South Australian Resource Exploration & Investment Conference

Energy Resource Investment Insights, 20 April 2016

Go to South Australia

DRILL A WELL

BINGO

SORTED

I CAN'T HELP FEELING YOU MAY HAVE OVER SIMPLIFIED OUR OBJECTIVES SOMEWHAT...

Barry Goldstein
Executive Director
Dept of State Development
South Australian State Government
• Low oil prices are reducing upstream petroleum investment world-wide;

• Capital constraints on development to convert reserves/resources to supplies pose risks for Eastern Australia’s gas supplies;

• No jurisdictions are immune. Effective investment /regulatory frameworks minimize pain. Oct-Dec ‘15 ABS statistics confirm petroleum exploration expenditure increased 1% in South Australia while total Australian petroleum expenditure fell 23.9%;

• High-graded oil and gas plays are still being explored – but at reduced rates;

• Cooper - Eromanga basins licence holders are re-positioning: All operators are reducing costs, reducing debts, reducing investment, some seek to exit up- and/or mid-stream. AGL and Origin have sold or seek to sell upstream assets;

• Organised opponents of resource development remain;

• Domestic gas market opportunities remain attractive but capital and demand constrained; and

• Implications of low oil price and uncertainty from Parliamentary inquiries / election commitments that imply or call for bans for oil and gas operations put efficient, objective-based regulation and justifiable multiple land use and at risk.
South Australia Cooper Basin Production

<table>
<thead>
<tr>
<th>3Q/4Q production</th>
<th>Volume</th>
<th>Gross A$ Sales</th>
<th>Calc’d A$/unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Gas</td>
<td>28.00PJ</td>
<td>A$159.07m</td>
<td>A$5.68/GJ</td>
</tr>
<tr>
<td>(incl Ethane)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crude</td>
<td>4.7million bbl</td>
<td>A$319.00m</td>
<td>A$67.87/bbl</td>
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<tr>
<td>Condensate</td>
<td>0.6million bbl</td>
<td>A$39.00m</td>
<td>A$65.00/bbl</td>
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</table>

2014/15 production

<table>
<thead>
<tr>
<th>Volume</th>
<th>Gross A$ Sales</th>
<th>Calc’d A$/unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales Gas</td>
<td>61.42PJ</td>
<td>A$329.8m</td>
</tr>
<tr>
<td>(incl Ethane)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crude</td>
<td>11million bbl</td>
<td>A$999.4m</td>
</tr>
<tr>
<td>Condensate</td>
<td>1.2million bbl</td>
<td>A$107.4m</td>
</tr>
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</table>

2013/14 production

<table>
<thead>
<tr>
<th>Volume</th>
<th>Gross A$ Sales</th>
<th>Calc’d A$/unit</th>
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</thead>
<tbody>
<tr>
<td>Sales Gas</td>
<td>53.60PJ</td>
<td>$253.4m</td>
</tr>
<tr>
<td>(incl Ethane)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crude</td>
<td>10.5million bbl</td>
<td>$1.316b</td>
</tr>
<tr>
<td>Condensate</td>
<td>1.4million bbl</td>
<td>$166.8m</td>
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</tbody>
</table>

Context: Price trends in decline bar domestic gas

Rig count in South Australia

20 jobs lost/gained in South Australia per US$1/b change in oil price.

