The UKCS: Transformation in progress

Andy Samuel and Robert Armour

April 2018
2014 - Crisis looming

UOC $30

Production down, PE 64%

Exploration all time low

No trust in fiscal regime

Lack of vision, leadership & strategic approach

Commercial vipers nest

Decommissioning headache

Many assets in the wrong hands

20th century technology

Governments thinking ahead

Public support from industry for Wood Review recommendations….but many sceptics in private
Establishing a new regulator

Wood Review recommendations

- Establish **new independent regulator** with new powers
- Focus on **maximising economic recovery**
- **Seven sector strategies** to set direction
- **Transform commercial behaviours** and realise 3bn boe extra potential

Creating the OGA

- April 2015 - OGA established
- March 2016 - MER UK Strategy
- October 2016 - Independent GovCo with new powers
Strategic approach

Sector Deal – Industrial Centres of Excellence

Transformational Technology
Underwater Engineering
Decommissioning

Strategies

Decom Asset Stewardship IM Technology

Guidance

MER UK Exploration EOR Supply Chain Tight Gas

New stewardship regime

TPA Sanctions Financial penalty Meetings Competition

Stewardship Expectations Tiered reviews Benchmarking Behaviours

Sector wide data

Wells/Decom Hackathons Projects lessons learned PE Unsanctioned discoveries pack RF UOC

www.ogauthority.co.uk
Fiscal competitiveness

- Petroleum Revenue Tax permanently reduced from 50% to 0%
- Introduction of new basin-wide Investment Allowance
- Supplementary Charge reduced from 32% to 10%
- Transferable tax history to give buyers certainty they can get tax relief for decommissioning at the end of field life

2 x £20 million for new geophysical surveys in 2015 & 2016 and £5m for exploration data in 2018

Fiscal packages of £2.3bn introduced 2015/2016 in line with “Driving Investment” principles

OGA promoting and the Treasury delivering on Driving Investment
Asset stewardship

Structured data rich approach founded on clear expectations

Proactive, structured and prioritised tiered reviews with operators to evaluate stewardship; priority given to the greatest MER UK impact

Single, annual UKCS Stewardship Survey replaced 9 previous surveys; reduces complexity, time, effort and burden on operators and the OGA

1. Joint Venture Hub Strategy
2. Exploration and Appraisal Subsurface Work Programmes
3. Optimum Use of Subsurface Data
4. Licence Activity, Decision Points and Milestones
5. Robust Project Delivery
6. Production Optimisation
7. Information Management
8. Technology Plans
9. Collaboration
10. Planning for Decommissioning
Exploration & licensing – new approach

- Summer 2016: Second Government-Funded Seismic Shoot
- End 2016: Introduction of New Flexible Innovate Licences
- 19th June 2017: Release of Undeveloped Discovery Data Packs
- 19th July 2017: Release of Regional Maps and Exploration Datasets
- 22nd August 2017: 30th Round Technology Event with OGTC
- 21st November 2017: 30th Round Application Deadline
- End November 2017: Launch of Seismic Data to Support the 31st Licensing Round
- Q4 2017-Q1 2018: Licence Application Assessments (OGA/BEIS/HSE)
- Q2 2018: 30th Round Licence Awards & Announcement of 31st Round
- Ongoing: OGA Management of Exploration Portfolio

Highly encouraged by 30th Round applications
Technology

Focus areas

<table>
<thead>
<tr>
<th>Technology focus by area</th>
<th># technologies from operators plans</th>
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<tr>
<td>Exploration</td>
<td>New prospects, Derisk discoveries, Near-field exploration</td>
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<td>Development complexity</td>
<td>Heavy oil, HPH, Tight, Flow assurance, High water production, Thin reservoir</td>
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<td>Development efficiency</td>
<td>Wells, Tie-back, Standalone facilities</td>
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<td>Asset management</td>
<td>Production, Integrity, safety and, Increase recovery, Opex efficiency</td>
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<tr>
<td>Decommissioning</td>
<td>Well P&amp;A, Facility</td>
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Examples

