

## ENERGY

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Legislative acts/threats, regulatory issues and price collapse provided an unusual energy picture during the fourth quarter 2009. These issues were going on in one of the worst economic downturns in 70 years which brought a drop in commodity prices and curtailment in exploration and production activity. Exploration and production companies were laying off people and stacking rigs. A spokesman at the 15th Annual CO2 Conference said the outlook is for increased energy demand as economies around the world grow and population increase from about 6 billion people to 8 billion people by 2030.

The U.S. Energy Information Administration annual energy outlook says oil prices will rise steadily beginning in 2010 and will continue on that trend to 2035 and beyond. Natural gas prices are projected to rise from very low levels during the 2008-2009 recession. Shale gas has been the primary source of recent growth in North America and with Alaska production will offset declines in supply to meet consumption growth and lower import needs through 2035.

## I. Global Review and Demand for Oil & Gas

World oil demand will grow in 2010 for the first time since 2007 and return to pre-recession levels by 2012 according to IHS Cambridge Energy Research associates. The rebound would mark a turnaround from the largest drop in global demand since the oil crisis of the early 1980's. The demand is expected to rise by 900,000 barrels a day and return to its 2007 high of 86.5 million barrels a day. In the 1980's the largest area of demand decline came from power generation where oil was replaced by substitutes such as coal, natural gas or nuclear. Today IHS CERA prognosticates that global growth is coming from the transportation sector in emerging markets where there are fewer large-scale options for switching fuels.

The natural gas industry reports a glut of natural gas because of the unconventional shale gas plays on the North American market and the previously reported enormous natural gas discoveries in several foreign countries. To absorb the excess gas, steep reductions were required in the cash market for it to become economic to displace coal-fired power generation with natural gas. By early March, prices at Henry Hub had fallen to the mid \$3.00 per MMBtu range and they stayed there through late September with averages at \$3.50 per MMBtu, the lowest price in seven years. The steep decline in natural gas prices had a major impact on electric generation as a result of the worst economic recession in many years, total U.S. electric generation fell 4.9% between January and August 31, 2009. The result was a 12.6% year over year decline in coal use. By contrast the amount of natural gas used to generate electricity increased by 2.9% resulting in a 100 billion-cubic-foot net increase in gas use.

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Andy Weissman, publisher of "Energy Business Watch" reports that several factors will determine pricing this winter. The amount of gas in storage is at a record high. Canadian imports could decline and LNG imports are likely to remain low. As a result, prices this winter will depend on colder weather. If the forecast for colder weather is confirmed, the storage surplus could evaporate leading to a significant price increase.

## **II. Oil and Gas Pricing**

Natural gas prices jumped 6% at year end amid forecasts for colder than normal temperatures that could drive demand for the fuel and help draw down high gas stockpiles. Natural gas for January delivery on the New York Mercantile Exchange was up 34.7 cents or 6.1% higher or \$5.99 a million British thermal units the highest settlement price this year. The forecasts for a prolonged period of cold weather can draw down natural gas storage levels.

Natural gas in U.S. storage for the week ended December 18th stood at 3.4 trillion cubic feet- 11.87% higher than last year and 13.1% above the five-year average.

Incidents in Russia and Iran moved oil prices to a five week high. Nymex light sweet crude for February delivery settled 72 cents or 0.9% higher at \$78.77 a barrel, the highest settlement since November 19. Russia warned it is prepared to cut off oil supplies to Europe via the Druzhba pipeline in a dispute with Ukraine over transit fees. In Iran, a clash between security forces and antigovernment protesters killed at least eight. These incidents contribute to the volatility of oil and gas pricing. At year end light sweet crude for February settled up 41 cents or 0.5% with \$79.28 a barrel on the NYSE. Oil prices have risen 14% since December 14, 2009 and are less than \$2 below their high for the year.

The U.S. Energy Information Administration reported a 1.5 million barrel drop in U.S. oil inventories as well as a 201 million barrel decline in distillate stocks, including heating oil and diesel, and a 400,000 barrel decline in gasoline inventories.

## **III. Outstanding Exploration and Production Activity**

### **West Africa**

The December issue of Offshore Magazine reports a golden decade for Angola's deepwater. The production from Angola has grown to 1.5 MM b/d eclipsing deepwater output for the U.S. Gulf of Mexico and Nigeria. This activity is second to Brazil in global deepwater oil rankings. Angola has 12 major projects onstream exploiting 35 fields that initially contained 6.5 billion bbl of oil.

