What happens after decommissioning?

An Onshore Perspective

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What happens after Decommissioning?

- **What happens after Decommissioning...?**
  - Onshore Operations are not AFTER decommissioning,
  - They are essentially the end of the Decommissioning process...

- **“Getting it to the Beach”...**
  ...is only part of the story...

Hopefully we can provide some insight into the onshore perspective.
Decommissioning – an Onshore perspective:

- **Background Information on Shetland Decommissioning**
  - Who we are, Where we are, What we’ve achieved

- **What can be done to Reduce Costs?**
  - Project Organisation and Optimisation
  - Effective / Efficient Waste Management
  - Re-use of equipment – the practicalities and opportunities

- **How are Shetland Decommissioning Integrating these ideas?**
  - Working with contractors/operators
  - Investigating infrastructure requirements
Background - Decommissioning Interest began in 1999

- **Market Development**
  - Established in 1999 to market and develop Decommissioning opportunity for Shetland
  - Contract award in 2005 from Aker Solutions and Total for the Frigg Cessation Project
  - Currently working on development & feasibility studies for Topsides, Jackets, Subsea & Single Lift

- **Operational Philosophy**
  to build on Best Industry practice to develop Shetland into a
  
  “centre of excellence”
  for Decommissioning

www.shetlanddecommissioning.com
Background - Company Stakeholders

- **Shetland Decommissioning**
  - The marketing name for a joint venture / cooperation agreement between PetersonSBS [PSBS] and Veolia Environmental Services [Veolia] with support from Lerwick Port Authority [LPA]

- **Stakeholders Today**
  - Peterson SBS Develop & Operate the Facility Providing Marine & Quayside Service
  - Veolia provide the Decontamination, Deconstruction, Waste Management & Environmental Services
  - Lerwick Port Authority Operate the Harbour
Background - Geography
Background - Geography
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Background - Geography
Background – Lerwick Harbour

- All Weather Port
- Open 24/7
- Over 3,000m of Quayside
- Excellent Freight Links with the UK Mainland
- Local Support Services with 30 years of Oil & Gas Experience
**Decommissioning Facility**

- Concrete Pad with impermeable membrane - covering an area of ~20,000 sq. m.
  - Includes Wash Bay, Bunded Storage, Quarantine Area & Emergency Stations

- The Pad is Fully Enclosed - all drainage leads to Class 1 Interceptor
  - Fully Licensed with PPC permit issued by SEPA
  - RSA authorisation approved for receipt, handling and temporary storage of LSA / NORM
Experience - Piece Small

- **Piece Small Operations**
  - Piece Small Decommissioning of platform MCP-01 started in 2006
  - The 1st Campaign ran from Aug-Dec 2006
  - This was completed in 2008 with the 2nd Campaign running through Jan-Dec 2008
  - The Greenhead Base acted as the forwarding supply for all of MCP-01 Logistics requirements
  - All piece-small Waste materials were processed through Greenhead
Experience – Large Scale Decommissioning Operations

● Load-in of TCP2 Module Support Frame
  • 8730 Te Structure – with grillage and trailers = 11,100 Te crossing quay
  • Months of preparatory Engineering and Construction works required onshore
  • 358 axle lines mobilised - Europe and America and Australia
  • Significant Barge works required in advance of operations – 3 weeks
  • Operations scheduled for specific date and tide conditions
  • Completed on Schedule and without significant incident or LTIs
Experience – Onshore Decommissioning

- **Decontamination & Deconstruction of TCP2 Module Support Frame**
  - **12 weeks of Decontamination works**
    - Establishing Safe Access, Detailed Inventory and finalising of the Deconstruction Plans
    - Handling: Asbestos, WEEE, NORM, Insulation Material, etc
  - **5 months of Deconstruction works**
    - Reduction by Machine maximised - Leihberr 984 + 19Te LaBounty shear
    - Hot-work & Pre-cutting required due to steel thickness (Up to 100mm)
  - **Full Environmental Accounting**
Waste Management – Indicative split of fractions

- Permitted Discharges
- Temporary Equipment Removed
- Hazardous Materials Recovered
- Non-Hazardous Materials to Landfill
- Hazardous Materials to Landfill
- Sale / Reuse of Materials
- Non-Hazardous Materials Recycled
- Recycling of Metals
- Non-Hazardous Materials to Landfill
Waste Management – Indicative Metal Recycling Breakdown

- Stainless Steel
- Copper
- Isolation Material
- Mixed Non-Ferrous
- Copper Nickel
- EE Waste
- Aluminium
- Titanium

Ferrous Metals ~94%
What can be done to Reduce costs and Environmental Impacts?

**Options for improvement/optimisation**

- Have a more integrated approach to the programme management of decommissioning from before CoP – not a staged approach
  - Engage the Onshore project team early in the design process to ensure Load-in and Deconstruction are taken into consideration
- Get actual characterisation data early – taking samples offshore, allows for more investigation into recovery options
- Plan the **Post Operational Clear Out** [POCO] phase based on decommissioning to optimise activities conducted offshore
- Full understanding of the programme work breakdown structure to remove duplication and smooth workflow
What can be done to Reduce costs and Environmental Impacts?

- **Effective/efficient waste management**
  
  - Link into POCO offshore – focus on waste: “Is this activity going to create a problem onshore?” Built into decom planning mind set
  
  - Plan activities so that cleaning only gets done once and the records are maintained and handed over to prove this
  
  - Only maintain during NUI what is needed to maintain safety, any equipment needed during lifting operations, access equipment and recognised items with an identified re-use/re-sale route
  
  - Offshore Sampling of wastes will enable more effective waste management planning
    
    - Allows Waste routes to be identified and fully costed – allowing for reduced risk exposure and hence reduced cost to client.
Re-use / Re-sale of Equipment – the practicalities

- **Considerations & Obstacles:**
  - Oil & Gas Industry does not generally want 2nd hand equipment
  - Equipment from Decommissioned platforms may be 20-30 yrs old
    - and hence can be out-moded / obsolete or at the end of its design life
  - Lack of Maintenance from CoP to Onshore
  - Lack of certification for equipment when it arrives
    - No maintenance or No certification = low value or lack of interest
  - Value of equipment vs. the Logistics of retrieving the equipment.
    - Cutting access holes to extract the equipment deep from a structure
    - Rigging and Crane requirements for extraction
    - HSEQ issues
    - Delays to deconstruction programme from performing extraction
    - If you try to extract during deconstruction you introduce men to the workface and HSE issues
  - Must be wary of storing these items “in the garage” for a rainy day…
Re-use / Re-sale of Equipment – opportunities

- **Opportunities:**
  - Specialist equipment can command high re-sale value if the buyer can be found
  - Opportunity to provide RARE spares for older equipment in service on other platforms / fields
  - Re-use of concrete structures should be investigated wherever possible
    - The energy requirements for recovery / recycling are excessive
    - Re-use opportunities as Marine foundations or similar presents excellent added value to Waste hierarchy
How are Shetland Decommissioning Integrating these ideas…

- **Marketing our Capabilities to the industry**
  - Taking a proactive approach to integrating onshore disposal into the decommissioning design process
  - