

## ENERGY

INDUSTRY QUARTERLY

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## December 2010

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## I. International Forecast Predictions and Present Status of the Energy Industry for the Year 2011

- Emphasis will be on exploration and development drilling of oil prospects rather than gas deals because of obvious price disparity on a BTU basis and international glut of gas reserves with minimal price scenario.
- OPEC as a group produces about one-third of the world's oil. Saudi oil minister, Ali Naimi, speaking at a conference in Singapore, suggested a price range of \$70 to \$90 per barrel. Other OPEC members including Venezuela, Algeria and Libya favor crude price of \$100 a barrel. OPEC meeting in Ecuador in early December 2010 showed no desire to boost production and a passive attitude.

The oil industry giants such as Saudi Aramco and Exxon Mobil Corp. and large wildcat companies plan to spend one-half trillion dollars in 2011 to extract oil and natural gas according to a new survey by investment bank Barclays Capital. Large western oil companies are leading the industry spending by increasing their budgets faster than state-run national oil companies that have dominated spending in recent years.

- The guest editorial by Earl Broussard in the January 2011 edition of Journal of Petroleum Technology predicts that "The anticipated greater focus on shallow water activity following the recent moratorium on deepwater drilling in the Gulf of Mexico has caused the energy personnel to think about shallow water opportunities again. Jack-up drilling and completions can now enjoy the same risk avoidance as land operations. The service industry in the future must focus on the cost of shelf hardware with risk avoidance for the operator if the industry is to develop the shallow water margin shelf fields in the Gulf of Mexico and around the world."
- Industry association officials expressed concern over the Environmental Protection Agency's plan to regulate greenhouse gas (GHG) emissions under the Clean Air Act early next year. Several also suggested that US Interior Sec. Ken Salazar may have gone further than necessary following the Macondo well accident and spill with withdrawals and new regulations which unduly delay exploration and development on federal land

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onshore as well as offshore.

“Our frustration has been that instead of learning lessons, the secretary has taken an overly cautious approach,” said Daniel T. Naatz, IPAA’s vice-president of federal resources and political affairs. “We’ve moved backward as a result of what happened, and that will hurt our economy domestically and our competitive position globally.”

The industry is “trying to adjust to a ‘new normal’ in offshore oil and gas production,” said National Ocean Industries Association Pres. Randall B. Luthi. “One of the biggest challenges is to simply getting back to work.” The secretary’s deepwater moratorium covered 33 rigs, and as far as we know none are back on track to resume operations. Shallow water operations also have been delayed, and seismic work was even delayed for a period of time.”

American Exploration & Production Council (AXPC) Pres. V. Bruce Thompson said his association’s members report that processing of federal offshore drilling permits “has slowed to a snail’s pace.” He said many independent producers suspect the administration is trying to accomplish by regulation what it couldn’t by legislation with EPA’s GHG effort.

Voters rejected congressional attempts to regulate energy markets with a carbon cap-and-trade program, according to National Petrochemical & Refiners Association Pres. Charles T. Drevna. “Now, EPA needs to realize what happened and recognize that the Clean Air Act is not the right mechanism,” he said. “It looks as if we’re going to have to live with what is comes up with until cooler heads prevail or the court decides. We’re not saying that environmental rules and regulations aren’t necessary, but they need to be balanced.”

## II. Global Activity

Offshore activity continues to dominate the global E&P trends.

The November 2010 issue of the Oil and Gas Journal reports that the offshore has provided nearly 70% of the major oil and gas discoveries worldwide in the last decade, and the US gulf has been the most important deepwater region both in terms of production and investment, representing about one-third of global deepwater spending of around \$21 billion in 2009.

Deepwater oil and gas discoveries have averaged 5.5 billion bbl of oil equivalent/year over the last 5 years with an average discovery size of 150 million bbl vs. 25 million bbl for onshore. The US gulf has been the driver of US oil production, providing nearly one-third of the 5.3 million b/d of US crude oil output in 2009.

US oil production recorded year-on-year growth in 2009 for the first time since 1991 as the result of a 399,000-b/d increase in output from 2008 of new production largely from five deepwater fields: Tahiti, Dorado, King South, Thunder Hawk, and Atlantis North Flank.

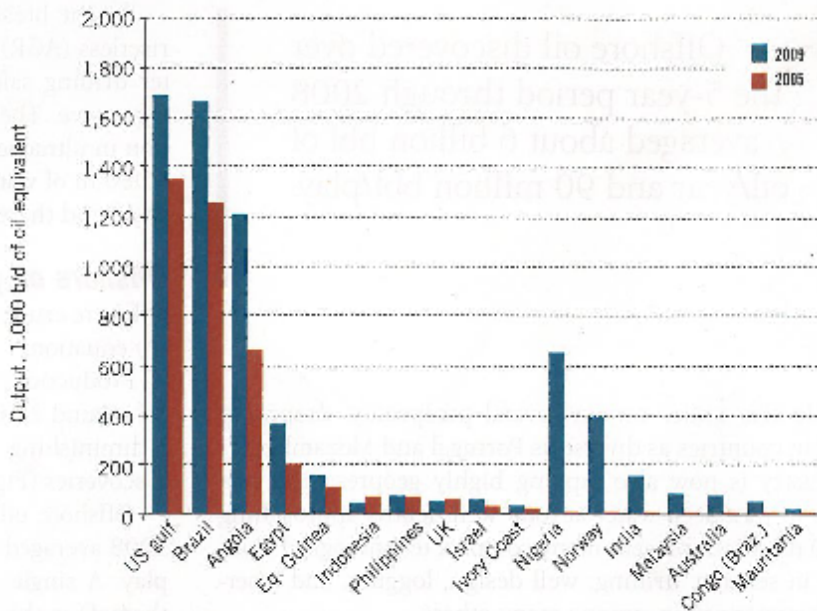
Presently, deepwater fields account for 80% of US gulf oil production. Intensive exploration efforts in the US deepwater gulf have spurred the evolution of many developments in drilling and seismic technologies that have been relevant to exploration successes in other basins around the world.

The Big 4 deepwater producers, Brazil, the US gulf, Angola, and Nigeria, account for three-quarters of current worldwide deepwater production, the remainder coming from 13 other countries.

The January 3, 2010 issue of the Oil and Gas Journal reports Iraq’s new Oil Minister Abdulkarim Al- Luaybi wasted precious little time in making his presence felt. Indeed, just a day after being installed as minister, al-Luaybi made some interesting declarations.

“Today our production is over 2.6 million b/d,” al-Luaybi told reporters after the installation ceremony, adding, “This figure has not been reached for more than 20 years.”

### DEEPWATER OIL AND GAS PRODUCING COUNTRIES



Source: Wood Mackenzie

Al-Luaybi also expressed his aim of increasing Iraq’s production capacity saying that developing the country’s economy and providing funds to finish projects and create jobs for people “all depend on revenue from oil.”

With those clear needs in mind, al-Luaybi said his ministry would “reactivate the role of the exploration teams and geological surveys in order to strengthen national production.”

The new minister also reiterated plans announced earlier to expand oil systems, including “projects to expand oil and gas pipelines, and make good use of the gas that comes out with the extraction of oil.”

Projected expansion is to include three new lines to Syria.

In a completely new departure, al-Luaybi said the Iraqi government will build several refineries in an effort to transform the country into one that exports products instead of just crude. Altogether, four refineries are to be constructed in 3-5 years’ time. The new minister also gave assurance that Baghdad would soon come to terms with the Kurdish Regional Government.

Altogether, the KRG has signed a reported 37 contracts with 40 international oil companies, amounting to an investment of \$10 billion when completed, deals that Baghdad has long bobbed and weaved over.

- In December 2010, the state of Qatar realized the vision of His Highness the Emir, Sheikh Hamad Bin Khalifa Al Thani, to reach the production capacity of 77 million tones per annum (Mta) of liquefied natural gas (LNG).

With a global reach that covers 23 countries on four continents, Qatar has achieved this significant milestone through the development of advanced technologies, which helps minimize energy utilization at all levels of the LNG production process, thus reducing the impact on the environment. Qatar takes great pride in its 77 Mta achievement and in being able to safely and reliably deliver this production capacity to global markets, where there is demand for cleaner, more efficient energy.

