#### October 2013



## Insights from the DUG Eagle Ford

Founders attended the recent DUG *Eagle Ford* Conference which attracted more than 4,000 industry executives from the upstream and midstream sectors. Here are a few of the main takeaways:

#### E&P Discussion:

- ▶ Forward Statements from the Operators: The industry outlook continues to display positive trends as production and corporate resource allocation is forecasted to increase in the Eagle Ford:
  - Sanchez Energy stated their operating capital is focused on continued production; specifically, over 90% of their drilling and completions capital plan (for 2014) is focused toward the Eagle Ford
  - Marathon noted their intent of continued drilling while allocating greater focus on efficiency in drilling, completion, and well facility capital. Their production growth profile projects a greater than 25% CAGR (compounded annual growth rate) from 2012 to 2017 in the Eagle Ford
  - During a presentation, BHP Billiton Petroleum President, Rod Skaufel, stated his company plans to spend \$3 Bn annually in the Eagle Ford. Furthermore, he remarked that completions could have the most upside over the next three years
  - Halcon Resources Corporation stated the company is dedicating approximately 40% of their second half 2013 D&C capital budget to the Eagle Ford, a trend they expect to continue
  - (Graph on page 1) The number of drilling permits issued in 2013 is on pace to increase greater than 25% over 2012. Operators' words and actions indicate that activity will remain high in the Eagle Ford for the foreseeable future:



#### Eagle Ford Drilling Permits Issued

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Marathon's production growth profile projects greater than a 25% CAGR (compounded annual growth rate) from 2012 to 2017 in the Eagle Ford.

▶ Continued Escalation in Eagle Ford Natural Gas Production: (Per chart below) The annualized natural gas production for the Eagle Ford is 5,372 MMd, an expected 122% increase from 2012. First half production has already surpassed total production from 2012. Operators continue to target the oil-rich areas of the Eagle Ford. Despite their focus, natural gas production has risen strongly in the region, as robust levels of associated liquid and dry natural gas are being captured alongside oil in the production process.



Eagle Ford Natural Gas Production

Schlumberger noted hi-way channel fracturing as their fastest growing technology, increasing production by 20%.

#### Oilfield Services:

- Advancement in Completion Techniques: Completion phase innovations are continuing to garner attention as operators seek to improve efficiency and cut costs. Richard Mason of Hart Energy stated that many operators are allocating their greatest attention towards completion efficiency, "the biggest focus in industry is towards efficiency in completion ... that is where the industry is moving," adding, "completions have great upside." As examples of the ongoing innovations, new techniques are becoming more prevalent, including:
  - Zipper fracturing
  - Hi-way fracturing
  - Proppant concentration/type
  - Fluid concentration/type
  - Choke management
  - Optimized artificial lift
- ▶ Perforation Engineered vs. Geometric: Schlumberger highlighted their increased focus on engineered vs. geometric completion practices. With their acquisition of ThruBit, LLC in 2011, the company has continued to focus on engineered perforation techniques to increase perforation efficiency<sup>1</sup>. Specifically:
  - Perforation Efficiency for Engineered Completion: 82%
  - Perforation Efficiency for Geometric Completion: 64%



<sup>1</sup> Perforation Efficiency is defined as the number of perforation clusters contributing to production divided by the total number of perforation clusters, increases through engineered completion juxtaposed to geometric completion.

#### ▶ Efficiency Gains:

- The average drilling cost per foot has decreased 17% over the last two years (chart below: blue)
- Drilling feet per day has increased 15% over the same period (chart below: red)
- Spud to put-on-production (POP) time has decreased 60% over the last two years
- Frac cycle time has been reduced by approximately 40% since January 2012



# Pioneer Natural Resources stated their company is saving \$600,000 to \$700,000 per well through pad drilling.

#### Pad Drilling:

- Through pad drilling, Pioneer Natural Resources stated their company is saving \$600,000 to \$700,000 per well
- Chesapeake Energy expects savings of 15%-30% per well
- Baker Hughes CEO Martin Craighead stated that his company's margins could increase 30%-50% with pad drilling
- Currently 75% of wells are drilled on pads, compared to 40-45% at the beginning of 2013
- Average number of wells per pad: approximately 4
- Pad well cost average 5-10% less than single well costs
- Top hole rigs are not very prevalent Credit Suisse opines that operators prefer having one rig drill all sections of the well in a serial manner
- Furthermore, 40 to 60- acre spacing is becoming more prevalent (decreasing from 80-acre plus) – which positively impacts property valuation



# Select Oil & Gas Transactions

| Announced           |             |   |  | Size   |
|---------------------|-------------|---|--|--------|
| Date<br>Oct-10-2013 | Closed Date | Target<br>Dresser-Rand Group Inc., Three      | Buyer/Investors  | (\$mm) |
| 000-10-2013         |             | Photocoltaic Plants                           | MDD Clean Energy AG  | -      |
| Oct-02-2013         | Oct-02-2013 | Toro Projects Inc.                            | Maverick Oilfield Services Ltd.  | -      |
| Sep-30-2013         | -           | Peak Oilfield Service Company                 | Bristol Bay Native Corporation   | -      |
| Sep-26-2013         | Sep-26-2013 | Ichron Limited                                | RPS Group plc (LSE:RPS)  | 20.09  |
| Sep-25-2013         | -           | RMS Systems, Inc. (TSXV:RMS)                  | Phoenix Technology Services Inc.   | 19.14  |
| Sep-24-2013         | -           | Bonnett's Energy Corp.<br>(TSX:BT)            | Babson Capital Management LLC,Bowside<br>Capital,Mill City Capital, L.P. | 96.37  |
| Sep-20-2013         | Sep-20-2013 | SPIRIT Global Energy Solutions,<br>Inc.       | Norris Production Solutions  | -      |
| Sep-17-2013         | -           | R360 Environmental Solutions                  | Waste Connections, Inc.  | 1,300  |
| Sep-17-2013         | -           | CAVU Resources Inc., - 240<br>Acres, 26 Wells | Petrotech Oil and Gas, Inc. (OTCPK:PTOG)                                 | 0.4    |
| Sep-17-2013         | Sep-17-2013 | Gulf33 VALVE PROS, LLC                        | Curtiss-Wright Flow Control Corporation                                  | 4.0    |
| Sep-13-2013         | Sep-13-2013 | Accurate Tool Co., Inc.                       | Sentry Equipment Corp.   | -      |
| Sep-12-2013         | Jul-31-2013 | Drill String Services, Inc.                   | Tubular Repair LLC   | -      |
| Sep-06-2013         | Oct-03-2013 | Mission Well Services, LLC                    | Calfrac Well Services Ltd. (TSX:CFW)                                     | 147.0  |
| Sep-06-2013         | Sep-06-2013 | Sooner, Inc.                                  | Marubeni-Itochu Tubulars America, Inc.                                   | 600.0  |
| Sep-05-2013         | Sep-05-2013 | Chancellor Oil Tool, Inc.                     | Tejas Completion Solutions, L.P.   | -      |

## Transaction Overview:

The M&A market for oil and gas equipment and services remained steady through September and into October. Specifically, the future outlook for the midstream market appears healthy as companies continue to seek capital to create the infrastructure necessary to get the commodities from the major U.S. production areas. Jim Dillavou of Deliotte & Touche noted, "We continue to see activity around the major basins, such as the Eagle Ford and the Permian ... Production is still outstripping infrastructure. There are plenty of opportunities for investment, so this continues to be an area of high interest."

Sources: Capital IQ, EIA & Deloitte

# Natural Gas Futures (Henry Hub)



## Nature Gas Futures Overview:

Natural gas spot prices averaged \$3.62 per MMBtu at the Henry Hub in October, increasing 20 cents from the previous month's price. This month's increase is the beginning of an expected upward move as cooler weather increases nature gas consumption. The EIA forecasts the Henry Hub price will increase from an average of \$2.75 per MMBtu in 2012 to \$3.65 per MMBtu in 2013 and to an average of \$3.97 per MMBtu in 2014.

Sources: EIA

# Oil Futures Pricing (WTI)



## Oil Futures Overview:

The monthly average crude oil prices fell from last month, as prices have hovered around \$103 for the majority of the month. Prices in recent months have been buoyed by unrest in Syria and the Middle East along with fear that the U.S. government shutdown would curb the fuel demand of the world's largest oil user (U.S.). Futures dipped as these fears were abated and production remained strong. Prices are expected to stabilize for the remainder of 2013, while 2014 forecasts a target price of \$99.21.

