions as Barclays traders made up to \$40 million a day on interest rate derivatives by skewing Libor rates. But as the banking crisis took hold in 2007, perceptions of the bank's health became the dominant concern and the manipulation was exclusively to the downside. Senior treasury managers instructed the troops to reduce Libor to avoid negative attention. Per the FSA report, Barclays should not 'stick its head above the parapet'. And with that, we came to learn the difference between 'clean, clean' and 'dirty, clean.' Twenty other banks are under investigation and collusion is specifically alleged.

**Dwarfs all other financial scandals**

The total value of securities and loans affected by Libor is estimated at \$800 trillion annually. That's about 10 times the value of all goods and services that will be produced on the planet this year. A 2007 email to the NY Fed alleged a seven basis point mispricing by Lloyd's. If seven pips was the average mispricing, we're looking at an annual error of \$560 billion or about \$2 trillion over the four years the scam is alleged to have run. That number must be adjusted to allow for offsetting positions, positions held within the gang, jurisdictional and standing restrictions, and the treble damages allowed under US antitrust rules. Net estimates of bank liability for the scam are all over the map, ranging from \$6 billion to \$300 billion.

## Editor At Large



A view of London's financial district from the Thames River.

### Pretending to be asleep at the wheel

This scam is all the more pernicious because regulators were allegedly aware of it. Bank of England (BoE) governor Sir Mervyn King and US Treasury Secretary Tim Geithner discussed problems in the way Libor was set in early 2008. A 2008 Barclays internal email documenting a phone call with the BoE notes that “a number of senior figures in Whitehall” were troubled by Barclays’ relatively high Libor quotes following the collapse of Lehman. When Bob Diamond noted that not all banks were providing quotes at the levels that represented real transactions, the BoE representative’s response was, “Oh, that would be worse.” Again, according to Bob Diamond, who is now Barclays’s ex-CEO.

Recall that at the same time the Fed and the BoE were trying to drive down rates to mask the insolvency of their respective banking systems. So telling the banks to stop rigging Libor and selling interest rate swaps may have been a lower priority. The scam was contributing to the success of the regulators’ own policies. They were all rowing in the same direction.

### Who got done?

If you borrowed money keyed off Libor between 2007 and 2010, you may have benefited. But if you loaned money based on Libor, you probably got taken. One

popular means of exporting the scam was through interest rate swaps. If you paid a fixed rate and received a floating rate based on Libor, you likely got done. The US taxpayer is a notable victim because both the \$182 billion bailout of AIG and a \$1 trillion emergency lending program called the Term-Asset Backed Securities Loan Facility were linked to Libor.

### Whack-a-mole

The Libor rate setting mechanism is fatally flawed. Without any basis in an actual transaction, it is too easy to manipulate. Focusing on which particular entity actually did the manipulation may be beside the point, especially when participation appears to have been so widespread. Yes, the cars were stolen and we should punish the thieves. But we should also lock the doors and remove the keys from the ignitions going forward. There is insufficient honor among thieves for the current system to work. **OGFJ**

### About the author

*Larry Hickey is a managing director with Aneris XTRM, certified risk manager and frequent contributor to these pages. He has spent the past 14 years managing implementations of industry leading ETRM solutions. He is frequently called upon to turn around troubled projects.*



Don Stowers, *Editor, OGFJ*

# NuTech's focus: solving complex reservoir issues

## AN INTERVIEW WITH NUTECH'S ALLEN HOWARD

**EDITOR'S NOTE:** Allen Howard is one of the world's foremost authorities on oil and gas reservoirs. As president and CEO of NuTech Energy Alliance, his aim is to share his company's knowledge and help the petroleum industry use its resources more efficiently. We caught up with him in August at Summer NAPE in Houston.

**OIL & GAS FINANCIAL JOURNAL:** Allen, we hear a lot about NuTech Energy Alliance and the great work your engineers and geoscientists are doing to help improve reservoir analysis in shale plays and elsewhere. Can you give our readers some background on NuTech and what it is your company does?

**ALLEN HOWARD:** The original concept I had for NuTech began as early as 1995 while working with various technologies in the area of pore size relationships. This concept was actually put into a plan at my kitchen table in 1997 and further vetted for industry release in 1998. The unique pore size, or textural, models we created combined historical measured data with new technology to become the centerpiece for how NuTech defines and understands the reservoir.

Over a 15-year period we have evolved into an integrated reservoir evaluation company providing petrophysics, stimulation design, geomechanical relationships, core laboratory services, reservoir engineering, and characterization models. Each step of our analysis utilizes a process designed to continually capture more understanding about the reservoir. We think this process is key to producing consistent results for decision making.

To date we have analyzed more than 60,000 wells in virtually every known basin around the globe. This experience has allowed NuTech to gain knowledge and insight into how reservoirs can be more properly evaluated and managed.

**OGFJ:** How does NuTech differentiate itself from competitors? What is your special expertise?

**HOWARD:** The main difference is that NuTech was founded upon a unique approach to understanding textural modeling of the reservoir through petrophysics. Texture describes how we break down the pore system into different components (small to large) to understand how to properly assess the reservoir from key quantitative attributes such as affective porosity, clay, permeability, and saturations. Texture allows NuTech to solve the complex reservoir issues that prevent our industry from identifying and de-risking bypass pay.

When we build a reservoir model that utilizes all of the key elements, we tap into intel that helps us interpret

and further develop the reservoir. We refer to this new set of eyes that we lay on the reservoir as "Reservoir Intelligence." We use this approach in many ways, but one of the most dramatic is to shorten the learning curve in any unconventional play. Another critical application is to understand the risk our clients face in order to maximize their value at any point because of our understanding of the variables in shale evaluation. When we make a bold, forward-looking statement concerning an unconventional reservoir, we do so based upon our expertise.

**OGFJ:** At what stage does NuTech start advising its clients about the subsurface rock on their leaseholds? How does this impact development?

**HOWARD:** We typically get involved in the early phase of client activity—whether a client is involved in old field rejuvenation, analyzing or de-risking new and existing shale plays, or incorporating advisory services in the early phase of strategic planning. During the early stages of positioning or lease acquisition, NuTech enhances pre-existing well data ahead of the bit to help establish our high-level property distribution model across a prospective area. For example, we utilized hundreds of historical wells for control points to help identify the Eagle Ford formation back in 2007. This pre-existing data contributed key attributes for property distributions in order to understand the continuity of the play and define some of the variability prior to leasing or considering development.

**OGFJ:** For the non-geologists among us, can you talk a little about the physical characteristics of two or three shale reservoirs and how best to approach them to maximize productivity and make it more economic?

**HOWARD:** I believe the most critical attributes in the evaluation of any shale play are maturity, free hydrocarbon pore volume, the textural relationship to permeability, and rock competency, which combines the relationship between stress, brittleness, and mineralogy. The Eagle Ford, Utica, and Bakken shale plays all demonstrate high reservoir quality with these critical and calibrated attributes.

We have experience with shales that trend toward higher elasticity that computes lower clay and higher silt, which typically yields much larger storage capacity. In these environments we have achieved commercial success through advanced studies with fracture calibration. This is why reservoir intelligence is critical in the early stages of shale opportunities. Our primary goal at NuTech is to protect client investments by pre-defining the reservoir's primary characteristics and variability before executing the development plan.



From left: Will Deaton, VP client services; Britt Hill, EVP, COO; Allen D. Howard II, EVP, chief commercial officer; Allen Howard, president, CEO; Steve Roth, EVP, chief marketing officer

**OGFJ:** Geology can be quite different within a particular shale formation, which can affect drilling and completion techniques. What are some of the methods NuTech uses to identify “sweet spots” and differentiate them from other less desirable locations?

**HOWARD:** The most consistency I have experienced in a shale play is inconsistency, and in some cases within the same well. We have learned that variability is the way of life when developing a shale “sweet spot.” We have had to learn how to deal with such variability by utilizing a geologically-engineered approach to distributing the most key shale characteristics.

In most cases, we have to layer in reservoir-managed strategies to keep the operator in control of the development process. Once we have identified the shale sweet spot with these key characteristics we move quickly to completion design and strategies through a calibrated, closed loop learning process referred to as stimulation vision. I feel that the biggest step in the successful development of a new shale play is how quickly we can gain understanding of the completion learning curve. We have been fortunate since our first shale model was developed and released in 2002 in identifying successful shales throughout the world versus the ones that are not ready to be produced with current technology.

**OGFJ:** We hear a lot about “science wells” and how several of these vertical wells must be drilled to learn more about the formation before horizontal drilling commences for commercial development. What can be learned from science wells and how important is this to operators and producers?

**HOWARD:** We call these “proof of concept” wells, and they are used to collect all appropriate data to ensure the play has the correct attributes to be a success. This benchmark strategy allows the oil company to develop a plan to move forward. These strategies are performed by all shale players as acceptable practice.

NuTech’s approach to the proof of concept strategy is to create better calibration of older recorded data that can be utilized to understand reservoir characterization. We build confidence around key parameters from pre-existing wells so that they live and breathe as though they are new drills. These wells now become accepted data points and are invaluable because they assist in improving property distribution across the play.

Prior to drilling any proof of concept well, the placement or location work is quite strategic. We work with clients to place the wells correctly because we want to tie the resulting data points back into a model that adds value to the entire reservoir.

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**OGFJ:** I understand that NuTech has several principal services for reservoir evaluation. Can you give our readers a brief description of each and tell what benefits they provide?

**HOWARD:** We have constructed a series of reservoir services that are applied to our intelligence system as hooks in order to execute a specific, well placement, reservoir strategy. Each of these services can then be adapted to solve a particular reservoir issue that our clients need to address in each phase of the process from early decision risks to execution.

Over the past six years we have witnessed companies focusing only on the same reservoir tools at hand and repeatedly discounting others. At NuTech, our focus is to establish a full spectrum evaluation through a step-by-step process that combines real Reservoir Intelligence and its collective power.

**OGFJ:** How much better are we able to analyze hydrocarbon reservoirs today than just a few years ago and how has this impacted the upstream sector?

*"The most critical attributes in the evaluation of any shale play are maturity, free hydrocarbon pore volume, the textural relationship to permeability, and rock competency, which combines the relationship between stress, brittleness, and mineralogy. The Eagle Ford, Utica, and Bakken shale plays all demonstrate high reservoir quality with these critical and calibrated attributes."*

**HOWARD:** I have always worked on the leading edge of technology—from my early years at Schlumberger, to the advancement of magnetic resonance via NUMAR, and now to textural reservoir modeling here at NuTech. Reservoir engineering analysis to completion technology has made the difference in today's shale markets. We have observed tremendous strides in these technologies and have made achievements in shortening the expensive learning curve in key markets down from seven years for instance in the Barnett in the Fort Worth basin to less than two years in the Eagle Ford play in South Texas.

NuTech's main objective in these types of plays is to impact the industry's best practice strategies early in the decision process through final execution. Our abilities have allowed us to capture, identify, quantify, and ultimately understand all the high-risk properties of major shales. From this we have created an expertise that impacts economics by focusing our attention on improving performance through recoverability.

**OGFJ:** What do you see as the most exciting or interesting emerging resource play on the horizon?

**HOWARD:** Excellent question. I think that expresses the interest and heartbeat of the industry. From my personal perspective from the tremendous amount of work we have analyzed, there are about three or four plays in the Permian basin that are not quite there technically. When the strategies are properly understood and implemented, you will see some of the best reserves per well in the world.

**OGFJ:** Science and technology have brought about a renaissance of domestic oil and gas production in the United States. In your view, what are the overall implications of this? Can we achieve a measure of energy independence by reducing oil imports dramatically?

**HOWARD:** I believe innovative steps in technology, both primary and secondary, will continue to help us move towards energy independence, and NuTech has been a part of that technological renaissance. If we look at the 1,200 successful shale completions the industry has brought on line since 2008, we have stopped the nation's production decline. The impact is already being realized with increasing production at 1.5 million barrels of oil per day.

Within the service and technology sector, let's look at the impact from real world examples. In Cotulla, in La Salle County Texas (Eagle Ford shale play), there is a whole city being built overnight because of similar successes. That is a real economic impact beyond the oil reserves identified.

**OGFJ:** Is most of NuTech's business today in the United States? What are some of the other countries in which you operate, and how do you expect this will change in the coming years? Please elaborate, if you will.

**HOWARD:** Yes, a high percentage of our business is from North America. But I do like the fact that based upon our technical advantage, we were seeing prospective shale plays as early as 2006 in South America and European basins. In fact, we were ahead of the charge in places like Colombia and Argentina, but we faced an early but common attitude that these rocks would not produce. This delayed progress until they saw what happened with shale in the US. Now, many of those same reservoirs we initially analyzed are being hailed as world-class shale plays.

We are seeing major shifts in our international business strategy. Our partnership with Chevron Lummus Global supports our strategy to provide our reservoir understanding to projects and clients that may be lacking technical expertise and certainly unconventional experience.





**NuTech's family of nearly 100 geoscientists and engineers in front of the main office in Houston. The company has other offices in Dallas, Denver, Oklahoma City, Calgary, London, and Mexico.**

When it comes to international plays, we are only seeing the tip of the iceberg. Aside from our market presence in South America and Europe, we are expanding our popular catalogue of domestic unconventional reservoir studies by completing studies in the United Kingdom and Poland. In fact, we are currently assessing finding what we think will be one of the larger shale opportunities in the UK.

**OGFJ: What is the next big step for the petroleum industry and how will it be impacted by reservoir analysis and well analysis?**

**HOWARD:** I believe that shale development will be at the forefront of capital expenditures over the next 10 years. We are still in the early stages of understanding shale reservoirs, learning what is necessary to enhance production, and studying how to increase recoverability. Secondary and possibly tertiary completion strategies will ultimately be the next big step. Early-phase pilots have given positive results in some markets, but there still is a long way to go.

From a NuTech perspective, we want to use Reservoir Intelligence to lead the charge to developing better reservoir strategies to understand plays early and before major capital is invested. Our approach also helps steer clients toward plays that are more likely to be successful, as opposed to so many shales that don't currently work.

**OGFJ: What is the next big step for NuTech as a company?**

**HOWARD:** Our plan is to continue growing through expanding offices into key locations around the world and expanding our advisory services platform through strategic alliances with other key industry service players. Since the expertise in many of the key global markets is limited, we are being asked to provide advisory services that address those limitations.

Specifically, we see growth coming in Russia, South America, and Australia. But our key goal is to connect key global markets to what we have already learned from every important shale play in the US. We have already started this through a strategic alliance with Chevron Lummus Global, teaming with them to add integrated planning strategies from reservoir exploration through refinery. We signed a five-year contract with them, which is essentially a joint venture. CB&I (Chicago Bridge & Iron) is also part of this consortium, and we are working with them in Colombia. It just makes sense for us to share our expertise on reservoirs and the upstream sector with the companies that are designing and building midstream infrastructure and refineries that will take the production to various markets.

**OGFJ: Thanks for taking time to talk with us. OGFJ**



# Australia's coming LNG boom

*The Land Down Under could displace Qatar as the top LNG exporter in the world by 2020.*

Article from the Economist Intelligence Unit

The International Energy Agency speculates that we could be entering a “golden age of gas.” If that is the case, Australia is set to be a key contributor to it. While much attention has been paid to the shale gas boom in North America and prospects for the spread of the “shale gas revolution” elsewhere, Australia has been positioning itself to emerge as a leading player in the global liquefied natural gas (LNG) market by the end of this decade.

Australia could even displace Qatar as the top LNG exporter in the world by 2020. At the very least, Australia will surpass major LNG exporters Indonesia and Malaysia in terms of total liquefaction capacity. This will enable Australia, an already well-established Asia-Pacific LNG supplier, to carve out a greater role in the global LNG trade.

Gas production and LNG operations are not new to Australia. But a gas-for-export sector, in the form of

LNG, in the country is set to grow substantially. Australia's growing role as an LNG exporter will be made possible by the further development of offshore conventional gas resources, and of coal seam gas (CSG).

A new report from the Economist Intelligence Unit (EIU) analyzes the dominant trends in the development of Australia's gas resources and details the LNG projects that will unlock these resources for export to markets in Asia. The report also assesses the domestic and international drivers and constraints that will impact Australia's ability to increase its LNG export capacity.