### **Brazil**

Devon Energy Corp. and Anadarko Petroleum Corp. announced a second pre-salt discovery in Brazil. The Itaipu discovery is six miles southeast of the giant Jubarte field in the Campos Basin and 16 miles north of a 2008 Anadarko discovery.

## Shale Plays

Houston based Petrohawk Energy has announced the discovery of a mammoth natural gas field in McMullen County, South Texas. As a result, the Eagle Ford shale remains one of the hottest areas in North America.

Recently discovered U.S. shale plays including the Haynesville in Louisiana, Marcellus in Pennsylvania and Eagle Ford in South Texas are expected to provide a boost to U.S. natural gas supplies in coming years. The core areas of the eight largest U.S. shale plays may contain 475 trillion cubic feet of recoverable resources according to an estimate by Ross Smith Energy Group, an industry research firm in Calgary, Alberta.

An example of the success in the Marcellus is the drilling of 32 producing wells by Cabot Oil and Gas Corp. which are making 52 mmcf/d. Average initial potential on its horizontal wells is 7mmcf/d.

## IV. Deep Water Discoveries in the Gulf of Mexico

Despite a tough economy that forced cuts elsewhere, oil and gas producers in 2009 continued their push into the deep waters of the Gulf of Mexico, and many of their efforts were rewarded.

So far this year there have been 12 discoveries in at least 1,000 feet of water, representing 1.35 billion barrels of oil equivalent according to Wood Mackenzie, an industry consulting firm.

Well over half the volume of oil and gas discovered in 2009 is in a frontier area known as the Lower Tertiary play miles below the sea floor in an outer rim of the Gulf between Texas and Louisiana where extreme pressure and temperature present such obstacles.

In February Chevron announced its Buckskin discovery, among the years biggest. Located in nearly 7,000 feet of water in the Lower Tertiary, it encountered more than 300 feet of net oil pay. Chevron was quick to point out the risk with four dry holes, at a cost of \$100 million per well.

BP also announced a large discovery. Independent companies including Anadarko Petroleum, Mariner Energy, Noble Energy and Newfield Exploration Co. also had discoveries. The industry considers the new play in the Gulf of Mexico as a high reward for the risk involved.

### DEEP WATER DISCOVERIES

Major oil and gas discoveries in the Gulf of Mexico in 2009:

Prospect, Operator, Water depth (feet)

- Buckskin, Chevron, 6,920
- Santa Cruz, Noble Energy, 6,515
- Shenandoah, Anadarko, 5,750
- Heidelberg, Anadarko, 5,000
- Tiber, BP, 4,132
- Vito, Shell, 4,038
- Wide Berth, Mariner, 3,700
- Samurai, Anadarko, 3,400
- Winter, Newfield, 3,400
- Bushwood I, Mariner, 2,700
- Pyrenees, Newfield, 2,100
- Ewing Bank 998, Walter Oil & Gas, 1,000

Source: U.S. Minerals Management Service

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### Israel Discovery

American Independent Noble Energy has discovered a world class natural gas field offshore Israel. Located in deep water, offshore, the field, Tamar is the second largest natural gas find in the world since January 2008, behind only Petrobras' subsalt Jupiter discovery offshore Brazil.

## V. M&A Exploration and Development Deals – 2009

### Exxon - XTO Deal

Exxon Mobil has entered into an agreement to acquire XTO energy for \$31 billion in cash plus \$10 billion in assumed debt.

New technology helped pave the way for this deal. Producing natural gas trapped in shales have made it more accessible in recent years. Just ten years ago that technology didn't exist according to an Exxon spokesman "They have gone from thinking we had about a decade's worth of gas in the U.S. to thinking we've got from 80 to 100 years worth." Exxon Mobil already holds natural gas resources in the U.S. and other areas such as Argentine, Canadian Poland, Hungary and Germany. With this acquisition the company gains 45 trillion cubic feet of gas equivalent.

### Emerging M&A Opportunities

Jason Reinbold of The Rodman Energy Group reported in Oil & Gas Financial Journal that highly leveraged companies will probably divest assets that were acquired at the height of property valuations last year. A recent example is Edge Petroleum's asset sale to Public Gas Partners. The total consideration was \$191 million for assets that were mostly in the South Texas Gulf Coast region. The Edge deal implied valuation metrics of approximately \$5,546/Mcfe and \$1.48/Mcfe for proved reserves. This was an attractive price when compared to metrics in more attractive plays have been approaching \$10,000/Mcfe and \$2.00/Mcfe of proved reserves.

### Denbury-Encore Merger

Denbury Resources will significantly expand its presence across Gulf Coast and Rocky Mountains with the pending \$4.5 billion purchase of Encore Acquisition Company. The combined companies will have over 500 million barrels of oil equivalent that could potentially be recovered with CO2 floods.

### Devon Sale

Devon Energy sold three Gulf projects for \$1.3 billion to Maersk Oil in an initial move back to land based natural gas reserves that are less risky and less expensive. Devon had previously expressed their intention to sell all assets in the Gulf and in deep waters like those off the shore of Brazil.

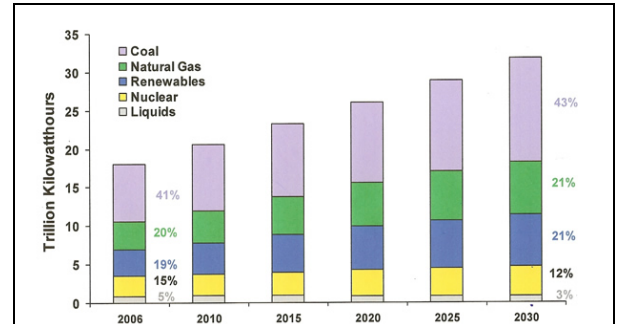
## VI. Alternative Fuels

We need to stop referring to alternative energy and start talking about supplemental additional energy sources. We cannot replace fossil fuels easily and quickly. It is currently estimated by the U.S. Energy Information Administration that our demand will grow by 9 percent between 2007 and 2030 with more than 50% of that demand being oil and natural gas. That means that in 2030 our total demand for energy will be met as follows:

33.5% by oil, 21.8% by natural gas, 22.9% by coal, 8.4% by nuclear, 10.7% by biomass and 2.7% by hydro

### Heavy Oil

Alaska's North Slope has an estimated 30 billion barrels of "in place" heavy oil, up to one-fifth of which is recoverable. The Alaska Division of Oil and Gas said that 6.5% of last year's production on the North slope was heavy oil, up from 5% in 2008. Several major companies are interested, having increased investments in heavy oil a few years ago.



Renewables are fastest growing electricity generation source, but coal and natural gas still fuel nearly two-thirds of world electric generation in 2030

Reference: EIA International Energy Outlook 2009  
Presentation - May 27, 2009

## VII. Geothermal

### China Renewable Energy Law

China's utilities will be required to buy all the power produced by wind farms and other renewable sources under a new law meant to promote the industry and reduce heavy reliance on coal. Beijing has set ambitious goals for wind, solar and other renewable energy in an effort to clean up its environment and demand for imported oil and gas.

### Geothermal Projects

Congress has authorized through its stimulus package \$400 million for the research, development and demonstration (RD&D) of geothermal energy technologies. According to AAPG Explorer there are 126 geothermal projects of various stages of development in the USA. Geothermal energy produces near-zero emissions and has minimal impact on the environment.

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## VIII. Recent M&A Deals in Oilfield Equipment and Services

- HOUSTON AND FORT WORTH, TX / November, 2009 / Valerus Compression Services ("Valerus") and TPG Capital ("TPG") jointly announced today that investment funds managed by TPG will purchase a majority stake in Houston-based Valerus. Valerus is a privately held provider of natural gas handling services, including natural gas compression, processing, and treating. TPG will invest \$500 million in the company's debt and equity. Proceeds from the transaction will be used to provide capital for the company's growth plans and to refinance the company's existing debt. Management, employees, and other current investors will retain the remaining ownership. Terms of the deal were not disclosed.
- ABERDEEN, October 2009 / ITS Group, a specialist provider of oilfield equipment and services to the global oil and gas industry, today announces a \$55 million equity investment from leading energy-focused private equity firm Lime Rock Partners. The agreement provides Lime Rock with a minority stake in ITS Group in return for providing growth capital to be used to support the company's growth aspirations as it aims to become a major global player in the oilfield drilling sector.
- LONDON, January 2010 / Petrofac has acquired Scotvalve Services Limited, a UK-based services company, from Scotvalve's management, for an initial cash consideration of £3 million. A further consideration of up to £2 million will be payable in cash and/or shares over three years, subject to achieving certain agreed performance targets. Scotvalve, founded in 1985, has some 37 employees located at a mechanical workshop in Aberdeen from which the company provides the servicing and repair of oilfield pressure control equipment. In addition, Scotvalve has the capability to provide its services to the oil & gas sectors in the Middle East and North Africa. Scotvalve will enhance Petrofac's mechanical services offering enabling the group to provide repair and maintenance services within a wider geographic footprint. It will form part of the Offshore Engineering & Operations business which already owns mechanical workshop facilities in the United Arab Emirates and a mechanical services JV relationship in Saudi Arabia with the Zamil Group Holding Company.



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