Orders of magnitude more in the USA from larger base

Ex Gladstone, Australia LNG exports sold at ~15% of price for Brent Crude
Context – Comparative advantage from local gas supplies
(compiled by Core Energy under contract to DSD, 2016)

Source of Gas                  Pipeline tariff to Mount Gambier

Wallumbilla, Qld (CSG)         ~$4.00/GJ
Longford – Mount Gambier       ~A$3.04/GJ
Moomba – Mount Gambier         ~A$2.85/GJ
Katnook to Mount Gambier       ~A$0.55/GJ

• Clear comparative advantages come from local content / local supplies
• Local supplies add to security of competing gas supplies
• Pipeline tariffs are generally published. Q: is there sufficient competition?
Context – Gas price net-backs from ex-Gladstone LNG exports

LNG landed net-backs estimates (per FERC Feb 2016 for LNG in Asia & 0.77 US$/A$ on 13 April 2016)
US$5.10 to US$5.42 = A$6.62 to A$7.04 per gigajoule (GJ) for LNG in Asia (not realized)
- A$1/GJ for LNG vessel shipping
- A$2 to -4/GJ for LNG production in Gladstone, Qld
- A$1 to -2/GJ tariff for gas pipelines Moomba to Gladstone
A$3.04 to -A$0.38/GJ is a range for gas price net-back at Moomba’s gate that is not realized

Gas price net-backs based on existing ex-Gladstone contracts
~15% of Brent oil (US$44.69/barrel = A$58.04/barrel) for LNG ex-Gladstone on 11 April 2016
~ AUD8.71 per GJ for LNG ex Gladstone
- A$2 to -4/GJ for creating LNG in Gladstone
- A$1 to -2/GJ tariff for gas pipelines Moomba to Gladstone
A$2.71 to A$5.71/GJ is gas price net-back at Moomba’s gate exc’g LNG vessel cost

Buyers and sellers can usefully share uncertainty on oil price and forex where gas is sold as a percentage of a benchmark crude e.g. 15% of Brent
Comparison of existing commercialized competitor marginal cost of gas supply (ex-field).

Distilled from company announcements by Core Energy under contract to DSD in 2016

The est’d NT AU$/GJ covers a range of AU$6/GJ (Blacktip ex-field) to AU$7.50/GJ for the higher cost unconventional plays. Mereenie Field gas AU$/gj is est’d to be in this range AU$ 5.71 / GJ

US$/GJ avg in USA: 2.00 (13 April 2016)
US$/GJ: 2.61
AU$/GJ: 5.71 / GJ

- Cost and productivity are relentless challenges
- Gas liquids help economics
Relevance of Moomba to Cost of Gas Delivered to Sydney

- Higher cost gas to Sydney

Steve Mackie’s (Santos) mud map

Black Tip & Mereenie to Sydney via Moomba
- owing to less pipeline distance to Sydney, roughly $1.40/GJ lower delivered cost to Sydney

Black Tip to Sydney via Mt Isa
- higher cost gas to Sydney

Mereenie to Sydney via Mt Isa
- Higher cost gas to Sydney

23.5 pj gas storage recently sold for $1.78bln
~ 90 PJ gas storage capacity in Moomba’s Lower Daralingie Beds
Cooper – Eromanga Oil and Gas Plays

Oil – Conventional Plays, Eromanga Basin
Structural and structure-stratigraphic traps, sandstone reservoirs, coal & shale source. ~50% success finding avg 2+ mmbo recoverable in the term 2002 to 15. More to come

Gas – Conventional Plays, Eromanga Basin
Structural and structure-stratigraphic traps, Coorikiana sandstone reservoirs, coal & shale source. An emerging play

Oil & Gas – Conventional Plays, Cooper Basin
• Structural and structure-stratigraphic traps, sandstone reservoirs, coal & shale source (6.5 TCF produced – more to come)

Dry to Liquids Rich Unconventional Plays, Cooper Basin
• Basin Centre Gas Play (shale, siltstone, tight sandstone)
• Roseneath-Epsilon-Murteree (REM) shale / siltstone /tight sandstone play
• Permian (source rock) coal play with petroleum liquids
• Patchawarra (source rock) shale – coal play
• Deep coal seam dry gas play

Hundreds of TCF sales gas potential in unconventional plays
Cooper Basin Unconventional Resource Play Volumetrics
669 TCF C1-C5 Sales Gas-in-Place
80 billion C6+ Bbls Oil-in-Place

