Dymaxion Surface to in-seam Drilling

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Surface to In-Seam Drilling

SIS Drilling Locations in the Bowen Basin

South East Queensland Petroleum Tenements

LEGEND
- Gas Field
- CSM Gas Field
- Gas Pipeline
- Oil Pipeline
- ATP - Application
- PL - Application
- ATP - Granted
- PL - Granted

- Surface to in-seam
- Vertical production well
- Cavitation well

PRINCIPAL TENEMENT HOLDERS
- Arrow
- Samson / Sunshine
- CH4
- Mosaic
- OCA / Origin
- Queensland Gas
- Santos
- Tipperary
- Other

Mitchell DRILLING CONTRACTORS
Surface to In-seam Overview

- Well Schematic
- Equipment
- Innovations
Multipurpose mineral exploration rig used for SIS Drilling
Surface to In-Seam Drilling

Surface to In-Seam Rig showing auto rod loader in operation
Surface to In-Seam Drilling

Data Acquisition While Drilling (DAWD) Screen
Surface to In-Seam Drilling

3” DX Oilfield grade drill pipe
Surface to In-Seam Drilling

Hybrid 96mm PCD Bit
Surface to In-Seam Drilling

Geo Steering Tool Operator
Surface to In-Seam Drilling

EM Survey Instrument
Moranbah Gas Project

- Overview
- Drilling sequence
- Equipment
Drilling Sequence

• Drill & complete vertical well: Rig 8
• Precollar horizontal wells to ~100m, run and cement surface casing: Rig 11
• Drill radius bend 100 – 300m: Rig 7
• Drill in-seam section, intersect vertical well, run polyethylene liner: Rig 4, 10
Surface to In-Seam Drilling

Moranbah Gas Project Vertical Rig
Surface to In-Seam Drilling

Moranbah Gas Project SIS Rig
Surface to In-Seam Drilling

Running polyethylene liner
Surface to In-Seam Drilling

Flaring from production well
Surface to in-seam costs / statistics

- Vertical Wells
- In-seam Wells
### Surface to In-Seam Drilling

**Table 1: Vertical well penetration rate and well cost**

<table>
<thead>
<tr>
<th>Shifts to complete</th>
<th>hole depth (m)</th>
<th>m/12 hour shift</th>
<th>Approximate cost /well</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>300</td>
<td>100</td>
<td>$ 50,000</td>
</tr>
</tbody>
</table>
# Surface to In-Seam Drilling

## Table 2: In-seam penetration rate

<table>
<thead>
<tr>
<th>Radius Bend 5 7/8”</th>
<th>In-seam to 1000m</th>
<th>In-seam 1000m - TD</th>
<th>Penetration rate decrease past 1000m</th>
</tr>
</thead>
<tbody>
<tr>
<td>m/12 hour shift</td>
<td>m/12 hour shift</td>
<td>m/12 hour shift</td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>170</td>
<td>110</td>
<td>36%</td>
</tr>
</tbody>
</table>
### Table 3: Horizontal well statistics

<table>
<thead>
<tr>
<th>Well depth</th>
<th>In-seam distance</th>
<th>Target intersection runs</th>
<th>12 hour Shifts to complete well</th>
<th>Approximate cost / well</th>
</tr>
</thead>
<tbody>
<tr>
<td>1400</td>
<td>1100</td>
<td>&lt;2</td>
<td>26</td>
<td>$ 185,000</td>
</tr>
</tbody>
</table>
New Technology

- Soilmec G-55
- American Augers DD140
Soilmec G-55
Self Contained Mud System
Soilmec G-55 Features

- 1200m production hole (8”) capacity
- 2000m+ Dymaxion SIS capacity
- Range 3 drillpipe
- Range 2 casing
- 40” table opening for LD holes
- Self contained mud system
- Automatic rod handling
Surface to In-Seam Drilling

Rig 125 – American Augers DD 140
DD 140 Features

• Depth capacity ~3000m
• 120mm+ hole size capacity
• Oilfield drill pipe allows wider range of hole designs
• Self contained mud system
• 10° to 60° drill angle
CBM in far away places

- Rig 114, UDR 1500, on location Central India
CBM in far away places

- Digging mud pits
CBM in far away places

- Day Shift Crew
CBM in far away places

- MDC crew participating in local “festival of colours”