- Unmanned buoy
- Versatile Production Unit Production club

Deployment

- Inspection drones
- Corrosion under insulation inspection

- Asset integrity technologies extend asset life and reduce Opex
- Advanced inspection technologies piloted in UKCS last summer
- MER UK Award nomination (Total)
- Wells plug and abandonment nearly 50% of decommissioning cost
- Breakthrough technology piloted in the UK (Centrica)

Thermite P&A (Interwell)
Big on data

Improved well data quality

- Improved knowledge of wells ownership
- Improved data compliance
- WONS data cleansing
- More accurate reporting

- 5,268 attributes corrected
- 1,343 wells updated

National Data Repository

- New NDR a first for the UK
- OGA at the heart of data transformation
- Backed by industry
- Huge value from access to timely, transparent petroleum data
- Launch early 2019

Using it differently

- 36.5m spatial server requests
- Frontier basins research with academia
- Unlocking opportunities
- Applying machine learning to well data
- New Open Data site
  - View it
  - Map it
  - Chart it
  - Download it
  - Share it

OGA at the heart of data transformation
‘Collaboration’

Commercial

Area Plans

Supply chain

Industry-owned
Focused
High value creating

Supply Chain Action Plan (SCAP) process facilitates and demonstrates that operators are:

Delivering maximum value from project activity

Delivering FDP and decom programme commitments

Contributing to TVA through supply chain engagement

Use of powers

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<th>As at 31st March 2018</th>
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<td><strong>Successes to date</strong></td>
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<td>OGA Powers</td>
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Still brick walls – so moving from generic to targeted support
Decommissioning

Cost distribution

- Target: £39bn
- P10: £44.5bn
- P50: £59.76bn
- P90: £82.7bn

Gross forecast decommissioning expenditure (£bn)

- Majors
- Others

- Five companies’ assets amount to 50% of total decom costs

Dashboards benchmark industry estimates

- Encouraging industry to share lessons learned
- Promoting innovation and collaboration
- Update report on annual progress

Industry approach

- Cost decrease over £1bn on Brent
- Halved cost of wells P&A
- Average cost per well <P10 compared with the current NNS OGA P50 benchmark of £3.6 million

Major prize to deliver
New Benchmarking

**Outlook**
“*The efficiency of resource progression*”
- Exploration
- Use of Seismic data
- Reserves replacement
- Recovery factor benchmarking

**Operating**
“*The efficiency of exploiting developed reserves*”
- Production efficiency
  - OPEX/UOC
- Measurement & Allocation inspections
  - Decommissioning

**Behaviours**
“The culture in which Operating and Outlook are framed”
- Data Compliance
- Technology
- OGA commercial case register
- Deloitte’s supply chain collaboration
- OGA Collaborative behaviour tool
- OGA Levy payment punctuality

The Foundation
Exploration

Exploration KPI Score

Exploration Facts

✓ The cost of drilling exploration wells is at its lowest rate for seven years.

✓ Well success rates have recently averaged around 50%.

✓ Over 100 new prospects have been generated from the 30th round.

Top 20 Producers

Over 2/3rd of Top 20 producers are exploring in the UK

Operated Wells and Licences in a 2015-2017 timespan

Exploration KPI =

- Wells Drilled
- Volumes Discovered
- Planned Wells
- Licences Applied For
- SE-03 Compliance
- Well Commitment Compliance
- Frontier Acreage Position
58% of production in developed fields was replaced by increases to reserves last year.

0.3B boe produced from existing fields.

0.06B Boe of reserves added from approved fields.

69% of UKCS 2017 production replaced by reserves.

Impressive performance from existing fields but more developments required.
Resource Progression

Reserves Replacement

- Infield Reserve Growth: Total = 0.7B boe
- Reserve Reductions: Total = -0.4B boe

Recovery factor

Seismic expectation compliance

- 31% Compliant
- 69% Non-Compliant

Field Quality Index vs. Recovery Factor

Recovery factor

Individual companies

Oil Field Volume Gap %
Reserves Replacement

New Field Approvals

0.06 B Boe of reserves added from approved fields

Significant volumes in the UKCS project pipeline

UKCS Project Pipeline

Development Cost /boe

- 0-20 MMBboe
- 20-50 MMBboe
- 50-100 MMBboe
- 100+ MMBboe

FDPA FDP

Highest recent Sanction Cost

Short Term
- 0.06 B Boe of reserves added from approved fields

Medium Term
- 1.5 B boe

Longer Term
- 1.1 B boe
- 1 B boe

Time to first oil
Behaviours

Data Compliance

- Data Compliance KPI Score (Out of 16)
  - Overall CDA Well Data Completeness Score: 3 to 4
  - CDA Well Data Completeness for Recent E&A Wells Score: 1 to 4
  - CDA Digital Logs Completeness Score: 1 to 4
  - Stewardship Survey - Diligence Score: 1 to 4

Collaborative Behaviour Tool

OGA View, Operator’s View

- Openness
- Reasonable
- Accommodating
- Learning
- Respect
- Strategic
- Average Change

Technology

- R&D Spend as a percent of operated revenue
  - Graph showing leader, fast follower, informed buyer

Commercial Case Register vs Relative Size of Operations

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<th>Operator</th>
<th>Cases</th>
<th>Licences</th>
<th>Production</th>
<th>Case Register Index</th>
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Overall CDA Well Data Completeness Score: 3 to 4
CDA Well Data Completeness for Recent E&A Wells Score: 1 to 4
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Stewardship Survey - Diligence Score: 1 to 4

43% of Tier Zero Operators reported no R&D spend

“Leader”
“Fast Follower”
“Informed Buyer”
“Right assets, right hands”

Right Assets Right Hands
- OGA flexible and enforcing MER UK Strategy
- Infrastructure Code of Practice underpinned by powers

Access to Infrastructure
- Contracting strategies, standardise and simplify

Cost Reduction
- Working with finance and investment community

Lack of Capital
- Access to Infrastructure

JOA Misalignment
- Facilitation and standardised agreements and processes

Divestment Packages
- Area hubs and strategy synergies to help optimise asset packages

Fiscal Regime
- OGA issued cost norms and benchmarking

Decom
- Improvements to fiscal terms, including late-life assets

The OGA does not provide endorsements or investment recommendations. Some transactions are still subject to OGA and other regulatory consideration, their inclusion on this slide is not an indication of the outcome of that consideration.

In 18 months – 31 deals, over $20bn
## Industry performance

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*Note that 2018 figures are predictions*

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*provisional data*

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<td><strong>Unit operating costs ($)</strong></td>
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*provisional data*
## OGA/Tripartite performance

257 success stories to end March 2018 recorded across the OGA, in partnership with industry and government

### Tripartite barrels mmboe
- **1576**

### New barrels added mmboe
- **973**

### Protect existing barrels mmboe
- **603**

### Costs mitigated £m
- **601**

### Value of investments £bn
- **2.9**

### Time saved to industry (fast-tracked consents) days
- **3450**

### From recovery factor
- **0.9 bn**

### From Area Plans
- **4 bn**

### Yet to find
- **2-6-9 bn**

---

And we can go further with potential combination from...

![UK Oil and Gas Production Projections/Scenarios](chart.png)

- **Additional 2.8 bn**
- **Additional 0.9 bn**
- **Vision scenario**
- **Vision 2035 baseline**
- **Mar-15**
- **Feb-18**

---

Days

- **3450**
Thank you
Questions to consider
What has to change to keep the UKCS vibrant through the Energy Transition?

A greater role for gas?
What is the UKCS competing against?

- Other basins?
- Clean energy?
- Itself/own behaviours?
Questions to consider

What is the priority? How can we balance maximising economic recovery with preparing for a low carbon future?
What is important for delivering Vision 2035?

What more can the OGA do to enable further value creation?