the offshore decommissioning market in the North Sea

- the decommissioning market – present & future
- the industry role for Decom North Sea
North Sea decommissioning activity

- developing decommissioning market
- ~7% of facilities removed to date with varying conditions and complexity
- estimated £400-500m annual spend, and rising
- supply chain capability developing

“coming soon”
- BP Miller, Valhall
- Marathon Brae
- CNR Murchison, Ninian North
- Hess Fife, Flora, Angus, Fergus
- Perenco Leman
- and others
some market observations

- many forthcoming projects will be “firsts” for their respective operators
- decommissioning projects have largely been “one-offs”
- limited opportunity for learning and knowledge transfer
- decommissioning cost estimates continuing to increase
- early contractual experiences not always happy - for operators or contractors
- industry now genuinely seeking more co-operation and innovation
- some new technologies needed
the task / opportunity ahead

- Over 500 fixed installations in production & a greater number subsea
- Over 50,000 kilometres of pipelines in place & over 10,000 wells
- Maybe a $100bn decommissioning cost

UK
362 platforms
(44 > 40 yrs old)

Norway
107 platforms

The Netherlands
84 platforms

Denmark
30 platforms

Others
~ 5 platforms
projected decommissioning spend in UKCS - the longer term

Potential Decommissioning Expenditure
$70/bbl and 40p/therm
Hurdle: Real NPV @ 10% / Devex @ 10% > 0.3

Source: Prof. Alex Kemp, University of Aberdeen
total decommissioning spend in UKCS 2012–2016 - approx £4bn

Source: Oil & gas UK
£30 - 35 billion spend in the UKCS alone

- Pipelines Decommissioning: £1,800 (£1,550)
- Onshore Disposal: £850 (£720)
- Survey & Monitoring: £300 (£250)
- Subsea Structure Removal: £570 (£500)
- Project Management: £3,070 (£2,500)
- Decommissioning Programme: £435 (£330)
- Operations: £4,380 (£3,450)
- Wells P&A: £4,950 (£4,000)
- Conductor Removal: £1,350 (£1,100)
- Topsides Cleaning: £1,480 (£1,250)
- Pipelines Cleaning: £780 (£650)
- Topside Removal: £5,300 (£4,300)
- Jacket Removal: £5,100 (£4,300)
- Subsea Structure Removal: £570 (£500)
- Survey & Monitoring: £300 (£250)

Values shown in £ millions (brackets denotes last year’s figures)

Source: Oil & Gas UK
285 fixed platforms are anticipated for removal over the next 10 years in the North Sea.

UK (160) and The Netherlands (90) will represent the largest market for fixed platform removal over the 2011-2021 period.

Source: Infield Systems
26 floating platforms are expected to be removed from the NWECS over the next 10 years.

UK (17) and Norway (9) are the only countries with floating platform due for removal over that period.
795 Subsea units are anticipated for removal over the next 10 years in the North Sea.

UK (551) and The Netherlands (230) will represent the largest market for the removal of subsea units over the 2011-2021 period.

Source: Infield Systems
Satellite Wells (548) will represent the largest share of subsea units removed within the North Sea over the forecast period.

 Templated wells will account for the second largest share, far behind Satellite wells with 111 anticipated for removal over the same period.
capacity issues?? – 2010 to 2020

growing decommissioning activity plus..........

capacity issues?? – 2010 to 2020

growing decommissioning activity plus..........

encouraging level of new North Sea developments

ongoing supply chain opportunities for international growth

plans for huge developments in offshore wind

early stage marine energy developments
opportunities for innovation

**mapping of hazardous materials**
- identification and quantification
- non-intrusive measuring techniques
- continuous monitoring techniques
- access and sampling techniques

**hydrocarbon free**
- improved flushing techniques
- reception, storage and separation
- industry standard for cleanliness

**legacy and monitoring**
- remote monitoring of remaining assets
- long term leach rates of drill cuttings
- accelerate degradation of footings

**removal**
- alternative methods
- jacket dismantling – near shore option
- concrete mattresses
- cutting technologies (incl. explosives)

**cleaning & waste management**
- mercury, asbestos, NORM
- chemical & non-chemical techniques
- qualification and verification

**well plugging and abandonment**
- alternatives to expensive rigs
- cutting technologies – verification
- barrier techniques – new materials
- the UK decommissioning market – present & future
- the role for Decom North Sea
strong industry support

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<th>2010/11</th>
<th>2011/12</th>
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<tbody>
<tr>
<td>year long consultation with industry – facilitated by Scottish Enterprise, Highlands &amp; Islands Enterprise, and Department for Energy &amp; Climate Change, involving:</td>
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<td>operators</td>
<td>contractors</td>
<td>website development</td>
<td>improved market intelligence</td>
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<td>marine &amp; logistics</td>
<td>onshore disposal</td>
<td>recruitment</td>
<td>more equitable remuneration models</td>
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<td>networking events</td>
<td>standard model for decommissioning plans</td>
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<td>our role in industry:</td>
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<td>o stimulate a vibrant, efficient and cost effective supply chain</td>
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<td>o secure maximum economic benefit from decommissioning expenditures</td>
<td>conferences</td>
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current initiatives – market intelligence

...trying to provide more reliable market intelligence

a workgroup of analysts from Decom North Sea, Oil & Gas UK, operators (including BP & CNRI) and major contractors (including Acteon Group & Wood Group PSN)

courtesy: Prof Alex Kemp, University of Aberdeen

Potential Number of Fields Decommissioning
$70/bbl and 40p/therm
Hurdle: Real NPV @ 10% / Devex @ 10% > 0.3

courtesy: Oil & Gas UK
current initiatives – assessing skills & training needs

- industry steering group from Falck Nutec, Wood Group PSN, Tyco Fire & Security, Mintra Training Portal and Petrofac Training
  - 12-15 individual interviews with experienced professionals
  - on-line survey of all Decom North Sea member companies
cross sector research - what can we learn?

nuclear
- first workshop in March 2011 - joint working with ITF and Scottish Enterprise
- second workshop 16 November 2011 in Glasgow – joint working with Nuclear Industries Association

salvage
- initial seminar in December 2010 - joint working with SUT
- second seminar on 6th December 2011 in London – again with SUT

potential synergies being identified and progressed
current initiatives - packaging of projects

promoting the benefits of :-

- spreading investment costs over more than one project
- encouraging collaboration and joint venturing
- achieving greater transfer of learning and best practice
- greater efficiency in the use of marine & lifting equipment, ports, yards etc