Despite Australia's great LNG potential, several factors are likely to slow the pace of progress and determine how far the country's LNG sector will expand after 2020. However, this much is clear: Australia is on the cusp of dramatically expanding its role as an LNG supplier to Asian markets this decade.

## Australia and global gas supply

Australia has abundant resources of conventional and unconventional gas to supply both domestic and export markets. With 135 trillion cubic feet (tcf) in proved reserves, Australia is the 11th-largest holder of gas reserves in the world. Just under one-quarter of these reserves are unconventional coal seam gas (CSG) reserves. Australia has been exporting gas in the form of LNG for over 20 years, and future development of these reserves, both conventional offshore and CSG, will be increasingly directed towards supplying export markets.

## Australia already supplying LNG to Asia

Australia has three LNG export plants operating, two in Western Australia and one in the Northern Territory, with total capacity of 24.3m tonnes/year (t/y). All three terminals source natural gas from offshore fields. In 2011 Australia was the fourth-largest LNG exporter by volume – behind Qatar, Malaysia, and Indonesia – accounting for 7.9% of global LNG exports. Japan accounted for 73.4% of Australia's LNG exports and China for 19.3% in that year. The remainder was exported to South Korea, Taiwan, India, and the Middle East.

Australia is not the only supplier of LNG to the growing Asian gas market. Malaysia, Indonesia, Brunei, Oman, Nigeria, Qatar, and Russia (Sakhalin Island) are also established suppliers to the energy-hungry Asian economic giants. However, of these suppliers, Australia will initiate the largest increase in LNG export capacity in the coming years, and is poised to replicate the capacity growth that Qatar achieved during the previous decade.

Australia's proximity to Asia provides its LNG export sector with a large and expanding market practically in its back yard. The EIU forecasts robust gas consumption growth in Asia, increasing the regional need for imported LNG. Operators of Australian LNG projects, both existing and planned, have underpinned their projects with longer-term supply agreements, which will guarantee supplies to Asian gas-consuming economies for several years.

## The next wave of LNG: an Australian decade

The EIU expects Australia's LNG exports to increase significantly during the second half of this decade, with seven LNG projects in the construction phase. The timing of some of these projects may be delayed to some extent because of higher than anticipated costs.

Approximately 61m t/y of LNG export capacity in Australia are scheduled to be added to Australia's LNG capacity from these seven projects already approved. This includes 35.9m t/y from plants that will source conventional offshore gas fields in Western Australia and the Northern Territory, and 25.4m t/y that will source onshore CSG resources in Queensland.

If achieved, this will make Australia the largest global LNG exporter, assuming no further capacity increases from Qatar, the current LNG leader. Furthermore, Australia's share of global LNG export capacity will sharply increase from around 8% in 2012.

## A risky business

There are several risks facing Australia's LNG sector. High project costs, scarce labor supply, a strengthened Australian dollar, infrastructure bottlenecks, and tight environmental regulations could combine to delay the timing of some LNG projects coming on stream. Australia is an expensive place to build an LNG plant. Domestic political risks include opposition from some farming communities to CSG-to-LNG projects, and demands from local industrial gas consumers to keep a certain portion of gas production for the Australian market.

North America and East Africa may emerge as potential competitors to Australia for the Asian LNG market in the longer term. In the case of US LNG, volumes are likely to be competitively priced as they will not be indexed to

*"The R&D credit provides a direct reduction of tax liability for labor, supply, and contractor costs that are incurred on projects that are technological in nature, and is in place to incentivize the development of specialized solutions to engineering and construction projects. The credit is intended to reward the expansion of domestic development activities."*

an average basket of crude oil prices in Asia. Nevertheless, if a flood of North American and East African LNG does occur it will impact the viability of proposed LNG projects in Australia that are unlikely to be sanctioned in the next few years. Australian LNG projects under construction already have long-term supply agreements in place.

## Conclusion

Despite the domestic and international risks addressed in the report, the EIU expects the second half of this decade to be a significant one for the Australian LNG sector. By 2020 Australia will have a much greater role as a key supplier to the Asian LNG market.

Proximity, low political risk, and available resources will enable Australia to maintain a key role in supplying the Asian market, even accounting for North American and East African competition in the longer term; and even if Australia's LNG capacity expands only modestly beyond the current list of seven projects that are currently under construction.

For more information, visit the Economist Intelligence Unit's website at [www.eiu.com/research](http://www.eiu.com/research). **OGFI**



**Unit recently added close to 25,000 net acres to its Granite Wash core area in the Texas Panhandle.**

*Photos courtesy of Unit Corp.*

## Unit Corp.'s \$617 million purchase from Noble may be a game-changer

**U**nit Petroleum Company, the E&P arm of Tulsa, Okla.-based Unit Corporation, recently completed what company executives are calling a “transformational” event. On July 11, Unit Petroleum acquired Mid-Continent properties from Noble Energy for about \$617.1 million. The transaction doubles Unit’s current net acreage position in the Granite Wash play and essentially triples its potential horizontal drilling inventory.

“We always use strategic thinking when it comes to acquisitions,” Larry D. Pinkston, Unit’s president and CEO told OGFJ. “These assets benefit all three of our business segments, and we look forward to accelerating development of these assets and delivering growth in all segments to our shareholders over the next several years.”

Oil and natural gas exploration and production companies evaluate potential acquisitions in a number of ways, says Unit. The ultimate goal: purchase assets that are fairly priced, provide substantial cash flow from current operations, and provide a long-term drilling inventory for future growth.

Unit is a publicly held energy company engaged through its subsidiaries in oil and natural gas exploration, production, contract drilling, and natural gas gathering and processing.

### **Purchasing assets that are fairly priced**

The western Oklahoma and Texas Panhandle properties acquired by Unit include 84,000 net acres in the Granite Wash, Cleveland, and Marmaton plays, with 900 producing wells and associated production and reserves of 60 MMcfe/d and 264 bcfe, respectively. The transaction with Noble will add about 25,000 net acres to Unit’s Granite Wash core area in the Texas Panhandle with significant resource potential that would include 600 potential horizontal drilling locations.

Industry M&A teams from companies such as LINN Energy and Apache Corp. have been extremely active in the Mid-Continent region. High levels of M&A activity and competition for assets often mean higher prices from sellers holding out for the highest bid. However, based

on the purchase price, the transaction seemed to be fairly valued at approximately \$10,283 per flowing Mcfe/d, or \$2.34 per proved Mcfe, compared to how the markets were valuing the company in July 2012. At the time of the transaction, Unit was trading at an enterprise value to trailing 12 months production and enterprise value to 2011 proved reserves of \$10,302 per Mcfe/d and \$3.07 per Mcfe, respectively.

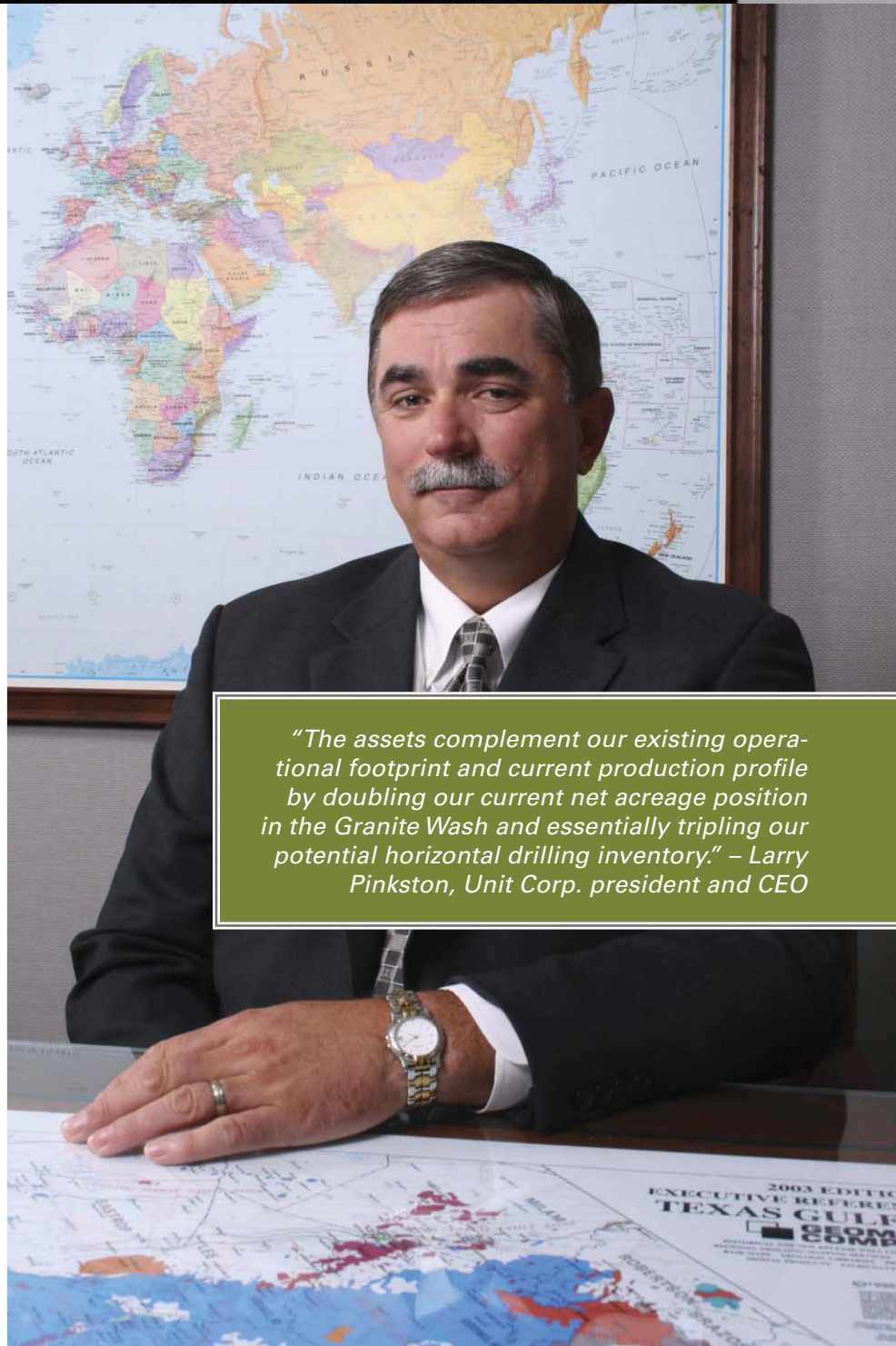
“We believe we acquired the properties at a cost that will provide a good economic rate of return to our exploration and production segment for many years,” Pinkston told us. “We have the option to control our pace of drilling because most of the locations sit on acreage that is held by production.”

### **Attractive properties**

Unit Corp. told OGFJ that cash flow from the properties in 2011 was approximately \$99 million and that the assets were immediately self-funding. At first glance, production from the assets seems natural gas weighted. However, the current production profile indicates a more balanced portfolio. During the first quarter of this year, Unit produced 19.7 bcfe, comprised of 58% natural gas, 20% NGLs, and 22% oil. The production stream purchased from Noble breaks out to 65% natural gas, 27% NGLs, and 8% oil.

Even more important, however, is the rate of return that these wells are anticipated to deliver. At current commodity prices, Unit’s average Estimated Ultimate Recovery (EUR) for a Granite Wash well is 4.0 bcfe with an average cost per well of \$5.5 million.

Using Unit’s data points, industry professionals estimate an internal rate of return (IRR) of 33% in the Granite Wash using \$85.00 per barrel of oil and \$2.50 per Mcf of gas. Giving no value to the natural gas, a Granite Wash well can generate a 10% IRR, considered breakeven, with a blended rate (crude oil and NGLs) per barrel of \$36.96.

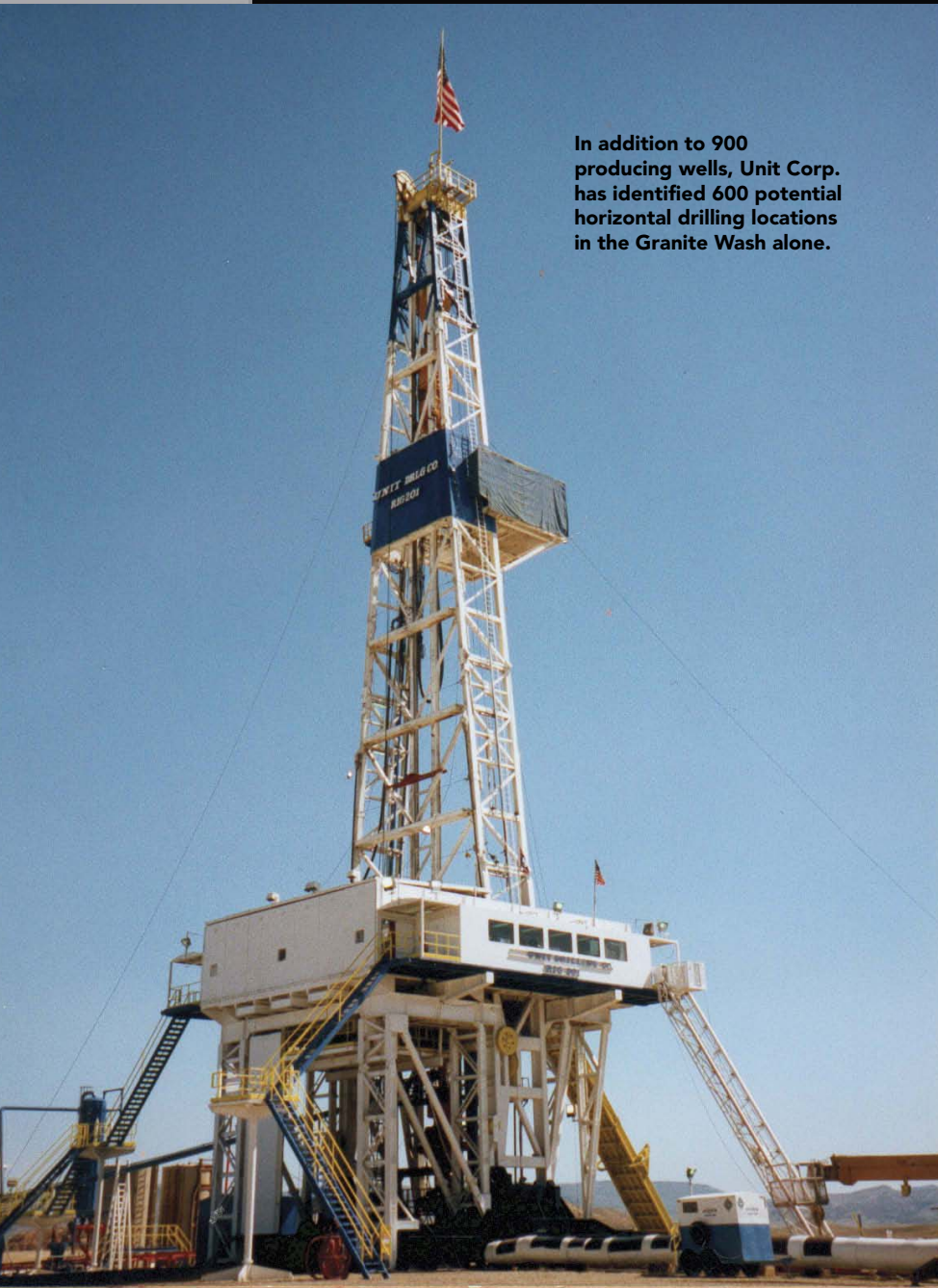


*“The assets complement our existing operational footprint and current production profile by doubling our current net acreage position in the Granite Wash and essentially tripling our potential horizontal drilling inventory.” – Larry Pinkston, Unit Corp. president and CEO*

“The assets complement our existing operational footprint and current production profile by doubling our current net acreage position in the Granite Wash and essentially tripling our potential horizontal drilling inventory,” Pinkston said. “The liquid-rich nature of the production stream will allow us to continue to economically grow our liquids production.”

### **Long-term growth opportunities**

Long ago, Unit Corp. established a minimum annual reserve replacement target of 150%, and this acquisition should ensure that the company has the inventory to continue meeting or beating this target for 2012 and beyond. Unit was immediately able to accumulate production and reserves through this acquisition.



