Access to Infrastructure: A new approach for the North Sea

10th of May 2012
James Paton
In the UKCS lack of access to suitable infrastructure is increasingly becoming an impediment to further development.

Through this presentation we:

- Assess the magnitude of the problem and forecast the trend going forward.
- Diagnose why this such a challenging issue.
- Propose a potential solution.
- Discuss funding issues related to such a model.
Who are we?
Who are we?

- ADIL was established in May 2006 and is independently owned by the founding directors.
- We provide a full field development service to the oil and gas industry from well appraisal and conceptual engineering through to project execution, operations and decommissioning.
- We now have ca 100 experienced people and currently manage development projects for clients with capital expenditure in excess of £2bn. We have delivered two fields from conceptual stage to first production.
- We have a broad client base and aim to maximise value for our clients by managing risk, solving problems and taking full ownership of project delivery.
- We have worked for clients on both sides of the infrastructure divide so we understand the problems faced by both the owners of existing infrastructure and the third parties trying to tie in.
Some of our clients

Dana Petroleum (E&P) Limited

Bridge Energy

TAQA

Maersk Oil

Faroe Petroleum

E-On

Valiant Petroleum

BG Group

AFREN

Xcite Energy

Premier Oil

Ithaca Energy

Talisman Energy

Vattenfall
Hub Analysis
Assumes high gas prices and ignores economic cut offs to give a technical potential

UKCS RESOURCE TECHNICAL POTENTIAL – 60 billion boe

20 billion boe potential
## Ownership Changes & Fragmentation

### 2004: 78 companies

<table>
<thead>
<tr>
<th>Tier 1</th>
<th>BP</th>
<th>Total</th>
<th>Shell</th>
<th>ConocoPhillips</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;1000mmboe</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 companies</td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Tier 2B</th>
<th>BP</th>
<th>Total</th>
<th>Shell</th>
<th>ConocoPhillips</th>
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</thead>
<tbody>
<tr>
<td>200-1000mmboe</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 companies</td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Tier 3</th>
<th>Apache</th>
<th>Marathon</th>
<th>OMV</th>
<th>SIE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-200mmboe</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34 companies</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Tier 4</th>
<th>Ithaca</th>
<th>Carizzo</th>
<th>Gas-Union</th>
<th>CalEnergy</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10mmboe</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 companies</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Tier 5</th>
<th>Volantis</th>
<th>Almwell</th>
<th>Veritas</th>
<th>Holywell</th>
</tr>
</thead>
<tbody>
<tr>
<td>No developed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tier 6</th>
<th>GTO</th>
<th>Echo</th>
<th>Mahona</th>
<th>Target Geodata</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tier</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>85.5%</td>
<td>14.5%</td>
<td></td>
<td>0.5%</td>
</tr>
<tr>
<td>2011</td>
<td>64%</td>
<td>36.1%</td>
<td></td>
<td>1.6%</td>
</tr>
</tbody>
</table>

- **Reserves with Tier 1&2 companies:**
  - 2004: 85.5%
  - 2011: 64%

- **Reserves with Tier 3&4 companies:**
  - 2004: 14.5%
  - 2011: 36.1%

- **Tier 4**
  - 2004: 0.5%
  - 2011: 1.6%

The assets have changed hands, but the hubs haven’t.
But by 2020, the areal coverage of “live” hubs appears to shrink to less than 50% of the area containing prospects or discoveries.

Some 3000 mmboe would remain “unassigned” to hubs and would require either standalone development or extended hub sweep.
HUB ANALYSIS EXAMPLE: 26\textsuperscript{th} LICENCE ROUND v 2020 HUBS

Which 26\textsuperscript{th} Round prospects and discoveries offered most export options as we head towards 2020?
CONCLUSIONS

- Gaps opening up particularly in the OMF, the CNS, and large swathes of the Gas Basin. This is a different issue to tax/exploration activity and requires a different approach centred on costs, collaboration, ownership …. maybe tax

- Estimate 40% to 50% of outstanding of future resources (E&A) may not be covered by 25 km hub catchment

- A new export strategy is needed to compensate for the forecast loss of hubs and to increase the options for the recovery of up to 3000 mmboe.
New development in the North Sea – is time running out?
Why is access to existing infrastructure problematic?
Two views of the world

