Houston IPAA/TIPRO Luncheon
“Living on a Razor’s Edge – The Embedded Challenges in U.S. Deal Flow”

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Managing Director
Jefferies & Company

January 9, 2013
Advised on Seven of the Top Ten Shale/Resource Transactions

<table>
<thead>
<tr>
<th>Date</th>
<th>Seller</th>
<th>Buyer</th>
<th>Trans. Value ($MM)</th>
<th>Shale/Resource</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec-09</td>
<td>ExxonMobil</td>
<td>XTO</td>
<td>$35,000</td>
<td>Diversified</td>
</tr>
<tr>
<td>Jul-11</td>
<td>BHP Billiton</td>
<td>Petrohawk Energy</td>
<td>15,223</td>
<td>Diversified</td>
</tr>
<tr>
<td>Nov-11</td>
<td>KKR</td>
<td>Samson</td>
<td>7,200</td>
<td>Diversified</td>
</tr>
<tr>
<td>Feb-12</td>
<td>Apollo</td>
<td>El Paso E&amp;P</td>
<td>7,150</td>
<td>Diversified</td>
</tr>
<tr>
<td>Feb-11</td>
<td>BHP Billiton</td>
<td>Chesapeake</td>
<td>4,750</td>
<td>Fayetteville</td>
</tr>
<tr>
<td>May-10</td>
<td>Shell</td>
<td>East Resources</td>
<td>4,700</td>
<td>Marcellus</td>
</tr>
<tr>
<td>Oct-11</td>
<td>Statoil ASA</td>
<td>Brigham Exploration</td>
<td>4,643</td>
<td>Bakken</td>
</tr>
<tr>
<td>Nov-10</td>
<td>Chevron</td>
<td>Atlas Energy</td>
<td>4,300</td>
<td>Marcellus</td>
</tr>
<tr>
<td>Jun-11</td>
<td>Marathon Oil</td>
<td>Hilcorp Resources</td>
<td>3,500</td>
<td>Eagle Ford</td>
</tr>
<tr>
<td>Mar-10</td>
<td>CONSOL Energy</td>
<td>Dominion</td>
<td>3,475</td>
<td>Marcellus</td>
</tr>
</tbody>
</table>

- Jefferies has advised on more than 45 shale/resource transactions for greater than $150 Billion

Source: IHS Herold.
Bold indicates Jefferies advised on transaction.
# Relationships with the Largest Energy Companies in the World

## Jefferies Involvement on Transactions with the Top 20 Global E&P Companies Since 2010

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company</th>
<th>TEV ($MM)</th>
<th>Transaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Exxon Mobil Corporation</td>
<td>$423,414</td>
<td>Purchase of XTO</td>
</tr>
<tr>
<td>2</td>
<td>PetroChina Co. Ltd.</td>
<td>336,263</td>
<td>Purchase of East Resources; CHK Permian purchase</td>
</tr>
<tr>
<td>3</td>
<td>Petroleo Brasileiro</td>
<td>248,053</td>
<td>Purchase of Atlas Energy; CHK Permian purchase</td>
</tr>
<tr>
<td>4</td>
<td>Royal Dutch Shell plc</td>
<td>245,205</td>
<td>Purchase of East Resources; CHK Permian purchase</td>
</tr>
<tr>
<td>5</td>
<td>Chevron Corporation</td>
<td>197,228</td>
<td>Purchase of Atlas Energy; CHK Permian purchase</td>
</tr>
<tr>
<td>6</td>
<td>Gazprom</td>
<td>174,093</td>
<td>Purchase of East Resources; CHK Permian purchase</td>
</tr>
<tr>
<td>7</td>
<td>BP plc</td>
<td>166,395</td>
<td>Purchase of East Resources; CHK Permian purchase</td>
</tr>
<tr>
<td>8</td>
<td>China Petroleum</td>
<td>143,139</td>
<td>Purchase of East Resources; CHK Permian purchase</td>
</tr>
<tr>
<td>9</td>
<td>Total SA</td>
<td>136,526</td>
<td>Purchase of East Resources; CHK Permian purchase</td>
</tr>
<tr>
<td>10</td>
<td>Eni SpA</td>
<td>123,626</td>
<td>Purchase of East Resources; CHK Permian purchase</td>
</tr>
</tbody>
</table>

Other global companies of note include: BHP, KNOC, Mitsui, Mitsubishi, Reliance, Sasol.

## Other Transactions

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company</th>
<th>TEV ($MM)</th>
<th>Transaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>ConocoPhillips</td>
<td>$114,281</td>
<td>Various divestitures</td>
</tr>
<tr>
<td>12</td>
<td>Ecopetrol SA</td>
<td>105,680</td>
<td>Purchase of GOM Deepwater</td>
</tr>
<tr>
<td>13</td>
<td>Rosneft Oil Company</td>
<td>88,896</td>
<td>Purchase of GOM Deepwater</td>
</tr>
<tr>
<td>14</td>
<td>BG Group plc</td>
<td>87,757</td>
<td>Sale of Mauritania</td>
</tr>
<tr>
<td>15</td>
<td>Statoil ASA</td>
<td>86,231</td>
<td>Sale of Peregrino; Purchase of Brigham</td>
</tr>
<tr>
<td>16</td>
<td>CNOOC Ltd.</td>
<td>85,653</td>
<td>JVs w/ Chesapeake (Eagle Ford, Niobrara); Nexen (GOM DW)</td>
</tr>
<tr>
<td>17</td>
<td>Occidental Petroleum</td>
<td>83,213</td>
<td>Sale of certain assets</td>
</tr>
<tr>
<td>18</td>
<td>Suncor Energy Inc.</td>
<td>62,036</td>
<td>Purchase of Peregrino; Purchase of Brigham</td>
</tr>
<tr>
<td>19</td>
<td>Repsol YPF SA</td>
<td>60,813</td>
<td>JVs with Mitsui &amp; KNOC (Marcellus &amp; Eagle Ford)</td>
</tr>
<tr>
<td>20</td>
<td>Anadarko Petroleum</td>
<td>50,823</td>
<td>JVs with Mitsui &amp; KNOC (Marcellus &amp; Eagle Ford)</td>
</tr>
</tbody>
</table>

Source: IHS Herold. Bold indicates Jefferies advised on transaction.
Macro U.S. Reserves and Production
Natural gas can now be viewed as a long-term energy solution.
Increase in U.S. liquids production is reducing imports
Historical U.S. Gas Production

Source: EIA.
Rig Count Rebuilt and Peaking

Historical 36-Month Forward Strip for Oil & Gas (1)

U.S. Total Rig Count (2)

(2) LandRig Newsletter, Smith Rig Counts, Jefferies & Company estimates.
U.S. Shales and Resource Plays Can Lead a Resurgent U.S. Economy (1)

- GDP gains in 2017 of $167 - $245 Billion (1.2% - 1.7% U.S. GDP)
- Total employment gains 835,000 - 1.6 Million jobs in 2017
- Increase employment 0.5% - 1.0%
- Up to $85 Billion in new taxes
- $12 Billion in royalty payments

North American Onshore M&A Activity - $100 Billion Per Year Business


Total Transaction Value ($B)

International Buyers
Domestic Buyers

North American Onshore M&A Activity – U.S. vs. Canada


Total Transaction Value ($B)


Canada

United States

$10 $15 $26 $17 $24 $38 $16 $34 $33 $14 $41

$5 $6 $9 $24 $39 $38 $37 $54 $66 $76 $72

$-$ $10 $20 $30 $40 $50 $60 $70 $80 $90 $100 $110 $120

Unconventional Activity Increasingly Liquids Rich

2007 – 2008
- Cracking the shale code
- Focus on gas shales
- Domestic independents take the lead

2009 – 2010
- Shift to oil shales beginning in 2010
- Majors and internationals move onshore in a big way

2011 – 2012
- Operations become focused for all involved
- Capital markets and private equity step up

Source: IHS Herold.
(1) Proved reserves consisting of at least 50% oil.
Capital Sources for North American E&P Companies Since 2007 ($B)

- M&A (Asset Only): $297 Billion
- Debt: $112 Billion
- Equity: $74 Billion
- Joint Ventures: $53 Billion

More than $500 Billion raised
## Future Shale Development Requires Massive Capital

<table>
<thead>
<tr>
<th>Play</th>
<th>Est. Total Area (Million Acres)</th>
<th>Wells to be Drilled</th>
<th>Implied Recov. Res. (Tcfe)</th>
<th>Future Drilling Capital ($B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marcellus</td>
<td>12</td>
<td>150,000</td>
<td>750</td>
<td>675</td>
</tr>
<tr>
<td>Utica</td>
<td>5</td>
<td>52,500</td>
<td>344</td>
<td>281</td>
</tr>
<tr>
<td>Haynesville</td>
<td>3</td>
<td>37,500</td>
<td>247</td>
<td>300</td>
</tr>
<tr>
<td>Eagle Ford</td>
<td>3</td>
<td>37,500</td>
<td>206</td>
<td>206</td>
</tr>
<tr>
<td>Fayetteville - Core</td>
<td>2.5</td>
<td>31,250</td>
<td>84</td>
<td>102</td>
</tr>
<tr>
<td>Bossier</td>
<td>1</td>
<td>12,500</td>
<td>69</td>
<td>94</td>
</tr>
<tr>
<td>Woodford</td>
<td>1</td>
<td>12,500</td>
<td>39</td>
<td>69</td>
</tr>
<tr>
<td>Barnett - Core</td>
<td>1.2</td>
<td>21,818</td>
<td>55</td>
<td>57</td>
</tr>
<tr>
<td>Bakken</td>
<td>3</td>
<td>9,375</td>
<td>34</td>
<td>31</td>
</tr>
<tr>
<td><strong>Total Drilling</strong></td>
<td><strong>31.7</strong></td>
<td><strong>364,943</strong></td>
<td><strong>1,828</strong></td>
<td><strong>1,815</strong></td>
</tr>
<tr>
<td>Estimated Midstream</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>251</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$2.066 Trillion</strong></td>
</tr>
</tbody>
</table>

- Average of $70 Billion per year for 30 years
Relative Play Economics and Rig Count
Single Well Return Comparison Across North American Unconventional Plays
Assumes NYMEX Pricing as of 1/4/2013

Source: Jefferies estimates.
Note: NYMEX 5-year forward average of $89.56/ Bbl and $4.18 / MMBtu.
Historical Relative Trading Performance
2008-2012

Lowest Cost Producers Have Detached from Broader Natural Gas Market
Rig Counts Grow in Liquids Rich and From Gas Plays

Rigs by Major Basin (1)

![Bar Chart showing rig counts by major basin over different months]

(1) Source: LandRig Newsletter, Smith Rig Counts, Jefferies & Company estimates.
Best Shale Plays Making Significant Contributions

U.S. Oil Production by Major Play

U.S. Gas Production by Major Play

Source: DrillingInfo.
Technology Is Driving Improving Well Results

Key Points

- Operators are using advances in technology to improve recoveries across numerous plays
- EURs have trended upwards as companies move up the learning curve
- In addition, drilling costs have generally fallen based on a number of factors:
  - Increase in pad drilling as leases become HBP
  - Consolidated, integrated infrastructure
  - Economies of scale as development ramps up

Range Resources – Marcellus EURs

<table>
<thead>
<tr>
<th>Year</th>
<th>3.5 Bcfe</th>
<th>4.5 Bcfe</th>
<th>5.0 Bcfe</th>
<th>5.0 Bcfe</th>
<th>5.7 Bcfe</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td></td>
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<tr>
<td>2009</td>
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<tr>
<td>2010</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

EQT – Marcellus EURs

<table>
<thead>
<tr>
<th>Year</th>
<th>Single Well EUR (Bcfe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 2010</td>
<td>3.8 Bcfe</td>
</tr>
<tr>
<td>Q1 2011</td>
<td>7.3 Bcfe</td>
</tr>
<tr>
<td>Current</td>
<td>9.0 Bcfe</td>
</tr>
</tbody>
</table>

