Unlocking marginal fields
UKCS opportunity

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**UKCS – the big picture**

**Infrastructure**
- 5,000+ wells
- 250+ subsea systems
- 3,000+ pipelines
- 250 fixed installations

**Production (boepd)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
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</thead>
<tbody>
<tr>
<td>2014</td>
<td>1.4 million</td>
</tr>
<tr>
<td>2015</td>
<td>1.6 million</td>
</tr>
<tr>
<td>2016</td>
<td>1.65 million</td>
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**Resources**
- 43bn Produced
- 10bn Remaining potential
- 20bn

**Developed**
- 6.3bn boe
- Developed, or under development

**Oil and Gas Revenues**
- ~£20bn gross revenue
- >£330bn corporate taxes since UKCS began

**Supply chain**
- ~£30bn turnover
- 60% UK
- 40% Exports

**Costs**
- Unit costs down by nearly 30%
- Average unit operating costs have fallen from £18 per barrel in 2014 to an estimate of £13 per barrel in 2016

**Unsanctioned Discoveries**
- 3.4bn boe
- Currently not being pursued

**Jobs**
- 330,000 jobs in the UK
- Delivered through or supported by upstream oil and gas activity

**Active basin with significant future potential**
Production and discoveries

- **UKCS**
  - Production increasing but need to sanction reserves

<table>
<thead>
<tr>
<th>Year</th>
<th>Discovered and appraised</th>
<th>Sanctioned</th>
<th>Produced</th>
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</thead>
<tbody>
<tr>
<td>2013</td>
<td>143 Mmboe</td>
<td>458 Mmboe</td>
<td>514 Mmboe</td>
</tr>
<tr>
<td>2014</td>
<td>72 Mmboe</td>
<td>157 Mmboe</td>
<td>511 Mmboe</td>
</tr>
<tr>
<td>2015</td>
<td>150 Mmboe</td>
<td>342 Mmboe</td>
<td>566 Mmboe</td>
</tr>
<tr>
<td>2016</td>
<td>300 Mmboe</td>
<td>65 Mmboe</td>
<td>582 Mmboe</td>
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**UKCS production increasing but need to sanction reserves**
Development plans and decommissioning

Ongoing development discussions but growing risk of COPs

Project pipeline back to pre-peak levels

Post-2016, 50% of spend is sanctioned

Growing risk of COPs

Source: OGA
Unsanctioned discoveries

Ca. 350 discoveries, 3.4bn boe technically recoverable

70% are small (<10mmboe)

Various degree of technical challenge: e.g. heavy oil, tight gas, HPHT, fluid quality

150 discoveries unlicensed, 200 have fragmented ownership (>50 operators)

Largest near-term development opportunity in UKCS
Unlocking marginal fields

1. Clusters and collaboration
2. Infrastructure access
3. Licensing
4. Development efficiencies
5. Technologies
Clusters and collaboration

Significant “clustering” opportunities – Area development plans

Moray Firth – 43 discoveries in 11 potential clusters

CNS – 64 discoveries in 18 potential clusters

Source – OGA

**Individual Discoveries P50 Recovarable Volume**

**Impact of Clustering on Recoverable Volume**

Source – OGA

Cluster P50 Recoverable (mmboe)
Infrastructure access

~30 discoveries potentially suitable for ERD (0-5km)

~200 discoveries suitable for tie-back (<20km)

~120 discoveries would require **standalone** (cluster) developments

Incremental volumes can **extend life of host infrastructure**

Synergies with existing infrastructure
Licensing

**Alignment of license terms** (e.g. expiry, timing of commitments) to induce synergies (exploration and development campaigns)

**Licensing models** (from “cooperation” to “unitisation”) to facilitate joint area development plans

Focus on **relinquished licenses** and mature-area prospectivity as part of the **30th licensing round**. Comprehensive **data packages** on 150 unlicensed discoveries to be published by the OGA

OGA working with license holders and potential new investors
Design and execution efficiencies

- O&G UK Efficiency Task Force (ETF) initiative
- **Quick wins**: cost savings of 15-28%

“Lean designs” using industry standards
Immature & new technologies

**Efficient Tiebacks**
Existing technologies available including:

- Mechanical hot taps
- Mechanically connected pipe
- Modular spooled pipe systems
- Composite pipe

**Stand Alone Systems**
Key technologies identified:

- Unmanned Production Buoys
- Mini FPSO
- Subsea Storage
- Subsea Factory

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Focus on technologies to further reduce costs and extend reach

**Spooled Pipe - Image Courtesy of Airborne Oil & Gas**

**Zap-Lok Mechanically connected pipe - Image Courtesy of Cortez Subsea**

**Unmanned Production Buoy - Image Courtesy of OPB**

**Small scale FPSO - Image Courtesy of Amplus Energy**
OGA’s focus

Continue to promote Cluster and Area studies (E.g. in SNS, CNS, OMF)

Engage with operators to move area development forward

Leverage data for a successful 30th Licensing Round

Close collaboration with OGTC to fast track technology enablers

Support the work of industry bodies (OGTC, NSRI, ITF, O&G UK) on efficiency and best practices

The OGA proactively promotes marginal field opportunities