### III. Markets and Pricing

In late December 2010, crude oil prices were above \$91/bbl a two year high finding support from a surprising sources; US oil demand and Chinese manufacturers. Prices were nearly flat during 2010 even as most other commodity markets soared. During the four week period ending December 17, demand averaged 19.7 million barrels a day, the highest level since February 20, 2009 according to the U.S. Energy Information Administration.



|                                | 2008          | 2009          | 2010          | Change, %   | 2010          | Change, %   |
|--------------------------------|---------------|---------------|---------------|-------------|---------------|-------------|
|                                | bcf           |               |               | 10/09       | bcf           | 11/10       |
| <b>Marketed production</b>     |               |               |               |             |               |             |
| Texas                          | 6,321         | 6,850         | 6,625         | -3.3        | 6,660         | -1.0        |
| Louisiana                      | 1,177         | 1,532         | 2,000         | 30.6        | 1,900         | -5.0        |
| Federal Gulf of Mexico         | 2,327         | 2,433         | 2,260         | -7.5        | 1,940         | -13.8       |
| Other states                   | 10,615        | 11,078        | 11,675        | 5.4         | 11,825        | 2.1         |
| <b>Total production</b>        | <b>21,240</b> | <b>21,893</b> | <b>22,550</b> | <b>3.0</b>  | <b>22,325</b> | <b>-1.0</b> |
| <b>Imports</b>                 |               |               |               |             |               |             |
| Canada                         | 3,589         | 3,271         | 3,260         | 0.3         | 3,200         | -1.8        |
| Mexico                         | 43            | 28            | 30            | 7.1         | 25            | -16.7       |
| LNG                            | 352           | 462           | 450           | -4.9        | 425           | -1.2        |
| <b>Total imports</b>           | <b>3,984</b>  | <b>3,751</b>  | <b>3,720</b>  | <b>-0.8</b> | <b>3,650</b>  | <b>-1.9</b> |
| Supplemental gas losses, c/c * | 67            | 64            | 65            | 1.6         | 65            | —           |
|                                | -1,128        | -1,584        | -1,335        | -15.7       | -1,185        | -11.2       |
| <b>Total new supply</b>        | <b>24,157</b> | <b>24,124</b> | <b>25,000</b> | <b>3.6</b>  | <b>24,855</b> | <b>-0.6</b> |
| Supply from storage            | 34            | -313          | 250           | 20.1        | —             | —           |
| <b>Total supply</b>            | <b>24,191</b> | <b>23,811</b> | <b>24,750</b> | <b>3.9</b>  | <b>24,855</b> | <b>0.4</b>  |
| <b>Exports</b>                 | <b>963</b>    | <b>1,072</b>  | <b>1,100</b>  | <b>2.8</b>  | <b>1,155</b>  | <b>5.0</b>  |
| <b>Total consumption</b>       | <b>23,228</b> | <b>22,739</b> | <b>23,650</b> | <b>4.0</b>  | <b>23,700</b> | <b>0.2</b>  |

\* Extraction losses and unaccounted for gas  
Source: 2008 and 2009 Energy Information Administration; 2010 and 2011 EIA estimates and forecast.

The recovery of oil prices is an encouraging sign of world growth. Crude oil closed above \$90 on the New York exchange the last week of December, 2010 for the first time since October 2008, after prices fell in the early months of the financial crisis and global recession. The price of crude has held above \$80 for much of 2010.

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## IV. Current Activity

Drilling activity remains constant and lucrative in areas worldwide except for Gulf of Mexico.

- Drilling activity in Canada's Atlantic Seaboard

Oil and gas development in Newfoundland, Labrador and Nova Scotia is located in the deepwater offshore basins. Jeanne D'Arc Basin off Newfoundland's Grand Banks has three producing fields; Hibernia, Terra Nova and White Rose with a new field, Hebron, being developed by Exxon Mobil. The big news is that business is as usual offshore Canada compared to the slowdown in the U.S. Gulf of Mexico due to new regulations and environmental concerns. Offshore development costs typically prevent small companies from investing in deep water drilling activities.

However, Oceans Advance, a consortium has been developed by 50 local companies to advance collaborative efforts at R&D and ocean technologies. Oceans Advance is headquartered in St. John, Newfoundland.

*Excerpted from "Atlantic Canada Invites Exploration," E&P Magazine, September 2010, p.92-97*

- Chevron Corp. said that it will invest \$4 billion over several years to develop that lies 5,200 feet, beneath the Gulf of Mexico.

The decision follows Chevron's October move to invest \$7.5 billion to develop two other oil fields in the area, showing the oil giant still sees the Gulf of Mexico as a key driver of its long-term production growth, despite uncertainty over fallout from the BP PLC oil spill.

Despite stricter operating rules, the U.S. Gulf remains an attractive bet for U.S. oil companies as one of the only remaining spots world-wide where state run firms don't have first crack at major new discoveries. The new rules were imposed for offshore drilling in the aftermath of the deadly explosion and sinking of a drilling rig in April.

Chevron said the field is expected to produce up to 75,000 barrels of oil and 25 million cubic feet of natural gas a day when fully operating. Production is expected to start in 2014. The field is located approximately 225 miles south of New Orleans.

- Big gas find in Israel sparks frenzy. Two years ago, Ratio Oil Exploration LP, an energy firm here, employed five people and was worth about half a million dollars.

Today it sits at the center of a gas bonanza that has investors, international oil companies, Israeli politicians, and even Hezbollah, Israel's sworn enemy, clamoring for a piece of the action.

Ratio's market capitalization now approaches \$1 billion. The rally at Ratio is attributable to the company's 15% stake in a giant offshore called Leviathan, operated by Houston-based

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Noble Energy Inc. Noble was confirmed its earlier estimates that the field contains 16 trillion cubic feet of gas-making it the world's biggest deepwater gas find in a decade, with enough reserves to supply Israel's gas needs for 100 years.

Noble and its partners think the field could hold enough gas to transform Israel, a country precariously dependent on others for energy, into a net-energy exporter. Such a transformation could potentially alter the geopolitical balance of the Mideast, giving Israel a new economic advantage over its enemies.

- Dutch parliament hearing expected to touch on corruption in oil-rich Delta, as spills spur concerns. Royal Dutch Shell PLC will this month be grilled by Dutch lawmakers for the first time over its operations in the Niger Delta, reflecting growing concern in the West about oil spills in West Africa.

Critics of Shell's record, both in parliament and among non-governmental organization, are expected to use parliamentary hearings, scheduled for January 26, to quiz the company over its activities in Nigeria. The country's oil sector has long been plagued by militant violence, corruption, organized crime and, by extension, environmental damage.

Oil spills, which Shell says are caused by militant attacks, have befouled swaths of the Niger Delta. Amnesty International says hundreds of oil-polluted sites have yet to be cleaned up around Nigeria, compromising locals' water, food and livelihood.

Anglo-Dutch Shell, which hasn't been accused of wrong-doing, declined to comment.

*Source: Wall Street Journal, Tuesday, January 4, 2011*

- The success of the Haynesville shale gas play in Louisiana encouraged operators in East Texas to take a closer look. Sweet spots have been identified in Shelby, San Augustine and Nacogdoches counties. Increased drilling and completion rates with up to 15 multi-stage in two and a half months coupled with IP's of 20 million cubic feet per day has resulted in economic success for the Haynesville in East Texas.

The Haynesville averages 150-400 ft thick at depths of 10,500 to 13,500, making this high gas content, organic-rich black shale an attractive target for drilling.

The high gas recovery rates have drawn in larger companies and mergers and acquisitions sustained the Haynesville drilling through the economic turndown.

Because of this activity the rig count in the Haynesville climbed steadily even turning the downturn. High pressures and temperatures at depths over 10,000 ft required modifications to upgrade rigs encouraged development of new heavy duty drilling rigs. The sustained growth and high reserve estimates have changed the face of the Haynesville with larger companies and majors becoming active.

*From Petroleum Technology Transfer Council, September 2011, Vol. 16, No. 3, pp9, Based on*

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*“Mergers and Acquisitions Support Sustained Haynesville Drilling.” World Oil, SHALE ENERGY, Developing the Haynesville 2010, pp.67 - D-74.*