- Company Objectives
- Risk
- Worth
- Distraction
- Complexity
- Capacity - water & gas compression
- Decommissioning
Two views of the world

- Company Objectives
- Risk
- Worth
- Distraction
- Complexity
- Capacity - water & gas compression
- Decommissioning

- Uncertainty
- Value
- Speed
- Company Objectives
How can we resolve these issues?
Traditional view

Stranded
Looking in a different direction (1)
Looking in a different direction (2)

Enhanced capabilities/facilities for new & old
Has this been done before?
Independence Project

Field Facts
- 10 anchor fields
- Resource potential of over 2 TCF
- Water depths over 9,000’
Applicability to the UK

HW study carried out for ADIL shows that there are numerous clusters of fields which could support an “independence style” hub if they joined forces.
What needs to be overcome to help this happen in the UKCS?
The challenges

- Complexity
- Fear
- Misalignment
- Conflicting Interests
Ideal elements

- Simplicity
- Trust
- Alignment
- Common Interest
The Solution

A simple and secure methodology to maximise Owners’ value

- Risk free sharing of confidential data
- Unfettered assessment of data and information
- Addresses technical and commercial aspects
- Delivers an optimised, costed, offtake solution
- A fair, transparent and equitable commercial framework
## Process

<table>
<thead>
<tr>
<th>Action</th>
<th>Proposal/Approach</th>
<th>Data in from Field Owners</th>
<th>Screening Appraisal</th>
<th>Decision Gate</th>
<th>Full Appraisal</th>
<th>Decision Gate</th>
<th>Select</th>
<th>Decision Gate</th>
<th>Define</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Approach to Field Owners</td>
<td></td>
<td>Appraise/High level screen of SORs</td>
<td>In depth appraisal</td>
<td>Select transport and processing route</td>
<td>Align with ADIL DDP</td>
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<tr>
<td>Technical</td>
<td></td>
<td></td>
<td>Assess: • Maturity of information • Reserves • Compatibility • Commerciality • High level potential concept(s)</td>
<td>Assess: • Reserves • Constrained profiles • Concept options • Risk evaluation • Project schedule • Cost ± 50% • Indicative service</td>
<td>• Reservoir modelling • Concept studies • Route survey(s)? • BFOP • BOD • PEP • Assess hosts for onward transport/processing • Project schedule • Cost ± 30% • Regulatory engagement</td>
<td></td>
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</tr>
<tr>
<td>Commercial/BD</td>
<td>Gauge interest • Set out parameters</td>
<td>Request: • Profiles • Description of development • Composition data • Service request • Timescale • Corp goals and drivers</td>
<td>• Evaluate commercial models • Outline Tariff Agreement</td>
<td>• Contract strategy • Assess long lead items • Refine Tariff Agreement</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Funding</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>Assurance</td>
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Some rules

Field Owners

- Spirit of compromise from each Field Owner
- Prejudice and past confrontational behaviours left behind
- Full and complete data deposited
- No gamesmanship or field to field negotiations

“Honest Broker”

- No sharing of field confidential data with other Field Owners
- No taking of licence interest
- Each operator to have a seat on an Executive Board
- Maximum value of collective – no axe to grind
- We win if everyone wins
Has ADIL done anything like this before?
Nov 2009 – Feb 2010 independent gas hub designed to accommodate up to 4 subsea tie-backs in diverse ownerships (ADIL had no licence interest)

- Funding agreed in principle
- Tariff offer made to Field Owners; eventually declined as one party decided to go to existing infrastructure
Who should own and fund the new infrastructure?
Owning and funding

- All of the field owners?
- One or more field owners?
- Fully independent of licence interests?
ADIL looked closely at funding for independent infrastructure in 2009/2010 and has continued to test the market.

- Enthusiasm for funding a utility model of ownership.
- Mixture of debt and equity based funding was available in principle.
- Attraction for funders was mixed portfolio risk and opportunity for upside.
In summary
Set overall market context and provided a measure of the scale of the opportunity.

Diagnosed why this is such a challenging issue for those owning infrastructure and those seeking processing and transportation services.

Proposed a solution that addresses the current challenges and obstacles and would facilitate additional development in the UKCS.
Any questions?