Marathon Oil – Eagle Ford EURs

<table>
<thead>
<tr>
<th>Year</th>
<th>Single Well EUR Range (MBoe)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 2011</td>
<td>400</td>
</tr>
<tr>
<td>Q2 2011</td>
<td>840</td>
</tr>
<tr>
<td>Current</td>
<td>965</td>
</tr>
</tbody>
</table>

Source: Public data.
Majors, Internationals, Private Equity
Majors / internationals have almost unlimited capital and a large universe of opportunities (1)(2)
- Looking at a broad / deep range of deals
- Average debt to market capitalization of 15%

(1) Per Capital IQ.
(2) Per IHS Herold. Includes all global acquisitions in the last 24 months.
Relative Activity of Operators

Total U.S. Onshore Rig Count: 1,525

Source: Operator rig counts per *The Land Rig Newsletter Biweekly Report*. U.S. onshore rig count per Baker Hughes.
International Appetite Waning Slightly

International buyers are slowing down (1)
- Natural JV buyers have done deals

2008 – 2011: $33.5 B
Year-to-Date: $8.3 B

(1) Per IHS Herold.
## Financial Investors Assuming a Bigger Role

<table>
<thead>
<tr>
<th>Category</th>
<th>Examples</th>
<th>Comments</th>
</tr>
</thead>
</table>
| **Traditional Buyout**          | ![Apollo](image1) ![El Paso](image2) | - Fits conventional investment model  
- Ability to execute very large transactions, particularly via syndication  
- More mature assets increase ability to utilize leverage  
- Bet on the management team |
| **Minority Equity Investment**  | ![KKR](image3) ![Hilltop Energy](image4) | - Middle ground between active and passive investment  
- Capital typically used to delineate an asset  
- More limited governance but requires visibility to liquidity |
| **Preferred / Convertible Security** | ![GSO](image5) ![Chesapeake](image6) | - More debt-like returns  
- Mature assets more suitable, but early stage assets viable  
- Limited governance (negative controls)  
- Equity upside through conversion, NPI, ORRI, etc. |

- These are in addition to traditional energy focused PE such as Encap, NGP, Quantum, Kayne Anderson, etc.
Closing Thoughts
Key Market Insights

- Buyers are worn out from a very busy 2012
  - A lot on the market
  - To a great extent it is a buyer’s market

- Sellers have had an eventful year
  - Capitulation on gas price
  - Price expectations compared to observed world records
  - A very crowded market ruled by quality

- If you buy it you must also effectively run it
  - Key challenge is execution of large shale drilling programs
  - Bolt-ons must have synergies that can be realized
  - Corporate deals have the added challenge of employee attrition
Key Market Insights

- Great deal of upside in improved performance in the major shale/resource development
  - EUR per well increase
  - Drilling and completion cost per well decrease
  - Decrease in rig days per well
  - Decrease in time to hook up wells as midstream infrastructure grows
  - Operating economies of scale

- Midstream market will continue to be very active
  - Most plays are in very early stages of development
  - MLP structure is attractive to investors
  - Large MLPs by nature need to continue to grow

- Potential break through to cash flow positive for resource developments
  - Early shale developments are decidedly cash flow negative
  - This could provide upward equity re-evaluation for independents
Key Market Insights

- While many internationals have completed deals there are still other new entrants
  - Continued high appetite for energy deals of all types from most Asian countries
  - Ability to export U.S. LNG is part of Asian decision making

- Future natural gas price
  - How far, how fast can it rise?
  - Will decreased gas rig counts lead to decreased supply?
  - Will new sources of demand significantly impact gas price
    - Coal switching
    - Industrial uses
    - CNG/LNG for transportation
    - LNG export
Corporate M&A oriented around "natural deals"
- CNOOC and Nexen
- Petronas and Progress

E&P industry running at its peak
- People, $, management resources at peak

Finally, deal flow is expected to maintain its $75 - $100 Billion per year pace
- Still many companies too under capitalized to develop shale holdings
- Continued consolidation of the major plays
- Big potential for midstream as well as upstream deals
- Continued buyer demand to be matched with undercapitalized seller supply