## V. Outstanding M&A Exploration Deals

- The Wall Street Journal reported at year end that M&A deals increased by 25% in 2010
- General Electric will acquire the global energy infrastructure technology and service provider Dresser Inc. The \$3 billion deal is the latest in a series of energy-related acquisitions by GE over the last 10 years, including oilfield equipment supplier VetcoGray in 2007 and pressure control specialists Hydril in 2008. Headquartered in Addison, Texas, Dresser operates in more than 100 countries, providing compression, flow technology, measurement and distribution infrastructure and service. Dresser had revenues of \$2 billion and earnings of \$318 million in 2009. GE builds natural gas-fired turbines for power generation and provides services like water treatment and recycling for oil and gas drilling operations. The acquisition will help GE capitalize on the recent natural gas boom in the U.S. and overseas by expanding the company’s portfolio of gas infrastructure equipment.
- CNOOC is buying \$2.16 billion of Eagle Ford assets in the largest US-Chinese oil deal in history. China National Offshore Oil Corp. will invest \$2.16 billion in Chesapeake Energy to increase China’s stake in the shale gas. Initially, CNOOC will pay \$1.08 billion for a 33% stake in Chesapeake’s Eagle Ford Shale acreage in South Texas, and has agreed to fund 75% of Chesapeake’s share of drilling and completion costs until an additional \$1.08 billion has been paid, which Chesapeake expects to occur by year-end 2012.

With the additional capital from CNOOC, Chesapeake expects to be running 31 rigs by year-end 2011 and about 40 rigs by year-end 2012.

- Maresk Oil will buy the Brazilian oil interests of SK Energy Co. of South Korea for \$2.4 billion, the latest in a series of deals in one of the world’s fastest-growing petroleum plays. Maresk Oil, the oil exploration and production arm of Danish freight company A.P. Moller-Maresk AS, has agreed to acquire SK Energy stakes in three oil blocks offshore Brazil. The deal is a cash and debt-free transaction, Maresk Oil said.
- Chevron’s announcement last month that it is acquiring Atlas Energy, a large acreage holder in Pennsylvania’s gas-rich Marcellus shale play for \$4.3 billion, is another sign that the long-term outlook for natural gas is positive. Although several billion dollars isn’t a huge investment by the standards of a company the size of Chevron, oil majors don’t make a move of this type until they have thoroughly measured the risk against the reward potential and concluded that the upside outweighs any possible negative consequences.
- Chesapeake Energy Corp. will sell some of its Barnett shale natural-gas production to Barclays PLC for \$1.15 billion, as the exploration company looks to lighten its debt load and

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the bank bets that prices are due to take off.

Under the deal, Barclays will receive 390 billion cubic feet of proven reserves, and can then sell the gas produced in the east Texas fields in the market. The reserves are projected to produce 280 million cubic feet a day 2011.

- Husky Energy Inc. is buying 860 million Canadian dollars (\$843 million) in western Canada oil and gas properties from Exxon Mobil Corp., and spending C\$2.5 billion on an oil sands project. The moves are part of an effort to promote growth and to re-ignite investor interest in its stock, which has been on a downward trajectory for the past year and a half.

Husky said it would increase its overall expenditures next year by 20% to C\$4.86 billion, including the acquisition, and to increase its production by 3% to 5%.

The acquisition of oil and gas properties in Alberta and northeast British Columbia from Exxon will add about 33,000 barrels-of-oil-equivalent production a day.

## VI. Alternative Sources of Energy

- We have previously reported the emphasis on exploration and development of oil shale plays in the Western U.S.

The following is an excerpt from “Oil Shale Takes a Turn in Spotlight,” AAPG Explorer, October, 2010 p. 34-36

- With oil bringing \$70-80 per barrel, development of domestic oil shale plays in the Bakken and Eagle Ford are the next big market. Multi-component seismic data has enhanced exploration for the sweet spots in the Middle Bakken in Montana and North Dakota, making 1,000 barrels per day a feasible drilling target for horizontal wells. In 2009, Vector Seismic formed a consortium to improve seismic exploration of fractured Bakken reservoirs. Since the Middle Bakken averages 15 to 80 ft thick at 8,000 ft depths, it’s below the limits of conventional seismic resolution. Vector’s high resolution multi-component seismic has focused on identification of the fractures to target the sweet spots. The technique is based on a converted wave (3-C) seismic survey. Because of the unique closed petroleum system of the Bakken with a high thermal gradient, horizontal fracture identification is very important. According to Scott Stockton, vice president of Vector Seismic Data Processing of Denver, “Where the tectonic fractures intersect the hydraulic, you get the best wells.” The challenge for producers in the Bakken was getting all that oil to market. Stockton credits “American ingenuity at its best.” Several companies went together to buy old rail lines and rail cars and created a tanker train to carry oil to Oklahoma refineries.
- A proposal to build the world’s largest solar thermal power plant in the Southern California desert got the go-ahead from the current administration in late December. The \$6 billion project is being developed by Solar Trust of America, a joint venture between Germany’s Solar Millennium AG and privately held Ferrostaal AG on 7,025 acres of federally owned land



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near Blythe, California. The estimated cost of the first two units of the Blythe plant is \$3 billion.