In addition to 900 producing wells, Unit Corp. has identified 600 potential horizontal drilling locations in the Granite Wash alone.

Growing by acquisition is technically “easy” as long as you have adequate funding. Unit plans to use availability under its credit facility and proceeds from a \$400 million add-on senior subordinated debt offering to complete this all-cash transaction. The deal represents almost 40% of the company’s year-end 2011 reserves. And, pro forma, using year-end 2011 reserves, the acquisition pushes Unit’s reserves to approximately 1 tcf.

However, as professionals in the oil and gas industry know, growing the business requires an active drilling program. The larger you become, the larger your inventory needs to be in order to sustain an adequate level of growth. In addition to the 900 producing wells, Unit has identified approximately 600 potential horizontal drilling locations in the Granite Wash alone. Bear in mind, Unit has been drilling in the Mid-Continent, namely the Granite Wash, for around 30 years and will apply its operational expertise to continue to grow production and reserves.

## Tying it all together

When targeting acquisitions, Unit Corp. adds one additional criterion to its evaluation procedures: the assets must economically benefit all three business segments of Unit Corp: E&P, contract drilling, and its midstream operations.

“What better way to grow than to grow as a whole?,” said Pinkston.

Unit’s 30 year operational expertise in the Mid-Continent provides tremendous upside for the exploration and production segment. Rather than “chasing the trends” by trying to add acreage in areas outside their operational expertise, Unit elected to focus on adding production and reserves in areas it knows best, allowing the company to leverage its operational know-how to develop the Granite Wash properties economically.

About 80,000 of the 84,000 net acres are held by production, allowing Unit to control the pace of drilling and development. The company’s current plan is to run two to three Unit-owned horizontal rigs in the Granite Wash for the remainder of the year with plans to add seven incremental rigs in the play by the end of 2013.

The acquisition also brings two gathering systems to the company’s midstream segment. Beginning at the end of 2014, the gas processing agreement on all the Granite Wash gas expires, and the company has the opportunity to process that natural gas through its midstream company, which is only six miles away from Unit’s Granite Wash acreage.

This transformational acquisition is expected to close in September 2012. The operational synergies created in all three segments will be significant for Unit Corp. With the acquisition, the company believes it has created a roadmap to future success. **OGFJ**

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# Newbuild and replacement cost functions

This is part two in a two-part series. Part one ran in the July issue of OGFJ.

Mark J. Kaiser and Brian F. Snyder, *Center for Energy Studies, Louisiana State University, Baton Rouge, La.*

**OVERVIEW:** Newbuild and replacement cost functions provide insight into the factors that influence costs and are used by investors, companies, government agencies, and other stakeholders to evaluate newbuild programs or the value of an existing rig or fleet. In Part 2, multi-factor cost models for jackups and semis are derived. Water depth was the single best predictor of rig cost and replacement cost models explained larger proportions of variance than newbuild models which is likely due to the manner in which cost estimates were performed.

## Newbuild cost models

### Single variable models

Single variable linear regression models using water depth, year of delivery and drilling depth capability were examined. The relationships behaved as expected in most cases with increases in water depth, drilling depth and build year having a positive influence on cost, however, most relations were not significant. The only statistically significant relationship involved water depth and jackup costs (Figure 1).

### Jackups

Multivariate newbuild cost models were specified using an environmental indicator (HARSH), water depth (WD, ft), and water depth squared terms. Variables for country of build, drill depth or delivery year did not add explanatory power and were excluded. The impact of

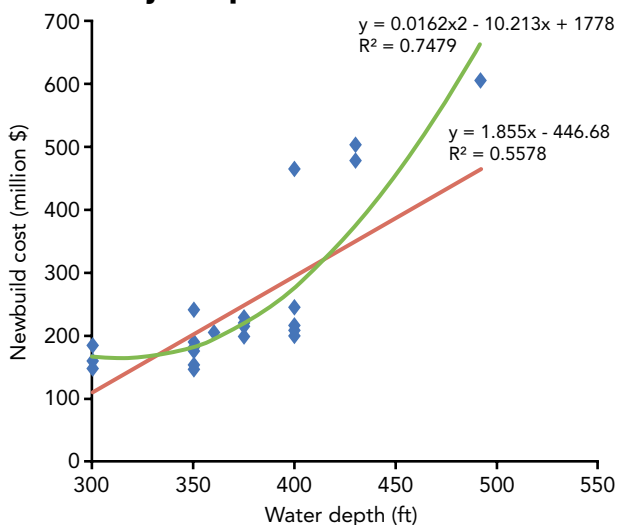
variable deck load was minor and was not included in the best model. The best model took the form:

$$\text{Newbuild Cost} = \alpha_0 + \alpha_1 \text{HARSH} + \alpha_2 \text{WD} + \alpha_3 (\text{WD})^2$$

All costs are reported in million 2009 dollars and the results of several variable combinations are shown in Table 1. Model A explained the largest portion of the variation in newbuild costs and contains both water depth and water depth squared terms of opposite signs. Figure 2 illustrates the output of model A, where the upper line is the model for harsh environment rigs, and the lower line is the model for moderate environment rigs. Costs increase at an increasing rate with water depth, consistent with our prior expectations.

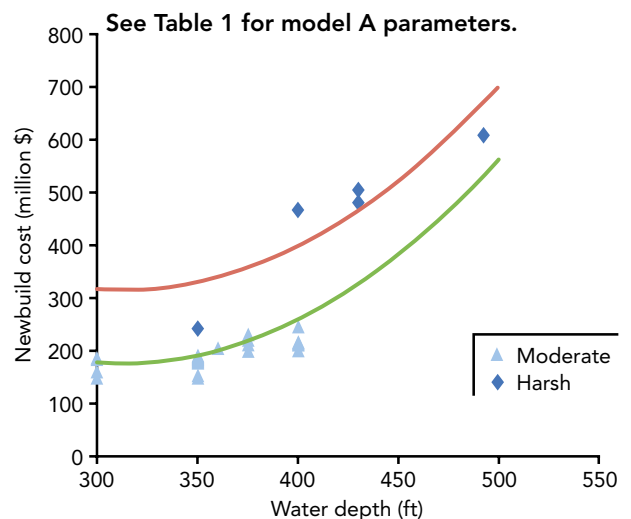
Models B and C compare the effects of the water depth and water depth squared terms and suggest that water depth squared is a slightly better predictor than water depth. In models A through C, negative and large positive intercepts are inconsistent with a priori expectations. Therefore, we examined the effects of constraining the y-intercept to zero in models D through F. The standard error of the regression models through the origin is higher than the analogous standard regression model, suggesting weaker fit. When the y-intercept is set to zero, the magnitude of the coefficients changes, but the signs of the coefficients do not change, suggesting that the direction of the relationships between water depth and operating environments and costs are robust.

**Fig. 1: Relationship between water depth and cost in jackup newbuilds**



Source: Data from Bailey and Sullivan, 2009

**Fig. 2: Newbuild cost model A output containing water depth and water depth squared terms**





**Table 1: Models of jackup newbuild costs**

$$\text{Cost (million \$)} = \alpha_0 + \alpha_1 \text{HARSH} + \alpha_2 \text{WD} + \alpha_3 (\text{WD})^2$$

Model	$\alpha_0$	$\alpha_1$	$\alpha_2$	$\alpha_3$	R <sup>2</sup>	Model p	SE
A	1248**	140.4**	-6.88**	0.011**	0.91	**	31.5
B	-209.9**	171.7**	1.128**	—	0.83	**	42.9
C	-16.0	163.38**	—	0.0016**	0.85	**	40.1
D	0	159.9**	-0.146	0.002**	—	—	39.8
E	0	201.6**	0.54**	—	—	—	47.7
F	0	167.8**	—	0.0015**	—	—	39.7

Note (\*): p is less than 0.05; (\*\*): p is less than 0.01. Terms without asterisks are not significant.

**Table 2: Models of semisubmersible newbuild costs**

$$\text{Cost (million \$)} = \alpha_0 + \alpha_1 \text{WD} + \alpha_2 \text{YEAR}$$

Model	$\alpha_0$	$\alpha_1$	$\alpha_2$	R <sup>2</sup>	Model p	SE
A	-50.3	0.025**	38.1*	0.39	**	81.2
B	0	0.024**	33.6**	—	—	79.5

Note (\*): p is less than 0.05; (\*\*): p is less than 0.01.

All of the models in Table 1 contain indicator variables for environmental conditions and the coefficients for these variables range from 140 to 201.6 suggesting that harsh-environment rigs are approximately \$140 to \$200 million more expensive than non-harsh environment rigs which is consistent with the summary statistics described in Part 1 (July OGFJ, pgs. 26-31).

The absence of nation of build and drilling depth variables from the models is not surprising. The lack of a geographic difference is likely due to international competition which forces shipyards to offer competitive pricing. Drilling depth was not a good predictor of costs because it is relatively invariant in the sample with most rigs capable of drilling either 30,000 or 35,000 ft wells.

### Semisubmersibles

Semisubmersible newbuild cost models did not yield robust models. The best model of construction costs contained water depth and delivery year:

$$\text{Newbuild Cost} = \alpha_0 + \alpha_1 \text{WD} + \alpha_2 \text{YEAR}$$

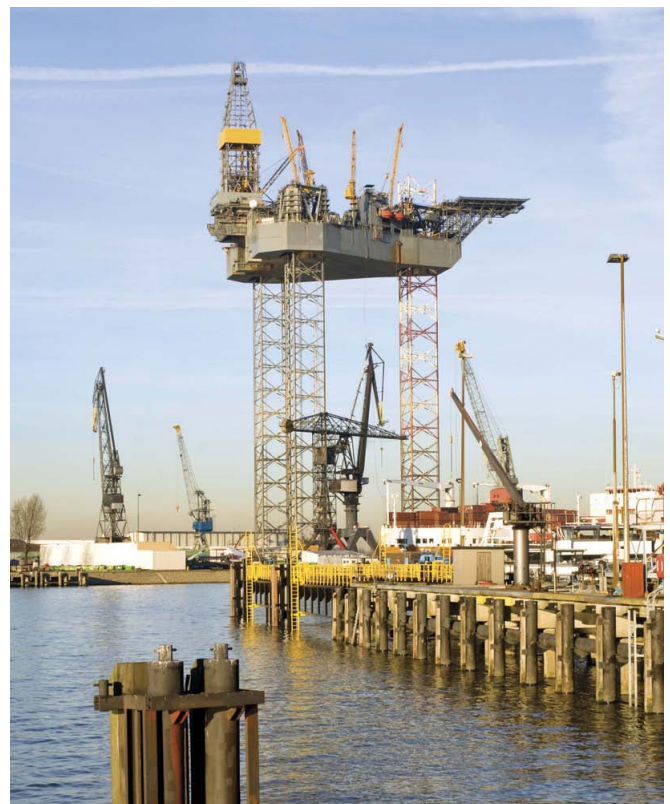
The model results are shown in Table 2 with and without the fixed cost component. Both models had similar coefficients but poor predictive ability. The model suggests that for each 1,000 foot increase in water depth capability, cost increases by \$25 million, and as the year of delivery increases, costs increase by \$38 million. Thus, a semi for delivery in 2012 should cost approximately \$100 million more than an identical semi delivered in 2009 because of the market conditions which influence contract negotiations.

For an average 8,333 ft water depth semi delivered in

2010, model B estimates cost at \$535 million. Approximately 37% of the cost is associated with the water depth term and 63% is associated with the delivery year term. The influence of the delivery year on costs is time dependent and related to commodity prices and shipyard demand when the contracts were written. Hence, these terms generally do not extrapolate outside the period of analysis and are generally not preferred in the specification. Market conditions in the 2009-2012 period led to increasing price with time; however, if a different time period were selected, conditions are likely to be different. For example, the Sevan Brasil will be delivered in 2012 at a cost of \$685 million, but two identical rigs built at the same shipyard for delivery in 2014 each cost \$526 million. Understanding the time dimensions of cost is an important determinant of applying empirical relations outside their sample window.

### Drillships

No combination of variables was able to capture the distinguishing features of drillship construction. The vast majority of drillships are under construction in Korea which eliminates the country of build variability inherent in the jackup and semi data sets, and orders in the sample occurred over a short time period (2007 to mid-2008) reducing the temporal difference due to market conditions. Additionally, many of the vessels under build are one of three similar designs. In this case, the average cost of drillships adequately describes the characteristics of the sample.



**Design Class**

Design class was investigated as an explanatory variable for each rig class using the single-factor model:

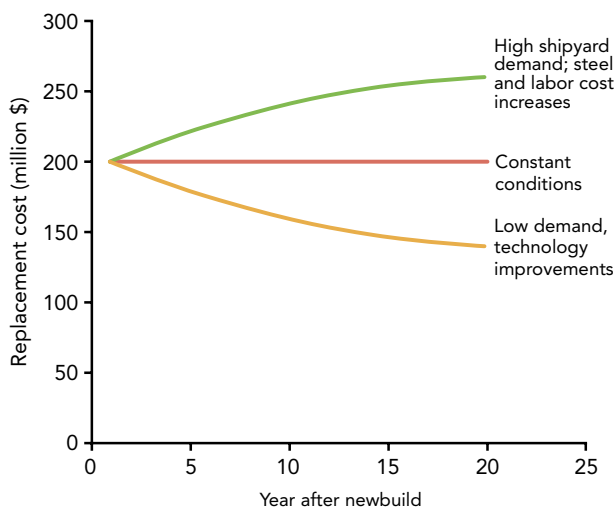
$$\text{Newbuild Cost} = \alpha_0 + \alpha_1 \text{DESIGN}$$

For semisubmersibles and drillships, design class did not improve the model results, but for jackups, the variable was statistically significant (Table 3).

Nine design classes were employed to categorize the sample data and each design class used its own indicator variable such that the cost is equal to the intercept plus the coefficient associated with the design class. For example, to determine the newbuild cost of an F&G Super M2 from Table 3, take the intercept and add -41.6. In cases where the p value of a parameter is not less than 0.05, the parameter cannot be said to differ from zero and the estimated cost is simply the intercept.

The model predicted over 95% of the variance in costs and suggests that there is more variation between rig classes than within rig classes; however, the model cannot be generalized beyond the rig classes depicted. The Letourneau Super 116, the F&G Super M2 and the MSC CJ46 are priced at a discount; the KFELS ModVB, Letourneau 240C and Pacific Class 375 may be considered average; and the KFELS N Class, MSC CJ70 and F&G 2000A are priced at a premium. All three premium designs are for harsh environments.

**Fig. 3: Effects of time and market conditions on replacement costs**



**Replacement cost models**

Replacement costs reflect the costs to replace a rig with a new asset of like quality and are related to newbuild cost. For a recently built rig, replacement cost may be estimated by reference to the rig's original newbuild cost adjusted for market conditions, or the newbuild

cost of similar rigs under construction. Replacement cost depends on technology trends, labor and material cost, construction supply and demand conditions, and the age of the rig at the time of the assessment. If new technology and improved construction methods, high competition among shipyards, and low demand for steel prevail in the future, replacement costs will be lower. Conversely, when there is high demand for shipbuilding services and a high price environment, replacement costs increase (Figure 3). Since many of the factors that influence newbuild prices also impact replacement costs, we expect that model results will be broadly similar.

**Table 3: Jackup newbuild costs by design class**

$$\text{Cost (million \$)} = 213^{**} + \alpha_1 \text{DESIGN}$$

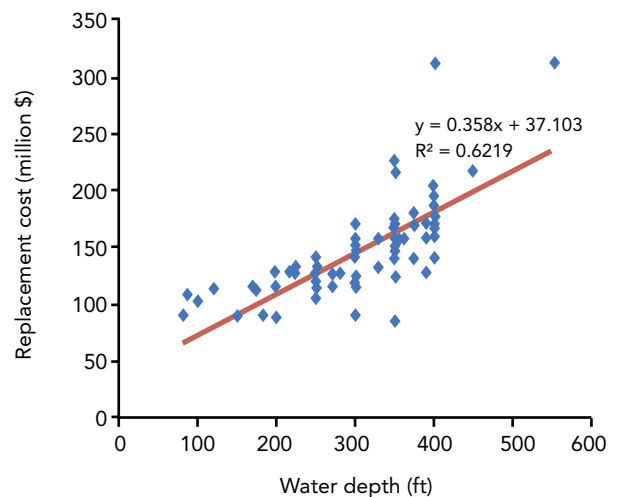
Class	$\alpha_1$
MSC CJ70	394.0**
F&G 2000A	27.0*
F&G Super M2	-41.6**
KFELS ModVB	-11.3
KFELS N class	270.0**
LET 116	-33.8**
LET 240	9.5
MSC CJ 46	-55.0**
Pacific Class 375	0.0**

Note (\*): p is less than 0.05; (\*\*): p is less than 0.01.

**Single variable models**

Single variable linear regression models were created to investigate factor impacts on replacement costs. Water depth was a significant factor for jackups (Figure 4) and for floaters (Figure 5). Delivery year was a useful descriptor for drillships (Figure 6) but not for jackups and semisubmersibles due in part to the effect of upgrading which subverts the age variation. Drill depth was not a significant factor for any rig type.

**Fig. 4: Jackup replacement costs as a function of water depth**



Source: Data from Bailey and Sullivan, 2009.

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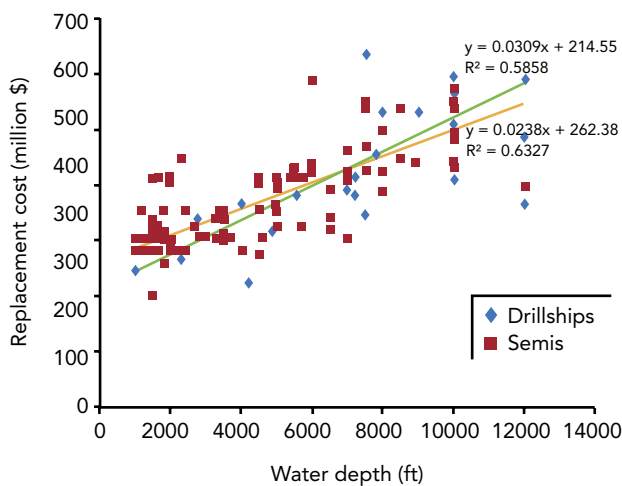
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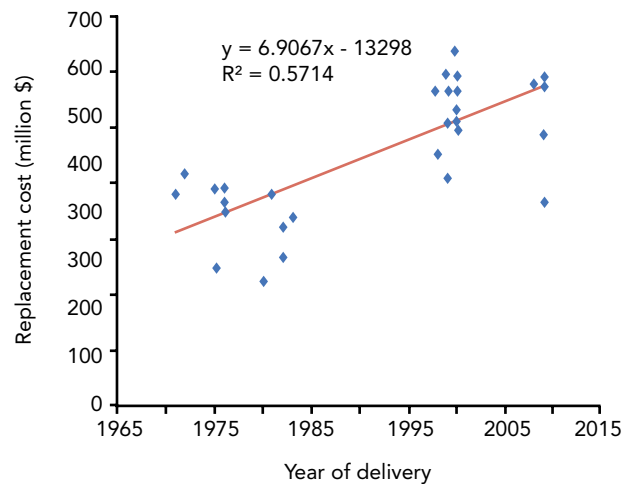
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**Fig. 5: Replacement costs of semisubmersibles and drillships as a function of water depth**



Source: Data from Bailey and Sullivan, 2009.

**Fig. 6: Replacement costs of drillships as a function of delivery year**



Source: Data from Bailey and Sullivan, 2009

**Jackups**

Multivariate replacement cost models were specified using water depth (WD, ft), environmental indicator (HARSH), and year of delivery (YEAR, yr):

$$\text{Replacement Cost} = \alpha_0 + \alpha_1 \text{WD} + \alpha_2 (\text{WD})^2 + \alpha_3 \text{HARSH} + \alpha_4 \text{YEAR}$$

Model results are shown in Table 4. Upgrade status was not a useful indicator of costs and was excluded. Age and water depth were significant predictors in several models, but are absent from the best model (model A). Water depth squared was a better predictor than water depth, consistent with the newbuild model relations. Costs increase with increasing water depth, harsh environments, and for younger rigs, as expected. Constraining the intercept to zero had little impact on parameter estimates.

As in jackup newbuild models, the jackup replacement cost model included an environmental indicator with a coefficient of 10.6. This suggests that in the replacement cost sample, a harsh environment rig enjoys a premium approximately \$11 million more than a non-harsh rig, much less than for newbuilds and likely due to the capabilities of the harsh environment rigs currently under build. The MSC CJ70 is capable of operating in harsh environments in water depths up to 492 ft, and can drill wells up to 40,000

ft deep with a 7,000 ton VDL; the KFELS N Class has similar capabilities. These additional advanced capabilities make modern harsh environment rigs more expensive than those of the legacy fleet.

Assuming an average moderate environment jackup with a water depth capability of 293 ft delivered in 1982, the replacement cost is estimated by model C to be \$131 million. Approximately 60% of the costs are associated with the delivery year term and 40% is associated with the water depth term.

**Semisubmersibles**

Replacement cost models were specified using water depth (WD, ft), year of delivery (YEAR, yr), and an environmental indicator (HARSH):

$$\text{Replacement Cost} = \alpha_0 + \alpha_1 \text{WD} + \alpha_2 \text{YEAR} + \alpha_3 \text{HARSH}$$

**Table 4: Jackup replacement cost models**

$$\text{Cost (million \$)} = \alpha_0 + \alpha_1 \text{WD} + \alpha_2 (\text{WD})^2 + \alpha_3 \text{HARSH} + \alpha_4 \text{YEAR}$$

Model	$\alpha_0$	$\alpha_1$	$\alpha_2$	$\alpha_3$	$\alpha_4$	R <sup>2</sup>	Model p	SE
A	-1243.7**	—	0.0005**	10.6**	0.674**	0.70	**	17.5
B	-1567**	0.282**	—	10.6**	0.818**	0.68	**	18.0
C	0	—	0.0006**	10.6**	0.04**	—	—	18.2

Note (\*): p is less than 0.05; (\*\*): p is less than 0.01. Terms without asterisks are not significant.

Model results are shown in Table 5. All coefficients were consistent with expectations. The coefficient of the water depth term was 0.020 indicating that for every 1,000 foot increase in water depth, costs increase by \$20 million. Newer rigs had higher replacement costs than older rigs, and each year increased cost by \$2.2 million. Harsh environment rigs cost \$23.8 million more than moderate environment rigs. For the average semi in the sample, model B estimates that 30% of costs were associated with the water depth term and 70% were associated with the delivery year term.

### Drillships

Replacement cost models were specified using an environmental indicator (HARSH) and water depth (WD, ft) variables:

$$\text{Replacement Cost} = \alpha_0 + \alpha_1 \text{HARSH} + \alpha_2 \text{WD}$$

Year of delivery was correlated with water depth and excluded from the model. Results are shown in Table 6. The coefficient of the water depth term was positive and for every 1,000 ft increase in water depth replacement costs increased by \$31 million. The harsh environment coefficient suggests that a harsh environment drillship costs \$196 million more than a moderate environment drillship. This is far more than the harsh environment premium in the jackup or semi cost models, and is partially the result of semis and jackups being more amenable to modification for harsh environments.

### Application

Model application is straightforward. To determine the cost of a newbuild 350 foot water depth, harsh environment jack-up with a 3,000 ton variable load in 2009-2010, for example, we apply the results from Table 1 and select model A since it has a low standard deviation and coefficients with the expected signs. To determine cost we substitute  $\text{WD} = 350$ ,  $\text{VDL} = 3000$  and  $\text{HARSH} = 1$  into:

$$\text{Newbuild Cost} = 1248 + 140 \cdot \text{HARSH} - 6.88 \cdot \text{WD} + 0.011 \cdot (\text{WD})^2$$

to obtain \$328 million. Confidence intervals are calculated using the standard error; a 95% confidence interval is given by \$265 to \$391 million.

### Limitations

The models developed are primarily limited by the sample size of the data from which they are constructed, and for the replacement cost, the manner in which costs are estimated. All three of the newbuild cost models and the drillship replacement cost model had sample sizes under 40 rigs. This is due to the limited drillship fleet size and the small number of rigs under construction at the time of analysis.

Some of the explanatory variables may be subject to error. The models treat the environmental design conditions as a simple variable that can only take the form harsh or non-harsh. However, for jackup rigs, the envi-

ronmental conditions which a rig can withstand depend in part on the water depth at that location. For example, a rig designed to operate in 350 ft in the Gulf of Mexico may only be able to operate in 200 feet in the North Sea. Overall, water depth was the single best predictor of rig cost. Water depth is believed to serve as a proxy for structural weight, and if weight were included the model fits may improve.

The data provide a snapshot of market conditions at a specific period of time. By fixing the time of assessment the effects of market fluctuations on cost data are eliminated which allows for a better analysis of the physical factors (water depth, harsh environment capacity, etc.) that influence costs. While we suspect that the factors identified as influencing costs apply to the market generally, the value of individual coefficients and model output will change with changes in shipyard supply and demand.

It is possible to build dynamic models of rig cost, but

these require a different dataset and model structure, and most importantly, prognostication of market conditions. By constraining the data to a particular point in time, problems with autocorrelation were avoided. While a time-series analysis of newbuild or replacement costs would be valuable, the focus of this analysis was primarily on the physical factors that impact costs. Time-series models may be adequate predictors of newbuild costs, but their application requires the estimation of market conditions in a future period, and given the volatility of the offshore markets, this may prove difficult.

**Table 5: Semisubmersible replacement cost models**

$$\text{Cost (million \$)} = \alpha_0 + \alpha_1 \text{WD} + \alpha_2 \text{YEAR} + \alpha_3 \text{HARSH}$$

Model	$\alpha_0$	$\alpha_1$	$\alpha_2$	$\alpha_3$	R <sup>2</sup>	Model p	SE
A	-4121**	0.020**	2.2**	23.8**	0.69	**	48.3
B	0	0.023**	0.13**	—	—	—	52.4

Note (\*): p is less than 0.05; (\*\*): p is less than 0.01.

**Table 6: Drillship replacement cost models**

$$\text{Cost (million \$)} = \alpha_0 + \alpha_1 \text{HARSH} + \alpha_2 \text{WD}$$

Model	$\alpha_0$	$\alpha_1$	$\alpha_2$	R <sup>2</sup>	Model p	SE
A	204.4**	196**	0.031**	0.65	**	67.2
B	0	234.7*	0.053**	—	—	94.0

Note (\*): p is less than 0.05; (\*\*): p is less than 0.01


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Bailey, J.E. and C.W. Sullivan. 2009-2012. Offshore Drilling Monthly. Houston, TX: Jefferies and Company. **OGFJ**

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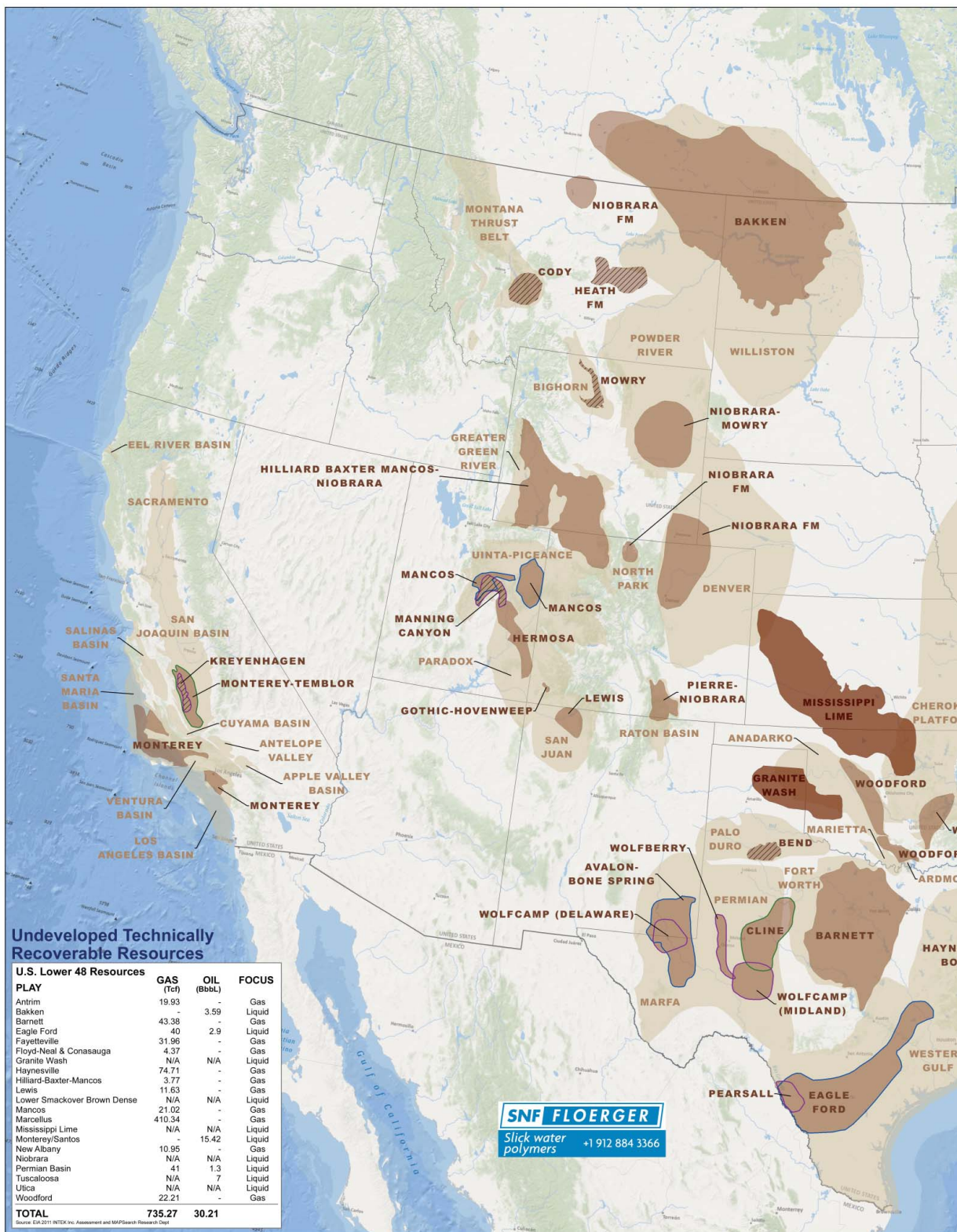
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# Diverse unconventional resource plays characterize Western US

The most important Western US unconventional resource play not named Bakken is the Niobrara, which is found in various states, but most notably in the Denver-Julesburg basin in Colorado, Wyoming, and a small portion of western Nebraska. It also occurs in several other locales in the West, most notably in Montana and a tiny sliver of northern New Mexico. It goes under the names Niobrara-Mowry, Niobrara-FM, Hilliard Baxter Mancos-Niobrara, and Pierre-Niobrara.

Check out the latest North American shale maps from PennWell at [www.ogfj.com](http://www.ogfj.com) to see the precise locations of various basins and unconventional resource plays.

Another large Western shale play is the Monterey shale in southern and central California. It is located both onshore and offshore. Major players there include Occidental Petroleum and Venoco Inc.

## Recent Niobrara activity

Denver-based Petroleum Development Corp. recently acquired Core Wattenberg assets that contain significant liquid-rich horizontal drilling opportunities from a private party for a purchase price of approximately \$330.6 million.

The assets are located almost entirely in the Core Wattenberg Field of Weld and Adams Counties, Colo., and are approximately 94% operated. They include an estimated 35,000 net acres prospective for horizontal development of the Niobrara and Codell formations. The acquired leasehold is 100% held by production and has an average working interest of approximately 93% with an average net revenue interest of approximately 81%.

Current net production is approximately 2,800 barrels of oil equivalent per day from approximately 700 wells producing primarily from the Niobrara and Codell formations.

Ryder Scott, the company's independent petroleum engineering consulting firm, estimates net proved reserves of 29.2 million barrels of oil equivalent using year-end 2011 SEC flat pricing and an effective date of April 1, 2012. The proved reserves are approximately 58% crude oil and natural gas liquids, and are approximately 54% proved developed.