<table>
<thead>
<tr>
<th>Basic Data</th>
<th>Resource Play</th>
<th>South Australia</th>
<th>Queensland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prospective Area (km²)</td>
<td>7202</td>
<td>3169</td>
<td>4031</td>
</tr>
<tr>
<td>Ave Thickness (m)</td>
<td>114</td>
<td>90</td>
<td>31</td>
</tr>
<tr>
<td>Depth (m)</td>
<td>&gt;3000</td>
<td>&gt;3000</td>
<td>&gt;2600</td>
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<table>
<thead>
<tr>
<th>Physical Extent</th>
<th>Reservoir Properties</th>
<th>Reservoir Pressure</th>
<th>Oil/press</th>
<th>Oil/press</th>
<th>Normal</th>
<th>Normal</th>
<th>Normal</th>
<th>Normal</th>
<th>Normal</th>
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<tbody>
<tr>
<td>Porosity (%)</td>
<td>4 - 7</td>
<td>2 - 4</td>
<td>n/a</td>
<td>n/a</td>
<td>4 - 7</td>
<td>2 - 4</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Ave TOC (wt %)</td>
<td>n/a</td>
<td>2.7 – 3.5</td>
<td>68</td>
<td>68</td>
<td>2.7 – 3.5</td>
<td>68</td>
<td>33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2 (%) discounted</td>
<td>27 - 37</td>
<td>37</td>
<td>30 - 35</td>
<td>35</td>
<td>tbd</td>
<td>27 - 37</td>
<td>37</td>
<td>30 - 35</td>
<td>35</td>
</tr>
<tr>
<td>BGI (scf/rcf)</td>
<td>257</td>
<td>257</td>
<td>205</td>
<td>205</td>
<td>tbd</td>
<td>257</td>
<td>257</td>
<td>205</td>
<td>205</td>
</tr>
<tr>
<td>Thermal Maturity (% Ro)</td>
<td>2 – 3.5</td>
<td>2 -3.5</td>
<td>0.9 – 2.0</td>
<td>0.9 – 2.0</td>
<td>&gt;0.7</td>
<td>2 – 3.5</td>
<td>2 – 3.5</td>
<td>0.9 – 2.0</td>
<td>0.9 – 2.0</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Resource Estimate</th>
<th>Prelim deterministic Oil-in-Place (billion bbl C6+)</th>
<th>-</th>
<th>-</th>
<th>39.94</th>
<th>23.59</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>14.44</th>
<th>2.13</th>
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<tbody>
<tr>
<td></td>
<td>Prelim deterministic Sales Gas-in-Place (tcf C1-C5)</td>
<td>150.54</td>
<td>33.58</td>
<td>113.77</td>
<td>53.15</td>
<td>TBD</td>
<td>208.49</td>
<td>36.80</td>
<td>67.28</td>
<td>5.03</td>
</tr>
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</table>
South Australia’s petroleum investment and regulatory frameworks ranked world-class

Key steps:

• Sustain an efficient/effective, trustworthy one-stop-shop for approvals/regulation;

• Skilled professionals regulate to simultaneously meet community and investor expectations;

• Pragmatic tenure over extensive resource plays (in Petroleum Retention Licences, PRLs) versus contestable investment with surrender required for under-spends. This aligns with time to appraise and develop new plays. Enables flexibility for expenditure profiles;

• Reduced PRL fees by 35% over the 4-year term from 1 July 2014;

• 5 year deferment of royalties for gas produced from unconventional reservoirs;

• Development investment counts towards minimum exploration and appraisal expenditures when oil $\leq A$70 per barrel. Aligns with low price settings;

• Publish market analysis and play size/attributes to inform the public and investors; and

• Government funded infrastructure (e.g. roads, airports, more) under consideration to foster productivity while construction costs are in decline in Australia
Barry Goldstein
Executive Director
Department of State Development
South Australian State Government