- The December 2010 issue of The Oil and Gas Investor has a featured article on the potential for billions of barrels of hydrocarbons from its unconventional formations and the combinations in the Permian Basin of New Mexico and West Texas. There are more than 300 operators involved in the Sprayberry, Dean, or Wolfcamp wells. Some operators are calling the Bone Spring Formation in the Delaware Basin sector of the Permian Basin another unconventional play. Also, the addition of the Leonard age Avalon Shale adjacent to Bone Spring is now considered as an additional zone to enhance the potential of the play.

## **VII. Recent M&A Deals in Equipment and Services**

- Nov. 2010 - BOS Solutions, a Calgary-based full-service provider of drilling fluid treatment to oil and gas exploration companies, will be acquired by Advent International, the global private equity firm. Terms of the deal were not disclosed. The current BOS management team, led by president and chief executive Glenn Leroux, will retain a significant ownership interest in and continue to lead BOS.
- Dec. 2010 - The Riverstone/Carlyle Global Energy and Power Funds, a group of energy-focused private equity funds managed by Riverstone Holdings LLC ("Riverstone"), announced that it has completed the acquisition of USA Compression Holdings, LP, the parent company of USA Compression Partners, LLC ("USA Compression" or the "Company"), a natural gas compression services company headquartered in Austin and Dallas, Texas. The terms of the transaction were not disclosed. Founded in 1998, USA Compression is the largest pure-play contract compression service provider in the United States, with approximately 610,000 horsepower of compression equipment deployed across 13 states in the Central and Northeast regions. USA Compression focuses on long-lived, large horsepower infrastructure applications, with most of its fee-based compression services provided on large regional gathering systems. The Company has a strong presence in the fastest growing natural gas shale plays, including the Marcellus, Fayetteville, Haynesville, Eagleford, Woodford and Barnett shales.
- Jan. 2011 – Black Pearl Capital Partners ("BPCP"), announced that it has successfully completed the acquisition of Canadian Energy Equipment Manufacturing FZE ("CEEM"), a specialist in custom-made equipment for the oilfield industry. CEEM specializes in the manufacturing of unique and custom-made equipment for the oilfield industry. One area of its expertise is the design and manufacturing of Advanced Hydraulic Workover Units/Rigs. The Company further provides multiple oilfield related services such as Water Jet Cutting, CNC Plasma Cutting, Steel Fabrication, Machining, Grit Blasting and Painting.

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- 2011 - O-Tex Pumping, LLC and an affiliate (collectively “O-Tex” or the “Company”) announced that White Deer Energy L.P. (“White Deer”) had made a \$52 million investment in the Company. O-Tex is the largest independent provider of downhole cementing services to the oil industry in Texas and Oklahoma. The investment included a \$42 million purchase of existing equity and \$10 million to acquire newly issued shares. O-Tex will use its share of the proceeds to accelerate the expansion of its cement pumping truck fleet and to finance the opening of additional locations. O-Tex currently provides cement pressure pumping from five locations in Texas, Oklahoma and Arkansas. The Company is headquartered in Duncan, Oklahoma.
  - Jan. 2011 - Grey Mountain Partners, LLC (“GMP”) has made an equity investment in Triton Diving Services, LLC (“Triton”), a provider of commercial diving services to the offshore oil and gas industry in the Gulf of Mexico. The investment provides Triton with additional capital and resources to enable it to further expand its business through internal growth initiatives or additional acquisitions of complementary businesses. Triton Diving Services, LLC Headquartered in Metairie, La., is an offshore commercial diving services provider focused on the Gulf of Mexico with a leading position in surface diving activities. With an owned fleet of six vessels, approximately 175 professional divers, and offices in Metairie, Amelia, and Houston, the company provides decommissioning, maintenance, inspection, and repair, and emergency services to a variety of major operators and engineering firms in the offshore oil and gas market.



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