The company has identified 180 gross proven plus probable Horizontal Niobrara drilling locations on the acquisition properties using current PDC spacing methodology of five gross (four net) wells per 640-acre section. It anticipates the acquired Horizontal Niobrara acreage will deliver, on a gross well basis, reserves of 300 to 500 thousand barrels of oil equivalent per well and generate an estimated \$4 to \$8 million of present value per well, discounted at 10% and further assuming current cost estimates of \$4.2 million dollars per well and utilizing the January 31, 2012 NYMEX commodity price strip.

Houston-based Noble Energy has expanded its operations in Colorado and plans to invest \$8 billion over the next five years, including \$1.3 billion in 2012. The company is developing horizontal wells that stretch nearly two miles through the oil-rich Niobrara formation. Noble has grown its holdings to 880,000 acres and is experimenting with increasing the density of wells drilled from the same pad.

Noble is one of three major drillers in the Colorado portion of the Niobrara. The others are Anadarko Petroleum and EOG Resources.

Results from Anadarko's first 11 horizontal Niobrara and Codell wells in the Wattenberg field of northeastern Colorado show strong initial production (IP) rates and could serve as a catalyst for potential joint venture agreements. Average IP was 827 boe/d with nearly 70% oil. IPs range from 555 to 1,505 boe/d. One outlier well produced 75% gas; others actually averaged an oil ratio of 77%, with a range of 66% to 86%.

Anadarko's best well to date, the Dolph 27-1HZ, demonstrated an IP rate of more than 1,100 barrels of oil per day with more than 2.4 million cubic feet of natural gas per day, resulting in an estimated ultimate recovery (EUR) of better than 600,000 barrels of oil equivalent.

## Monterey Shale

The Monterey shale play in California has major differences from other unconventional resource plays currently being developed through horizontal drilling and multi-stage hydraulic fracturing technology. An oil-prone play, it is significantly younger geologically than most shale plays currently being exploited. At shallower depths, it has very low permeability and needs stimulation in order to produce oil. Farther down, the shale becomes more brittle and contains natural fractures. Because the areas where it is found are tectonically active (i.e. earthquakes), there are numerous hydrocarbon traps.

Best practices in the Monterey shale do not call for multi-stage fracs, which are common in other shale plays. Instead, operators like Occidental Petroleum, the largest lease-holder in the Monterey shale, prefer large-volume hydrofluoric acid jobs. Oxy says that the multi-stage fracs don't work in the Monterey shale and the company has concluded that acid jobs yield better results overall.

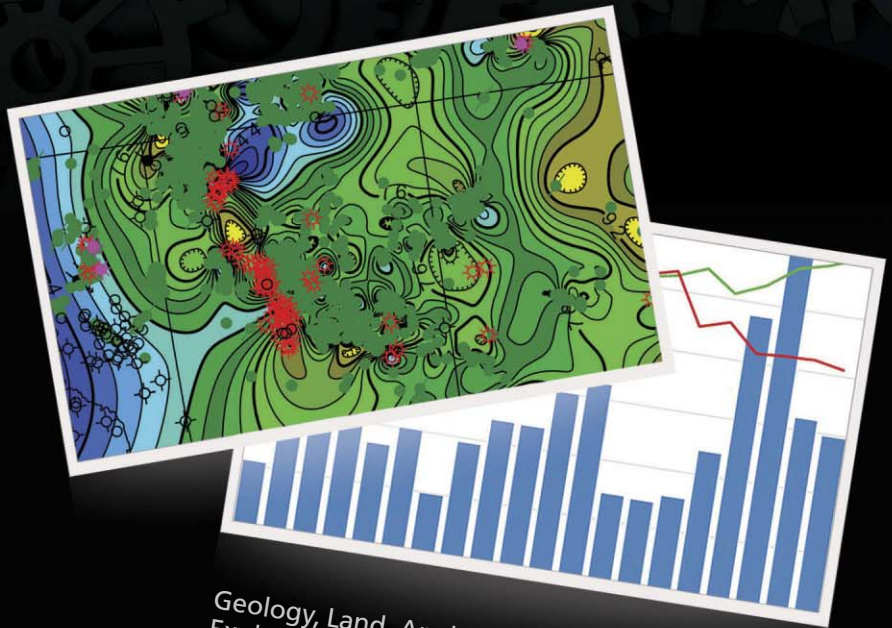
Venoco Inc., a Denver-based operator, has been operating in the offshore Monterey shale since 1997. More recently, Venoco has begun onshore operations in California's San Joaquin basin.

Other Monterey shale players and potential players include Berry Petroleum, Canadian Natural Resources, Gasco Energy, Newfield Exploration, Plains Exploration & Production, Western Energy Production, and Zodiac Exploration. **OGFJ**



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## Deal Monitor

# M&A pace increases as China strikes its biggest deal to date

Ronyld Wise, PLS Inc., Houston

As previously reported by PLS Inc., Chinese and Asian NOCs have been active buyers in the acquisition markets accounting for approximately 15% - 20% of the global value for E&P deals since 2009.

So it's not surprising that state-owned China National Offshore Oil Corp. (CNOOC) stepped up big in late July with China's largest E&P deal to date. On July 23, CNOOC announced a definitive agreement to buy Calgary-based Nexen Inc. for \$27.50/share cash – a 61% premium to Nexen's prior-day close. Including debt assumed, PLS calculates the deal to be US\$17.9 billion, eclipsing China's prior largest deal - state-owned Sinopec's \$8.5 billion buy completed in August 2009 of Addax Petroleum, an international E&P firm focused on West Africa and the Middle East.

CNOOC has an established foothold in Canada and a prior relationship with Nexen, having made a major move just about a year-ago with the \$2.1 billion corporate buy of oil sands producer OPTI Canada, announced July 2011 and closed November 28, 2011. At the time, OPTI's core asset was a 35% interest in the Long Lake oil sands project, operated by none other than Nexen.

CNOOC expects to close Q4 2012 and sees a rare opportunity to acquire long-life assets and create a North and Central American platform by retaining the existing Nexen management, technical and operating teams. Nexen's assets expand CNOOC's ownership in Canadian oil sands giving it total ownership of Long Lake as well as a 7% entry to Imperial-operated Syncrude. CNOOC also gets an operated position in the Horn River gas shale with joint-

## PLS Inc., Monthly Deal Monitor – Select transactions 07/17/12 - 08/16/12



### US Transactions

Date Announced	Buyer	Seller	Asset Location
13-Aug-12	Citation Oil & Gas Corp	Noble Energy	Mid-Continent
13-Aug-12	Midstates Petroleum Company	Eagle Energy Production LLC	Mississippian Lime
8-Aug-12	Abraxas	Undisclosed	Permian
6-Aug-12	EnerVest	Chesapeake	Permian
6-Aug-12	Three Rivers II	Meritage Energy	Permian
6-Aug-12	Undisclosed	Goodrich	Mid-Continent
1-Aug-12	Sumitomo	Devon	Permian JV
30-Jul-12	KKR	Comstock	Eagle Ford JV
24-Jul-12	Sheridan Holding Company II	Noble Energy	Permian
17-Jul-12	Undisclosed	Penn Virginia	Coalbed Methane
			Total Transaction value
			Number of Transactions

### International Transactions

Date Announced	Buyer	Seller	Asset Location
8-Aug-12	Westfire Energy	Guide Exploration	Canada
1-Aug-12	Petro China	Molopo Energy Ltd	Australia
23-Jul-12	Sinopec	Talisman	United Kingdom
23-Jul-12	CNOOC	Nexen	Canada
			Total Transaction value
			Number of Transactions

PLS Inc. Validity of data is not guaranteed and is based on information available at time of publication.  
Prepared by PLS Inc. For more information, email memberservices@plsx.com.

## Deal Monitor

venture partner Inpex. In the US, CNOOC gains a material entry into the deepwater Gulf of Mexico which significantly expands its global exploration portfolio. In the UK portion of the North Sea, CNOOC now becomes the second largest oil producer with Buzzard field anchoring a set of key assets.

In addition to the blockbuster CNOOC buy of Nexen, on the same day China's state-owned Sinopec agreed to pay \$1.5 billion to buy 49% interest in Talisman's UK North Sea business. Sinopec gains just over 30,000 boepd (98% oil) of net production and 2P reserves of 222 MMboe (94% oil). PLS calculates metrics of \$49,000 per daily boe and \$6.74 per Boe of 2P reserves.

In effect, on July 23, Chinese state-owned companies acquired UK North Sea production of over 144,000 boepd (114,000 by CNOOC via Nexen and 30,000 by Sinopec via Talisman) and 2P reserves of over 530 MMboe (CNOOC – 310 MMboe, Sinopec – 222 MMboe).

In the US Devon struck another large joint venture, this time with Japan's Sumitomo Corporation for \$1.4 billion. This is Devon's second large JV this year following its \$2.2 billion January deal with Sinopec covering five unconventional US shale plays. In this deal, Sumitomo gains a 30% position in ~650,000 net acres in the Cline and Wolfcamp (Midland) shales in the Permian basin. Sumitomo will invest \$340 million cash at closing plus another \$1.025 billion as a drill carry which will fund 70% of Devon's costs. PLS calculates deal value of \$7,000 per acre.

This period also witnessed an uptick in more traditional US M&A deals. The largest announcement, though value is not disclosed, is Houston-based EnerVest's agreement to buy the Midland basin portion of the Permian assets that Chesapeake put on the market earlier this year with estimated production of about 7,000 boepd. This is the smallest of the three Permian packages Chesapeake put on the market.

Other notable deals include recently IPO'd Midstates Petroleum's purchase of Eagle Energy of Oklahoma's Mississippian Lime assets for \$441 million. PLS estimates acreage values of \$2,500 per acre in the core Oklahoma Mississippian and \$750 per acre in the Kansas extension. Three Rivers didn't take long to re-start following their May 2012 \$1 billion exit to Concho. Backed with a fresh \$400 million commitment from Riverstone, Three Rivers II bought 1,900 boepd in the Permian's Wolfberry play from Denver-based Meritage III. KKR is back in the Eagle Ford with a drilling JV with Comstock Resources on de-risked lands in the black oil window. KKR is paying \$25,000 per acre, about the same price at which they sold out a year ago (with partner Hilcorp) in a \$3.5 billion exit to Marathon. Noble Energy is executing on its divestiture program and sold two packages recently. The first package for legacy Permian oil properties with upside sold to Sheridan Holdings for \$320 million. The second package, also oil-weighted, included Kansas Arbuckle legacy production with upside and sold to Citation Oil & Gas for \$140 million. **OGFJ**

Proved Reserve Value (\$MM)	Non Proved Reserve Value (\$MM)	Reserves (MMBoe)	Production (Boe/D)	Reserves (\$/Boe)	Production (\$/Boe/d)	Reserves (\$/Mcfe)	Production (\$/Mcfe/d)
\$140.0		7.0	1,000	\$20.00	\$140,000	\$3.33	\$23,333
\$441.0	\$209.0	37.0	7,000	\$11.92	\$63,000	\$1.99	\$10,500
\$7.0		1.2	240	\$6.00	\$30,000	\$1.00	\$5,000
NA	NA	NA	7,000	-	-	-	-
NA	NA	NA	1,900	-	-	-	-
\$95.0		6.5	NA	\$14.62	-	\$2.44	-
\$0.0	\$1,365.0	-	-	-	-	-	-
\$0.0	\$212.7	-	-	-	-	-	-
\$320.0		15.0	15,000	\$21.33	\$213,333	\$3.56	\$35,556
\$100.0		17.6	3,333	\$5.68	\$30,003	\$0.95	\$5,001
\$1,103.0	\$1786.7		Median	\$13.27	\$63,000	\$2.21	\$10,500
10			Mean	\$13.26	\$95,267	\$2.21	\$15,878

2P Reserve Value (\$MM)	Non 2P Reserve Value (\$MM)	2P Reserves (MMBoe)	Production (Boe/D)	2P Reserves (\$/Boe)	Production (\$/Boe/d)	2P Reserves (\$/Mcfe)	Production (\$/Mcfe/d)
\$264.5	\$185.1	41.8	12,035	\$6.32	\$21,973	\$1.05	\$3,662
\$10.5	\$32.7	53.6	73	\$0.20	\$143,288	\$0.03	\$23,881
\$1,500.0		222.5	30,707	\$6.74	\$48,849	\$1.12	\$8,142
\$17,900.0		2021.3	207,033	\$8.86	\$86,460	\$1.48	\$14,410
\$19,674.9	\$197.8		Median	\$6.53	\$67,655	\$1.16	\$11,276
4			Mean	\$5.53	\$75,142	\$0.92	\$12,524

Note: Canada transactions assume 20% royalty, unless disclosed.

## Industry Briefs

### **KMP to purchase TGP, EPNG for \$6.22B**

Kinder Morgan Energy Partners LP plans to acquire 100% of Tennessee Gas Pipeline (TGP) and a 50% interest in El Paso Natural Gas (EPNG) pipeline from Kinder Morgan Inc. for approximately \$6.22 billion, including about \$1.8 billion in assumed debt at TGP and approximately \$560 million of proportional debt at EPNG. The company previously announced that KMI would offer to sell these assets to KMP to more than replace cash flow from certain assets KMP is divesting pursuant to an agreement KMI reached with the Federal Trade Commission in order to complete the El Paso Corp. acquisition. KMP expects to complete the divestiture process during the third quarter of 2012. KMP is purchasing the assets at about eight times 2012 EBITDA and expects that the purchase price will be an even lower multiple of 2013 EBITDA, given the full-year benefit of cost savings and expansion projects. KMP plans to fund 10% of the transaction value, net of debt assumed, with KMP units that will be issued to KMI at closing valued at approximately \$387 million. The remaining value is expected to be funded with borrowings under a new \$2 billion credit facility, and equity and debt issuances. TGP is a 13,900-mile pipeline system with a design capacity of about 7.5 billion cubic feet (Bcf) per day. It transports natural gas from Louisiana, the Gulf of Mexico and south Texas to the northeastern US, including the metropolitan areas of New York City and Boston. EPNG is a 10,200-mile pipeline system with a design capacity of about 5.6 Bcf per day. It transports natural gas from the San Juan, Permian and Anadarko basins to California, other western states, Texas and northern Mexico. Combined, TGP and EPNG have more than 200 Bcf of working natural gas storage capacity.

### **Douglas-Westwood launches oil, gas consulting practice in Houston**

International energy business advisors Douglas-Westwood has opened a new office in Houston and appointed R. Michael Haney to lead its professional team. The new facility will manage the Douglas-Westwood group's Advisory and Research business in Houston and across the Latin America region. Haney has more than a dozen years' experience consulting for energy clients with Accenture, Arthur D. Little and Booz Allen Hamilton. He also worked in industry and investment banking and he co-founded and later sold a software technology startup. Haney has completed projects around the world, including in Saudi Arabia, Peru, Colombia, Algeria, and Korea. He holds degrees in Mechanical Engineering and Managerial Studies from Rice University in Houston, as well as an MBA from the University of Texas at Austin.

### **SandRidge makes \$1.1B notes offering**

SandRidge Energy Inc. has made a \$1.1 billion offering of two series of senior notes, marking SandRidge's largest capital markets transaction to date. The offering was comprised of \$825 million of 7.5% senior notes due 2023 and \$275 million of 7.5% senior notes due 2021. Proceeds will be used to finance a tender offer for \$350 million of SandRidge's senior notes maturing in 2014 and to fund capital expenditures. Covington & Burling advised SandRidge on the transaction.

### **Frontier Oilfield buys Chico Coffman Tank Trucks**

Chico Coffman Tank Trucks Inc. and its subsidiary, Coffman Disposal LLC, has been acquired by Frontier Oilfield Services for a sum of \$17,408,348.00. Coffman is a salt water disposal company with its

primary base of operations located in North Texas with its trade and service area being in the Barnett Shale oil and gas field located in North Central Texas. Coffman had audited 2011 revenues on \$40.5 million with an EBITA of \$3,263,929. Coffman's assets are currently valued on its financials at \$24 million and consist of accounts receivables, rolling stock (trucks and trailers), six permitted disposal wells and the headquarters' real property. Frontier Oilfield Services Inc.'s primary business focus is on wastewater recovery and disposal. Allegiance Capital Corp., a Dallas-based private M&A investment bank specializing in the lower middle market, acted as the exclusive financial advisor to Chico Coffman Tank Trucks.