Sources: EIA and Bloomberg

# U.S Total Onshore Well Count



#### Well Count by Select Basin

## Well Count Overview:

The U.S. Total Well Count for third quarter 2013 is 9,175 wells; up 164 wells or 2% from the revised 9.011 wells counted in second quarter 2013. Due to improved drilling efficiencies, the average U.S. onshore drilling rig is now producing 2% more wells, compared to *only* three months ago.

Compared to the second quarter 2013, the well count increased most notably in the Permian (up 66 wells or 3%), Williston (up 54 wells or 8%) and Eagle Ford (up 44 wells or 4%) basins. These increases were offset by reductions in the Fayetteville (down 35 wells or 18%) and Barnett (down 23 wells or 6%) basins

Sources: Baker Hughes & The Wall Street Journal

# U.S. Onshore Rig Count



## Onshore Rig Count Overview:

Entering October, U.S. onshore rig counts witnessed a 27 rig count decrease from the beginning of September, bringing the current rig count to 1675. However, as Jim Wicklund of Credit Suisse commented, rig count is being undermined as an accurate indicator for production, "we all know that rig count isn't a very good denominator anymore." As previously stated, wells drilled per rig is increasing. Drivers include: greater drilling technology (collapsing time), pad drilling (where a rig is able to drill multiple wells at a single location), and longer laterals (extracting more per well).

However, the outlook for rig count is expected to remain steady and not decrease at the same rate seen in recent months. David Lesar, CEO of Halliburton, stated, "we are now expecting the rig count to remain relatively flat for the remainder of the year as we observe a meaningful switch to multi-well pad activity among our customer base."

Sources: Baker Hughes and Morningstar

# U.S. Onshore Rig Count by Basin



## Rig Count by Basin Overview:

Despite the fall in total rig counts, the rig count in major basins remained flat. Since September 6th, rig counts increased in the Barnett (+1), Woodford (+3), Mississippian (+8), Utica (+1), and Bakken (+1), and decreased in the Eagle Ford (-4), Fayetteville (-2), Haynesville (-3), and Permian (-3). Additionally, the number of stages per lateral is increasing. As Halliburton COO, Jeff Miller, noted, "In spite of a relatively flat sequential U.S. rig count, drilling efficiencies in the trend towards multi-well pads are driving a more robust well count. Additionally, in some cases, we're seeing operators increasing the number of stages on horizontal wells, performing as many as 40 stages per lateral in the Marcellus in certain examples."

That being said, the rig count is expected to remain flat as production demands continue to prop up rig count, despite the efficiency gains. Rig counts as of October 4, 2013: Barnett - 33, Eagle Ford - 227, Fayetteville - 9, Haynesville - 40, Marcellus - 86, Permian - 453, Woodford - 47, Utica - 36, Williston - 183, and Other - 561.

Sources: Baker Hughes, EIA, and Morningstar

# U.S. NG vs. Oil Rig Count



## NG vs. Oil Count Overview:

Over the month of September, oil directed rigs saw a 16 rig count decrease and gas rigs observed a 10 count decrease. Even with the decrease, rig count is not expected to fall below the "bottom" seen in June. In this environment, efficiency will continue to be the theme. The COO of Halliburton commented, "In a flat pricing and rig count environment, cost management is going to be – extremely important … we anticipate better cost optimization will result from our strategic initiatives."

Sources: Baker Hughes and Yahoo Finance



U.S. NG vs. Oil Production

Dry Natural Gas Production Crude Oil Production --> Linear (Crude Oil Production)

## NG vs. Oil Production Overview:

US Oil production has continued to escalate (trend line show in blue) into historic levels. September brought production levels of 7.51 mm bbl/ day, as October production is expected to increase to 7.75 mm bbl/ day, the highest monthly production in over 25 years. Furthermore, EIA forecasts crude oil production to average 7.47 mm bbl/ day in 2013 and 8.45 mm bbl/ day in 2014.

Natural gas (charted in gray) production for October is forecasted at 66.60 bn cubit ft/day, rising from the September levels of 66.35 bn cubit ft/day. Natural gas production has remained stable over the past 12 months, however the winter months are expected to provide an increase in demand and prices.

Sources: EIA



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