### **EnCap Flatrock Midstream closes Fund II at \$1.75B**

EnCap Flatrock Midstream LLC has closed its second private equity fund, EnCap Flatrock Midstream Fund II LP, (EFM II) with total capital commitments of \$1.75 billion. The fund exceeded its \$1.25 billion target. EnCap Flatrock Midstream now has nearly \$3 billion in investment commitments and has made commitments to 10 portfolio companies across Funds I and II. EFM II is EnCap Investments LP's 16th institutional fund and brings the aggregate total raised by EnCap Investments over its 25-year history to more than \$13 billion. Thompson & Knight served as legal counsel for the fund.

### **Halliburton acquires Petris Technology**

Landmark Software and Services, a Halliburton business line, has acquired Petris Technology, a supplier of data-management and integration solutions to the energy industry. The acquisition comprises all of Petris' integrated solutions, including the PetrisWINDS products, such as Recall Applications, Recall Data Manage-

## Industry Briefs

ment, DataVera, Enterprise, Drill-NET, and Operations Management Suite – which will become available to Halliburton's clients as a part of the DecisionSpace® portfolio.

### **TETRA Technologies completes Greywolf acquisition**

TETRA Technologies Inc. has completed the acquisition of substantially all of the assets and business of Greywolf Production Systems for \$55.5 million in cash. The acquisition was funded with a combination of available cash and borrowings under the company's revolving credit facility. Greywolf is a well testing and flow back company headquartered near Calgary, Alberta, with Canadian operational centers in Crossfield and Grande Prairie, Alberta, and US operational centers in Williston, North Dakota, and Shoshoni, Wyoming. The company drew-down \$50 million under from its \$278 million revolving credit facility to fund a portion of the acquisition and for general corporate purposes. Following the draw-down, management estimates a remaining borrowing capacity of approximately \$228 million.

### **Stratex makes offer for Magellan Petroleum**

Stratex Oil & Gas Holdings Inc. has made an offer to acquire Magellan Petroleum for \$2.30 per share in cash and stock. The offer was made in a letter to Magellan's CEO with a copy to the Board of Directors August 27 after the CEOs of the two companies had previously discussed Stratex's interest in acquiring Magellan, but had failed to come to any definitive understanding. At \$2.30 per share, the offer provides a 137% premium to Magellan's shareholders based on the August 24 closing price of \$.97 and is 34% above Magellan's 52-week high of \$1.72. The total value of the transaction is approximately \$124 million. Stratex has secured committed financing to complete the cash

portion of the offer. In a prepared statement, Stephen Funk, CEO of Stratex said he believes combining the two companies would create greater value than the two entities could achieve separately.

### **Dart Energy sells Beckman Production Services**

On July 31, 2012, Dart Energy Corp. completed the sale of Beckman Production Services Inc. to SCF Partners, a private equity fund based in Houston that invests exclusively in the services, manufacturing and equipment sectors of the oil and gas industry. Beckman is a well service company in the US that provides maintenance, workover, completion, and support services for oil and gas production primarily in Wyoming, North Dakota, Michigan, Pennsylvania and Oklahoma. Simmons & Company International served as exclusive financial advisor to Dart Energy.

### **Wood Group increases Eagle Ford presence with Duval acquisition**

Wood Group has acquired Duval Lease Services and Freer Iron Works (Duval), a provider of maintenance, installation and fabrication services in the Eagle Ford shale region of Texas. Duval, which during the year to December 2011 generated sales of approximately \$32 million, will operate as Wood Group Duval within Wood Group PSN. Duval has approximately 300 personnel and will continue to be led by the existing management team. As of April 2012, Duval held gross assets of \$14 million.

### **Warburg Pincus invests in Hawkwood Energy**

An affiliate of private equity firm Warburg Pincus, along with Ontario Teachers' Pension Plan, has invested in Hawkwood Energy LLC, a new upstream oil and gas company. Together, the investment will reach

up to \$300 million. Denver, CO-based Hawkwood, which will seek to develop scalable oil and gas plays in known producing basins of the Rockies and Midcontinent, is led by CEO Patrick Oenbring and COO Leonard Gurule. Oenbring has nearly four decades of industry experience mainly at ConocoPhillips, Occidental Petroleum and Harvest Natural Resources. Gurule joined the company from Forest Oil Corp. where he served as a senior vice president.

### **NEAH forms MLP to provide field services to industry**

Newco Energy Acquisition Holdings LLC (NEAH Energy), an energy-related asset and services acquisition firm, has formed Water Consolidated Holdings LP (WaterCo) to provide water treatment and processing services to the petroleum industry. NEAH Energy Holdings Inc. (NEAH Holdings), a wholly owned affiliate of NEAH Energy, will own the General Partner and Limited Partner interests in WaterCo. Merriam Capital has been selected as the financial advisor to NEAH Holdings and WaterCo and will be responsible for arranging capital, assisting with target acquisitions and other key corporate finance matters.

### **Prolamsa to build new US plant to produce pipe, tubular products**

The Prolamsa Group plans to build a new manufacturing facility to produce pipe and tubular products to meet the growing demand of the US oil and natural gas industries. The investment is part of Prolamsa's plan to grow its presence in the pipe and tube markets in the Americas. The facility is expected to cost nearly \$150 million with a planned annual production capacity of 300,000 tons. It is anticipated the plant will begin operations in 2014. Several sites in the southeastern US are being evaluated.

## Energy Players

### **Patrick French, oil and gas legend, dies**

Patrick William French, a decorated veteran of the Vietnam War and an advocate for America's energy industry, died at his family's home in Bethesda, Maryland on Saturday evening, August 18, 2012. As president of the Foundation for Energy Education and executive vice president of the Texas Alliance of Energy Producers, French led a major public education effort to inform consumers about the key economic role of America's oil and gas industry. French formed his own company, The Association Development Group, in 1991. A Washington, DC-based consultancy, the firm worked with top trade associations, including the Independent Petroleum Association of America (IPAA). It was through his firm's IPAA connection that he met Alex Mills, who would later become Texas Alliance President and recruit French to join his leader-

ship team in Texas. French began his career in public advocacy as a fundraiser for the Republican National Committee. From there, he joined the US Chamber of Commerce, raising corporate membership funds and serving in the organization's offices in Chicago, Dallas, and San Jose. During the Vietnam War, French served as a paratrooper with the 173rd Airborne Brigade and received a Purple Heart for wounds received in action. Following his war service, he joined the 101st Airborne and 82nd Airborne Divisions. He earned his degree in government and politics from the University of Maryland. He also served on the board of directors of the Global Energy Management Institute at the University of Houston and on the board of directors of the National Corrosion Institute at Rice University. Born in Paris, France in 1947, he was the son of American diplomat Harry George French.

### **Mazeski assumes financial duties at Credo Petroleum**

Alford B. Neely has retired as CFO of Denver, CO-based Credo Petroleum Corp. Brian Mazeski, the company's controller, has been promoted to chief accounting officer. He will also serve as the company's principal financial officer and principal accounting officer. Neely joined Credo in 2006, and was promoted to CFO in 2008. Mazeski is a certified public accountant. Before joining Credo Petroleum, Mazeski worked for PriceWaterhouseCoopers LLP from 1996 to 2001.

### **Brooks replaces McKenzie as ZaZa Energy CEO**

ZaZa Energy Corp. has appointed executive director and president Todd A. Brooks as CEO, replacing Craig M. McKenzie. Brooks is one of three founders of ZaZa Energy LLC, the predecessor of ZaZa Energy Corp., and has served as an executive and director of ZaZa Energy since its combination with Toreador Resources Corp. in February 2012. McKenzie has also resigned from the ZaZa board of directors in



Brooks

order to pursue other opportunities. Prior to ZaZa LLC, from 2006 until 2009, Brooks made energy-focused investments across multiple geographic regions. He graduated from Vanderbilt University and earned a Doctor of Jurisprudence from South Texas College of Law.

### **ONEOK, ONEOK Partners make management changes**

ONEOK Inc. and ONEOK Partners LP have made a series of senior management changes. Charles M. Kelley, senior vice president, ONEOK's energy services business, now will lead that business, replacing Patrick J. McDonie who retired and accepted a position with another company. David E. Roth, senior vice president, administrative services, ONEOK and ONEOK Partners, will retire on Sept. 30, 2012, after 33 years with the company. Dandridge L. Harrison has been named senior VP, administrative services and corporate relations, ONEOK and ONEOK Part-



Kelley



Roth

ners. He assumes Roth's responsibilities for HR, information technology and corporate services, while continuing to lead the IR, communications, government relations and community investments functions. David R. Scharf becomes VP, strategic planning, ONEOK and ONEOK Partners. He was president, ONEOK Partners' natural gas gathering and processing business. Michael A. Fitzgibbons has been promoted to vice president, commercial, ONEOK Partners' natural gas gathering and processing business. Fitzgibbons previously was director, natural gas supply acquisition, Rocky Mountain region, natural gas gathering and processing.



Harrison



Scharf



Fitzgibbons

### **TETRA Technologies names Serrano CFO**

TETRA Technologies Inc. has appointed Elijo V. Serrano to the positions of senior vice president and CFO. Serrano



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## Energy Players

served as CFO of UniversalPegasus International from October 2009 through July 2012. From February 2006 through February 2009, Serrano served as CFO and executive vice president of Paradigm BV. He succeeds Joseph M. Abell, III, who resigned from the positions of senior vice president and CFO, effective July 31, 2012.

### **Beall replaces retiring Davis as EES CFO**

Express Energy Services LLC (EES) has named John R. Beall CFO. Beall replaces Jim Davis, who is retiring from EES. Davis, who was retired at the time, joined Express in 2009 to assist the company through a challenging financial period. Beall most recently was CFO for ENGlobal Corp. and has over 26 years in senior financial and treasury management roles with both private and public energy services companies. He graduated from Baylor University with a BBA and Southern Methodist University with an MBA in Finance.

### **Catherine Rector named Miller Energy Resources CAO**

Miller Energy Resources has hired Catherine Rector as its new vice president and chief accounting officer. She is a Certified Public Accountant and has 20 years of experience in accounting. Rector previously served as Director of Financial Reporting and Accounting Consolidations for Sitel Worldwide Corp. Prior to her work at Sitel, Rector worked as a senior manager in the audit practice at Rodefer Moss & Co. PLLC, as Controller at CapStar Bank, and also had her own private CPA practice for several years. She holds a BBA from Middle Tennessee State University.

### **Tethys names Hammond CEO**

Tethys Petroleum Ltd. has appointed Julian Hammond as CEO and president. In addition, the Rt. Hon Peter Lilley has been appointed as non executive chairman. Due to health reasons,

Dr. David Robson is unable to continue in his roles of executive chairman, president and CEO. The board extends best wishes to Dr. Robson and expresses gratitude for his role in building the company. Hammond has been deputy CEO since February 2011 when he assumed responsibility for the day-to-day operating activities of the company. In addition, Hammond was appointed to the board of directors with effect from January 2012. Hammond has worked for the company since 2006.

### **Bartol fills new role at Rowan Companies**

Offshore contract drilling services provider Rowan Companies plc has appointed J. Kevin Bartol to serve as the company's executive vice president, finance and corporate development. Bartol will lead the company's finance, investor relations and corporate development departments. William H. Wells will continue to serve as senior vice president, CFO, and treasurer, reporting to Bartol. Bartol joined the company in 2007 and previously served as senior vice president, corporate development.

### **FMC Technologies makes executive appointments**

FMC Technologies Inc. has appointed Robert L. Potter as president. He assumes the role from John T. Grep who remains chairman and CEO. Potter previously served as executive vice president of Energy Systems with responsibility for the Subsea Technologies, Surface Technologies and Energy Infrastructure business segments, in addition to several support functions. He has been with the company since 1973. Douglas J. Pferdehirt has joined the company as executive vice president and COO, assuming responsibility for the company's three operating business segments. Before joining FMC, Pferdehirt worked for Schlumberger for 26 years in a number of positions, including executive vice president of corporate development and communication,

and president of the Schlumberger Reservoir Production Group.

### **Dyck resigns president, COO roles at Ivanhoe Energy**

David Dyck has resigned his position as president and COO of Ivanhoe Energy, effective July 31, 2012. Carlos A. Cabrera, executive chairman and Robert Friedland, founder and executive co-chairman will lead the company with input and support from other members of the company's leadership team. Dyck served as president and COO since May 2010.

### **Kurt Dettinger joins Steptoe & Johnson**

G. Kurt Dettinger has joined the Charleston, WV office of Steptoe & Johnson PLLC. Dettinger will focus his practice in the areas of energy law, energy and financing transactions and government relations. Dettinger previously served as general counsel to West Virginia Governor Earl Ray Tomblin where he chaired the West Virginia Marcellus to Manufacturing Task Force and was involved in shaping energy initiatives undertaken and supported by Governor Tomblin. He testified before the US Senate Energy and Natural Resources Committee on the production of shale gas in West Virginia. In August 2011, Dettinger presented to industry executives on West Virginia's approach to developing local and national markets for Marcellus ethane at the NGL and Shale Gas Infrastructure Summit in Pennsylvania. Before his work with the Governor, Dettinger focused his practice in the areas of coal, natural gas and financing transactions, complex business disputes and representation of investment banks. He served as lead counsel to international and regional investment banking firms. Dettinger earned his bachelor's degree from Marshall University and received his JD from the West Virginia University College of Law.





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# MEXICO

*THE TIME IS NOW*

Cover of the report.  
Courtesy of Pemex



This sponsored supplement was produced by Focus Reports. Project Director: Mary Carmen Luna. Project Coordinator: Maria Elena Gomez. Project Publisher: Ines Nandin. Editorial: Claire Gordon. For exclusive interviews and more info, plus log on to [www.energy.focusreports.net](http://www.energy.focusreports.net) or write to [contact@focusreports.net](mailto:contact@focusreports.net)

**P**emex has been transforming itself for 74 years. It is one of the oldest oil companies in the world," says Carlos Morales Gil, the general director of the upstream subsidiary, Pemex Exploración y Producción (PEP).

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Mr. Carlos Morales,  
director of E&P, Pemex

The onshore fields of the states of Chiapas and Tabasco set the context for the boom years where the major discoveries in the Sound of Campeche, in which the largest discovery was Cantarell, the largest offshore complex in the world at the time. Cantarell reached peak production of almost 2.4 million

b/d of crude in the early 1990s.

Now, through a process of natural depletion, Cantarell's output stands at just 400,000 b/d. This loss of production has posed a major challenge.

The era of easy oil from huge superfields may be over in Mexico, but Pemex is far from wallowing in nostalgia. "These days there are many small fields, and we have to work on them to build success. To do that, we have to be very efficient, we need to move faster with regard to contracting, identifying new forms of contracting, increasing the technical skills of our staff, raising the number of people working towards advanced degrees, and we also need money to tackle all of our projects," says Morales.

For Pemex the deep waters of the Gulf of Mexico constitute the future for its oil and gas prospects, with potential resources of some 31 bboe.

Morales explains: "We started to work in deep waters in 2004 when we began acquiring seismic information and drilling with the only rig that we had at the time, which was limited to operating in 1,000 meters of water.

"When we were doing that we identified other areas, but they were in water depths greater than 1,000 meters. As a result, in 2007 we

contracted three brand new rigs that were to be built in several yards abroad and that would be delivered to us in 2010/2011. In 2011, we received them."

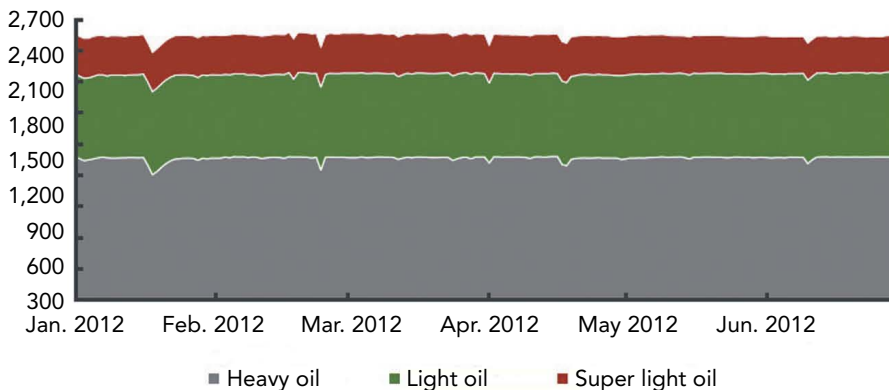
Between 2002 and last year, investment in deep water has been \$3.6 billion, but the spending has grown sharply now because of the arrival of three semi-submersible rigs. Each of the rigs costs at least \$500,000 a day in rental, and they are capable of drilling at water depths of between 2,100 and 3,000 meters. Right now the rigs are drilling wells that are near the maritime border with the US.

With shale gas and oil are revolutionizing the energy world, and the Eagle Ford formation, one of the world's richest in shale stretching from Texas down to the border with Mexico and clearly beyond, the potential for Mexico to join the revolution is huge. Despite budget and legal restrictions likely to delay Mexico's emergence as a world leader in the exploitation of shale Pemex is already looking in that direction.

In addition to the big investments in the upstream, Pemex is working more closely with the private sector to boost its downstream businesses.



### Mexico's oil production in the first half of 2012.



Source: Pemex

• During this first semester of 2012 the oil production was stable.

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Two of the major players in Latin America's petrochemicals industry are working hard on a project that aims to make an impact of \$1.5 to \$2 billion a year on Mexico's trade balance.

The alliance between Braskem, the petrochemicals leader of Latin America, and Idesa, one of Mexico's leading business groups, aims to revive the Mexican petrochemicals industry with the construction of a polyethylene complex in Coatzacoalcos in the southern Gulf state of Mexico.

While the private sector is already benefitting from Pemex investments in E&P and the introduction of incentive contracts following the 2008 energy reforms, all eyes are now set on what will happen at the country's highest political level.

On December 1 2013, Enrique Peña Nieto is due to be inaugurated as the next president of Mexico following his election victory on July 1. The future president's electoral pledges include providing a much greater role for the private sector in the nation's state-controlled oil industry.

These are definitively exiting times in Mexico!

### Opportunities Ahead for Private Sector

By Mexican law, all oil and gas in the country belongs to the state. As a result, profit-sharing or risk contracts, which are normal elsewhere in the world, are forbidden. Repetition. Indeed the law is enshrined in the Mexican constitution.

However, Mexico's 2008 energy reform provides a window of opportunity in the form of contracts that provide cash incentives on the basis of results. The contracts are the first in which blocks

are being contracted to the private sector. But, unlike similar contracts in other countries, the contractors cannot be given a portion of the oil produced. Nor can they book reserves.

Already two rounds of contracts for the development of mature oilfields under contracts based on cash incentives have been auctioned successfully and more are on the way.

In the first round, in August 2011, two contracts were won by UK-based Petrofac Facilities, and a third went to Schlumberger, the Franco-US company.

Both companies were involved in the second round, where four contracts were awarded. Their joint bid won one contract, another was awarded to Egypt-based Cheiron Holdings, and the big winner with two contracts was Monclova Pirineos Gas, MPG, which incorporates Mexican, Venezuelan and Colombian capital.

MPG already has previous experience in Mexico, with its participation in two blocks under a system of multi-service contracts in the Burgos gas basin

"Our capabilities in the Mexican market have made us acquire our own drilling fleet. Today we have six in total," says Ignacio Armando



Mr. Ignacio Layrisse, general director, MPG

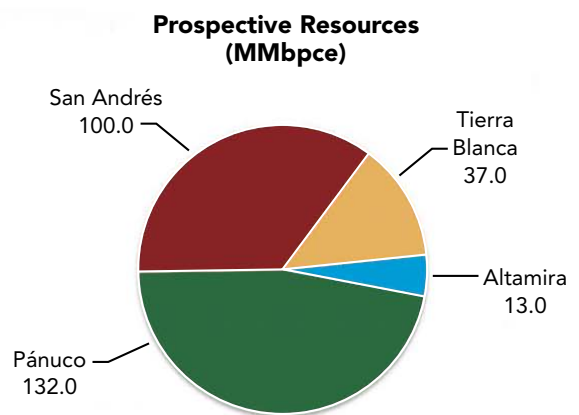


Mr. Jaime Buitrago, former president of ExxonMobil Ventures Mexico



Mr. Armando Rodriguez, general director, Sofimex.

### Location of the fields awarded on the second round of incentive contracts



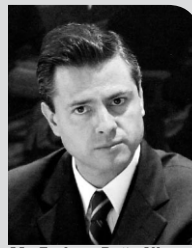
## A NEW HAND AT THE NATION'S HELM

In an interview with the Financial Times of London more than a year ago, Enrique Peña Nieto, Mexico's next president said that Pemex "can achieve more, grow more and do more through alliances with the private sector."

As the Financial Times commented: "Mr Peña Nieto's own party, the PRI, nationalized the oil sector in 1938 and ensured that Pemex remained the country's sole oil producer and only gasoline retailer. The constitution prohibits Pemex from forming joint-risk contracts with third parties which help to spread the risks and costs of finding and extracting oil."

Some of Peña Nieto's detractors have alleged that he wants to privatize Pemex. Nothing of the sort, he has countered on several occasions -- the aim is to strengthen Pemex, not weaken it as it faces major challenges in production.

In the Financial Times interview he emphasized: "Different mechanisms could be explored to ensure an involvement for



Mr. Enrique Peña Nieto,  
Mexico's president elect

the private sector in its alliance with Pemex... Brazil is one example."

As in all three of the elections in Mexico in the democratic era that began with the new millennium, the July vote was a three-way contest, involving the PRI -- which ran Mexico under a one-party system for seven decades of the last century -- the center-right National Action Party of President Felipe Calderón and a leftwing alliance.

Several polls had predicted that Peña Nieto would win an overall majority. In the event, he was reduced to 39 percent support.

So, for the third straight time, Mexico will have a president with a minority in a Congress. Peña Nieto will need all his political savvy in order to enact his proposals, including the one for oil.

Layrisse, general director of MPG.

"In Burgos, we are drilling about six wells per month and we have more than 160 active wells. In just five years, the production has grown several times," he adds. "If you add up what we have done in our two blocks in Burgos, we have produced more hydrocarbons than anybody else, apart from Pemex."

MPG has no previous oil experience in Mexico, but its holding company does in Colombia. "Furthermore, a large number of our staff formerly worked for PDVSA, the Venezuelan state company, so we do know how the industry works," says Layrisse.

In the past seven years, MPG has invested \$2.2 billion so far in the gas blocks. Initial investment in the two mature oil blocks are expected to be \$3.5 to \$4 billion.

Jaime Buitrago, the former president of ExxonMobil Ventures Mexico, agrees on the virtues of the incentive-based contracts.

"We think the 2008 energy reform was an important step in the right direction," Buitrago said. "And the integrated exploration and production service contract, which is the result of the reform, is best suited for the types of opportunities where Pemex has focused its application -- such as the reactivation of mature fields -- in contrast to more geologically risky projects such as deepwater exploration."

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For Horacio Ferreira general manager of Houston-based Surpetrol, these type of contracts point the way to the future for relations between Pemex and the foreign and national companies that work for it, says Ferreira. "It is very difficult for Pemex to be everywhere, deep water, shale gas, marginal fields to name but few: They need to focus on "the easy oil", or better prospects, and just leave the more complex ones to other people. Regulation and associations with key groups are going to be key for the country. We were also compelled to fulfill other obligations, such as getting ISO 9000 certification."

But he adds a rejoinder: "I do consider that Pemex needs to review its administrative regulations to facilitate the participation of vendors. Most of the key projects in Mexico are offered as integrated bids that restrict the participation of companies with key technological solutions."

The new contracts will provide important business for Sofimex, one of Mexico's leading bonding agencies, Armando Rodríguez Elorduy, the company's general director said. "They involve large

sums of money and long time-frames, which means the services offered by the bonding agencies will be of major relevance," Rodríguez said.

Pemex has long been a source of business for Sofimex because the state company's suppliers must by law provide bonds to guarantee their contracts. Sofimex achieved growth of 11 percent last year. While other firms have disappeared after a 10-year shakeout of the industry, Sofimex is now the fourth largest bond agency in Mexico and the third in terms of capital.

"Another aspect that has helped us to reach larger and more complex operations in the industry is the help of some of the most important brokers and risk management advisory firms found in the country, who have the experience and knowledge for this activity," says Rodríguez.

Pemex has a wide range of industry partners, some national companies that provide vital services, others international majors. All welcome the movement for change. All agree, the time to act is now.



## NUMBERS TELL THE PEMEX STORY

How important is Pemex? Let numbers tell the story of the state company's importance within Mexico and the world at large.

Forget the billions of dollars in annual net losses under the burden of taxes and royalties that no private-sector company would endure, Pemex is one of the world's top 50 companies in revenue terms. Last year's revenue of some \$120 billion was roughly on a par with those of Apple, Nestlé and Panasonic.

The Mexican state company's annual investment of some \$23 billion is more than all the other companies quoted on the Mexican Stock Exchange, including those controlled by Carlos Slim, regarded as the

world's wealthiest tycoon.

The annual Pemex budget is determined not by the company's executives but by the nation's Congress. In turn, Pemex contributes about one third of the federal budget. Each year it pays on average some \$70 billion.

Pemex production costs are among the lowest in the world at just over \$6.10/bbl, much less than those of, for example, the \$13.98/bbl of Chevron and the \$11/bbl of Shell.

Costs of exploration and development have risen to \$16.13/bbl, but they compare favorably with Chevron at \$21.47/bbl and Statoil at \$27.99/bbl.

Houston-based Tesco Corporation, the specialist in casing drilling, has established its Latin American headquarters in Mexico City. "Pemex is our leading client at a global level," says Hugo Alberto Morán, the general manager of Tesco's Latin America Business Unit. And, he adds: "The continuous development of the offshore fields, the deepwater projects, the challenges in the Chicontepec basin, the regeneration of mature fields ... all of these generate great opportunities for investment."

Turbomex is a solid supporter of the changes in Mexico. The Mexico City-based company's turnover doubled to almost \$20 million last year, "and the good times are yet to come," says the general manager, David Ferrusquia.

Founded in 1988, Turbomex found a niche in the engineering of offshore rigs in Campeche. "But from 2004 to 2010 we had tough times due to a decline in oil production in the area," says Ferrusquia, "but the slowdown caused us to leave and we had to move to onshore projects." We were also compelled to fulfill other obligations, such as getting ISO 9000 certification.

But the new investments that Pemex is making, as well as the changes that we have been making in our company internally, will involve us again in offshore projects and this highly motivates us.

"That and a growing interest in mining, where Turbomex has projects in Mexico, Peru and Chile," he concludes.



Mr. David Ferrusquia, general manager, Turbomex



Mr. José Olarte, general manager, Legotec

Some of the national companies have broadened their horizons. Reynosa-based Legotec is looking for international expansion. Already, Legotec has offices in the United States and Colombia.

"One of our main objectives is to position ourselves in international markets," says José Olarte, the company general director. "We have all the infrastructure, experience and knowledge to do it," he adds.

Legotec's core business is maintenance and refurbishment of tools for drilling rigs, but it also manufactures the tools themselves. "Some of our clients for the tools export them to other parts of the world. All the tools that we manufacture are inspected to API standards. Together with our clients, we have developed many projects. We have proven that we are a company that the industry can count on to develop any manufacturing job." Olarte says.

## Deep Changes Ahead

Spearheaded by the three ultra-modern semi-submersible rigs -- Centenario, Bicentenario and West Pegasus -- Pemex is advancing on its deepwater goals.

Drilling is well under way, Carlos Morales Gil head of Pemex Exploration and Production said. "So far we have discovered a very significant gas province in deep water with the Lakach well, which we confirmed later on with Piklis, Noxal, and Nen. These are all new discoveries in Mexican deepwater.


"Based on that, we are building a broader-based portfolio by drilling three more wells: Kaxa, Kunah and Hux. We are in the process of drilling them, and as soon as we have more information, we will release the results.





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"Afterwards, we are going to move north to drill additional wells in deeper waters greater than 2,000 meters. We have identified a target known as Supremus in the Perdido Belt, as well as what we call the sub-salt belt, west of Perdido."

Other prospects such as Trion and Maximino are close to the US maritime border and will be drilled in the later half of the year.

With an eye on the future, Mexico very recently signed a trans-border reservoir treaty with the United States. Any reservoirs that are found to cross the maritime border will be developed jointly in conjunction with partners in the US and with the holders of the reserves in the US.

Of the 19 wells drilled in waters of more than 500 meters from 2001 to 2011, nine were producers. However, the biggest discovery is of natural gas, whose commercial viability has been questioned on the grounds of the plunge in prices caused by the emergence of cheap and readily available shale gas.

However, the sparse results from the investment are not surprising, says Miguel Labardini, a partner of the Marcos y asociados consultancy in Mexico City. "They are similar to those of the deepwater resources of other regions and countries that were first explored," said Labardini.

"It takes time, and Pemex is at a very great disadvantage. By Mexican law it cannot spread the risk as other companies readily do. That means that Pemex has to go a lot slower."

But can Pemex face the huge capital and technological challenge that deepwater exploration implies? For Jaime Buitrago, the former president of ExxonMobil Ventures Mexico, the answer is one that only Mexico itself can answer.

"It is up to Mexico to decide which regulatory framework to use to develop resources in deep water," says Buitrago. "Deepwater exploration is an obvious case of a difficult environment that requires not only the investment in technology and the qualified personnel, but where there is important risk with no guarantee of success for investments that, in the case of an exploration well, can be in the \$150-200 million range."

### *The Shale Revolution Hits Mexico*

Last year the US Energy Information Agency identified several countries as having very strong potential for shale gas production. Mexico was one of them, with more than 600 TCF identified.

"We also made our own assessment of the prospective resources and we identified not as much as the agency, but something in the order of 400 TCF. Whatever the difference is, it is still a huge potential," corrects Carlos Morales Gil, general director of Pemex upstream subsidiary.

"First of all, we started looking at the continuation of Eagle Ford into Mexican territory, and so far we have drilled two successful wells there," said Morales.

"We are drilling another three wells in order to identify the shale gas potential south of the border in the state of Coahuila, and we also have plans to drill in the state of Veracruz," said Morales.



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## SPEED MERCHANTS

"Speed is the secret of PYTCO's success," says Jesús Martínez, the company's chief executive.

PYTCO, which makes 18,000 metric tons a month of carbon steel pipe with longitudinal welding by electrical resistance (EW-HFW), is very handily located in Monclova, Coahuila, says Jesús Martínez, the company's chief executive.

"We're practically right across the road from AHMSA, Mexico's biggest steel plant and only 250 kilometers south of the US border," Martínez adds.

"If someone anywhere in the world wants pipes in a couple of weeks' time, we can do it. Others might take three months."

### What else contributes to your success?

We spend a lot of money on market research. We study how the markets are going for the raw materials being used in Korea, the US and China.

### How much of your sales are to Pemex?

These days, PYTCO is heavily orientated towards exports. We supply 10 percent of our production to Pemex. The rest goes for export -- most of it to the US.

Our products are very well accepted in the U.S. market, and that is why we are currently undertaking new investments and increasing our offering.

### Which kind of investments?

We are planning the installation of 3 mills that will increase our capacity considerably.

### In what else are you involved?

PYTCO is involved in the Eagle Ford Shale natural gas project, as well as others in the southern US.



Mr. Jesús Martínez, general director, PYTCO

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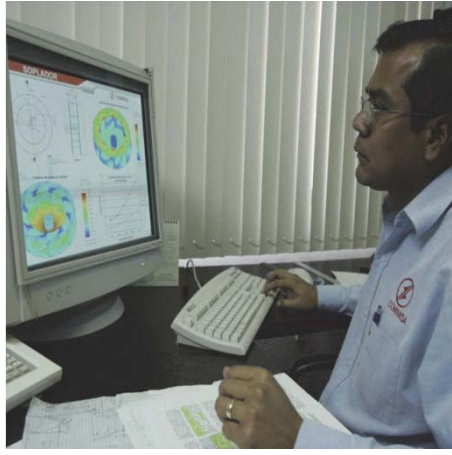
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But the first shale-gas contracts are likely to take some time. Morales adds: " We have completed the first round for mature oil fields in the South. Now we are in the second round for mature fields in the North. Upcoming bids will be for several blocks in Chicontepec. Then the fourth round will be for deep water, and after we do everything I've mentioned, then we will move on to shale gas."

Meanwhile, however, the revolution in shale gas has caused some collateral damage to Mexico. On occasions, Pemex's production of some 6.5 billion cu/ft a day is having to be reduced because, at current prices, it makes no economic sense to produce conventional gas. "Low prices make the nation's industry much more competitive, but it also gives us many problems," says the Mexico City-based independent analyst David Shields.

"Mexico can produce shale gas, instead of importing it, but that would mean enormous



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## FLUIDS ON ROAD TO SUCCESS

Pemex's big-budget development in the Chicontepec basin has set TETSA on the road to success.

Chicontepec covers a huge but geologically very difficult area, most of in the Gulf state of Veracruz. Only recently, Pemex together with international partners, appears to have cracked the technical challenge, with production having been doubled to 70,000 b/d.

That is good news for TETSA, Mexico's leading private-sector fluids transportation company, which is based in Poza Rica, in the north of Veracruz.

"By contrast with the southern states of Tabasco and Campeche, where fluids are mainly transported by pipeline, the area around Poza Rica is serviced by road," says Juan Manuel Barradas, general director of TETSA.

Boosted by Chicontepec, TETSA has grown to a workforce of about 900, with 240 pressure vacuum tankers, the nation's largest fleet of its type. "About 80 percent of our work is for Pemex. The remainder is from the private sector, mostly foreign companies," says Barradas.

The clients include big names in the industry, such as Schlumberger, Halliburton, Weatherford and QMax. "The Chicontepec boom began in 2009 for TETSA. The foreign corporations need a company with all the requirements and equipment for quality workmanship and efficiency," says Barradas.

challenges in terms of exploration, water availability and regulation," says Shields.

Morales does not underestimate the challenge but takes a more positive view.

"An additional challenge, not as a company but as a country, is to develop the gas market. We have to shift from the use of fuel oil to gas -- to shift from LPG to natural gas -- and this could take some time," he concludes.

## Shipping industry sails out of doldrums

Mexico has more than 9,000 km of coastline but traditionally it has tended to turn its back on the oceans.

In an effort to reverse the tendency, the Mexican Maritime and Ports Council, known as Comport, was founded in 2011 to unite four



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Mr. Luis Ocejo, senior managing director maritime, Business Grupo TMM

existing organizations.

As the government proposes reforms in the posts and navigation laws, the industry now has a single voice in lobbying within the Mexican Congress, says Comport's president, Luis Ocejo.

Ocejo is also senior managing director of TMM Maritime, the Mexican industry leader.

TMM has continued to produce strong financial results but the decline of Pemex production -- only recently stemmed -- has made life difficult at times.

However, new discoveries are increasing the demand for offshore vessels in order to develop exploration and TMM has been bolstered in 2010 by a \$10.5 billion Mexican pesos (about \$850 million at that time) financial package.

"It was a very good deal and we are very proud about it because it is the only shipping transaction in Mexico that was achieved under such conditions," says Ocejo.

TMM has a current fleet of 40 vessels, says Ocejo. "They include 27 offshore units, six product tankers, two chemical tankers and five tugs, out of which 39 are owned vessels and 37 bear the Mexican flag. It is also important to note that the average age of our fleet is less than 13 years."

"Pemex will require new technology and suitable infrastructure to carry out these activities," says Ocejo. "TMM is willing to continue investing in highly specialized tonnage, with state-of-the-art technology

in order to support Pemex in facing this huge challenge.

"In fact, we have already begun."

## Happy families

Mexico is very much a nation of families. A large number of Mexico's leading companies are run by descendants of their founders. They include such giants as Televisa, the largest media empire of the Spanish-speaking world, now run by Emilio Azcárraga, the third chief executive of the group, whose father and grandfather had the same name and same role.

Energy, in general terms, is an exception, because it is controlled by the state companies, Pemex, and the Federal Electricity Commission, or CFE.

Even there, one can see connections. Jesús Reyes-Heroles was the chief executive of Pemex for the first half of the current administration of Pemex. His father, of the same name, was one of Mexico's most distinguished politicians and the head of Pemex between 1964 and 1970.

But the tradition of family-based companies remains strong with the private sector in energy.

Construcciones Industriales Tapia is very much a family firm, founded by Juan Carlos Tapia and his sister Fabiola 15 years ago in central Mexico.

Since then the family has grown in every sense of the word. "We started with six workers and four welding machines. Now we have 2,200 employees, a production capacity of 27,000 tons a year and a 45-acre plant," said Juan Carlos Tapia, the founder and general director.



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## A KICK START FOR PETROCHEMICALS

The Mexican petrochemicals industry, dominated by the state company, Pemex, promises to shrug off years of lethargy.

Low production, mothballed plants and a booming trade deficit in chemicals and petrochemicals have been the hallmarks for the industry over the last two decades.

The most recent attempt to inject private capital to revive the sector was during the 2000-2006 administration of President Vicente Fox. The Fenix project was intended to build a 1.2 million tons ethylene cracker and associated plants, but it failed to fly.

This time round, the reshaped project, now called Etileno XXI, has new partners, Braskem, the Brazilian leader in Latin American petrochemicals, and Idesa, one of Mexico's leading business groups with a strong tradition in petrochemicals. And this time, both Pemex and the private-sector partners have reached agreement on the long-term pricing of the feedstock.

The investment in the Etileno XXI venture is reckoned to be some \$3.2 billion and the project aims to make an impact of \$1.5 to \$2 billion a year on



**5A**  
Mr. Roberto Bischoff,  
general director of  
Braskem Idesa

Mexico's trade balance and is slated to come on stream in 2015.

"This is a very important project for Mexico, for Mexican society and the Mexican community, because it represents a kind of rebirth of the petrochemical industry in Mexico. For decades we have not seen any important investment, just small investments, especially

in maintaining the existing infrastructure and the existing capacity, but not focused on adding new capacity and new products," says Roberto Bischoff, general director of Braskem-Idesa.

The new-found flexibility of Pemex in its relations with the private sector reflects the 2008 Mexican energy reforms. Another example is the \$566 million investment in a joint venture between the state company and Mexico City-based Mexichem, now rapidly emerging as a world leader in PVC piping and refrigerants.

And the family has widened to include clients from a who's who of leading international companies involved in the Mexican construction sector, including the Texas-based Maverick, and Switzerland-based Foster Wheeler, Mexican-US joint venture ICA-Fluor Daniel, Spain's Dragados Industriales, Korea's Samsung Engineering and many more, including, of course, Pemex.

"We are not opposed to the arrival of multinationals. Quite the contrary, we can do great things together with them," said Tapia.

Another company is heading in the opposite direction. One of the many family firms in the Mexican oil industry is Grupo Well, based in Poza Rica but with offices in all the key locations. But the group is undertaking a big change, explains the general manager, Oscar García.

"We are trying to professionalize the group, says García. "We aim to make this a professionally managed consortium."

Under the new regime, the group offers a one-stop shop of services for companies that want to work in Mexico or already operate there. The group has six affiliates, in consultancy, human relations, industrial cleaning, residential and office cleaning, legal services and information technology.

One of the services that is in most demand is human relations, where Mexico's labor laws can be a challenge to newcomers. Lower costs and



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## SAFETY FIRST

Tecno Fire, based in Ciudad del Carmen, Campeche, is a leading provider of fire prevention and security equipment for Pemex, particularly the state company's shipping fleet.

When Tecno Fire launched operations in 2000, said the general director, Ruben A. Rosiñol Abreu, "there were just 11 of us. Now there are 300, not counting the extra staff we have to sub-contract for the Pemex jobs".

Rosiñol dismisses claims made by some newspaper columnists that foreign companies are given preference for work in Mexico's oil and gas sector. "The Mexican market is very big. There's plenty of room for everyone.

"That said, we have to face up to the competition. We have to be quick on our feet and we do have an advantage because our charges are based on Mexican pesos rather than US dollars."

superior know-how give Grupo Well an advantage over its foreign competitors, García says.

The general director of OPC the rising star of the building and refitting of petrochemicals plants, based in Coatzacoalcos, the Mexican petrochemicals hub, is Jorge Arboleya Pastrana.

OPC Ingeniería y Construcción, which has



Mr. Jorge Arboleya, general director, OPC

been heavily involved with development in Pemex petrochemicals projects in recent years, began with a harbor works. OPC's portfolio of integrated projects include several for the Pemex petrochemicals and refinery subsidiaries. Now it is taking part in the construction of a tunnel under the River Coatzacoalcos to link the city and the petrochemical plants.

An outstanding engineer, Arboleya married in Coatzacoalcos, where his father-in-law was a founder of the original harbor works firm. Given his ability, Arboleya soon arrived at the top of OPC with or without the family connection, but OPC has leveraged his local connections to win what Arboleya describes as "very successful partnerships with companies such as Royal Boskalis Westminster and Ballast Nedam, both of the Netherlands, Grupo Diavaz in Mexico, Spain's FCC and Simon Carves Engineering of the UK, and several more," Arboleya adds.

Another kind of family.



Mr. Oscar García, general manager, Grupo Well.

## Research and Learning

Education and research, based in the practical experience of highly skilled work, is provided by COMIMSA.

COMIMSA, whose full moniker is the Mexican Corporation for Materials Research, plays a dual role, according to its director general, José Antonio Lazcano Ponce.

At the same time, COMIMSA -- based in the northern city of Saltillo,

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## FOREIGN RELATIONS

Like a young soccer pro snapped up by a top European club, COBSA was initially reticent when the quality of its work for Pemex drew the attention of the Mexican unit of Germany's H. Rosen, a worldwide leader in pipeline inspection services.

As relative newcomers to the industry, COBSA was doubtful about the prospects for an alliance with such a major player. "But we convinced them that we could create effective synergies working together," said Telésforo Segura, general director.

Born in 1999 as a general construction company, COBSA has become a leading specialist in pipeline building and maintenance. "The oil and gas sector provides about 90 percent of our business," says Segura.

Apart from H.Rosen, with which other foreign firms do you have links? Only last year, Rosen joined forces with the UK's Macaw Engineering, specialists in integrated analysis of the inspection of repaired or constructed pipelines, replied Segura. The new alliance opened up our company's horizons.



**Mr. Telésforo Segura,**  
general director, COBSA

Which new horizons? COBSA has opened a new niche, the integral maintenance of tanks, including inspection and analysis.

And what about business with Pemex? COBSA is currently developing three projects that are the largest undertaken for a decade by the Pemex refining subsidiary and will last to from three to four and a half years. One project involves the maintenance of 11 port terminals; a second involves 760 kilometers from Veracruz State in the southern Gulf to Cadereyta near the north Mexican industrial capital of Monterrey.

Is finance not a problem? As in all sectors of Mexican industry, financing can be difficult for all but the largest Mexican companies. But we generate confidence in our equipment suppliers. That gave us the flexibility we needed. And the Mexican export bank, Bancomext, is one of the great growth driving forces of our company.

Coahuila -- is both a limited company and a major research institute that forms a unit of Conacyt, Mexico's National Council for Science and Technology.

As a research and educational establishment, last year it had 107 post-graduate students in areas such as industrial engineering and advanced manufacturing. In addition, it provided training for more than 2,800 workers from a wide range of companies.

As a commercial business, COMIMSA has played a big role in several projects. For Pemex, it provided the basic engineering for the revamp of an ethylene plant in Veracruz, and the design engineering of cryogenic plants at Reynosa, near the Texas border.

"We've also worked on the development of security inspections of 74 Pemex offshore rigs and 58 of its processing plants and storage facilities," said Lazcano. In addition, COMIMSA has provided Pemex services for the rehabilitation and manufacture of gas turbines for its refineries and oil rigs. It has developed environmental risk analysis for the Burgos natural gas basin in northern Mexico.

Specialist services in areas such as metallurgy, trouble-shooting, corrosion and mechanical tests have been provided not only to Pemex but to the general energy, manufacturing, auto, construction, steel and mining



**Mr. José Lazcano,** general  
director, COMIMSA

industries.

COMIMSA has dozens of technical accords and alliances with other Mexican public-sector institutions as well as in the United States, Spain, Germany, Italy and the Ukraine.

Because it has to pay its way in the world, COMIMSA cannot stand still. "The only way we can achieve our goals as a public research institute, is by providing the resources that we ourselves generate," says Lazcano.



**Cangrejera Petrochemical Complex in Coatzacoalcos Veracruz. Courtesy of Pemex**

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## Beyond the Well

Petro River, Flotek support  
US veterans through NFVR

**Mikaila Adams**  
Senior Associate Editor –  
OGFJ

As I write this, Labor Day, a day when Americans collectively celebrate the economic and social contributions of workers, approaches. During these still-trying economic times, we are thankful for career opportunities and mindful of those still struggling to find work. Among those are many US veterans. The jobless rate for former servicemen and servicewomen is more than three times the national average, and many will see Labor Day come and go with no job and no immediate job prospects.

The Department of Veteran Affairs has reported that 24% of veterans in the United States under the age of 30 are unemployed. Simultaneously, our nation's energy sector is one of the fastest growing in the world and offers stable career opportunities—not just jobs—for those who are driven and team oriented.

Enter the National Foundation for Veteran Redeployment (NFVR). NFVR is a non-profit organization that seeks to offer career opportunities for our nation's veterans in the oil and gas industry in the United States. NFVR serves as a conduit for training, human resource networking, and financial support for veterans who are interested in learning a new trade to improve their career prospects.

Scot Cohen, co-founder of Iroquois Capital, a New York-based hedge fund, sits on the board of Petro River Oil, an emerging oil producer focused on

assets in the Mississippi Lime, and is a driving force behind the formation of NFVR. Now chairman of the organization, his interest in veterans's issues began with his brother's DEA service in Afghanistan. Already heavily involved in various organizations benefitting veterans, Cohen began to focus his efforts specifically on the issue of unemployment.

“Transitioning to civilian life is



From left: Scot Cohen, NFVR chairman, Petro River board member; Rajiv Srinivasan, NFVR CEO; Jay Snodgrass, Iroquois Capital associate; Jeffrey Freedman, CEO of Gravis Oil (merging with Petro River).

tough,” Cohen said, “and the staple of that transition is finding a veteran's utility in the work force, and feeling like a productive member of society.”

Through his brother, Cohen connected with West Point graduate and decorated combat veteran Rajiv Srinivasan. NFVR was born and Srinivasan now serves as the organization's CEO.

“The oil industry is uniquely positioned to make a substantial impact in veteran unemployment. This profession is growing quickly, the jobs are there, and the leadership is incredibly patriotic and truly value the sacrifices our service members make to keep our country safe; it's a great recipe to affect change in this major veteran issue,” said Srinivasan.

While many service members leave the military with skills transferable to a civilian market, many are unable to leverage their combat experiences to employment opportunities. NFVR's primary function is to award full scholarships to veterans seeking a vocational specialization in the oil and gas industry. Specializations include, but are not limited to: welding, drilling fluid technology, and roughneck school.

The organization also allows veterans to apply for transportation grants to fund airfare to training sites, as well as need-based stipends for living expenses during the course of their vocational training.

Through follow-up sessions and networking opportunities, NFVR and its corporate sponsors are committed to long-term career success of the veterans it helps sponsor and train.

A July 25 NFVR-hosted fundraising event at the Houston home of NFVR supporters Fred and Kay Zeidman raised \$100,000

for the organization. In addition to oil and gas executives, distinguished guests included Buddy Grantham, Houston's Director of the Office of Veterans' Affairs and MG (Ret) Bob Ivany, President of the University of St. Thomas and former Commandant of the US Army War College.

Petro River Oil and Flotek, a provider of oilfield and mining products and services, both donated \$50,000.

Petro River CEO Ruben Alba told OGFJ, “Sometimes we need to say more than thank you to our veterans. Petro River believes that the oil industry is stronger than ever and that we owe it to our country to support its veterans.”

To learn more about how you can help, visit [NFVR.org](http://NFVR.org). **OGFJ**

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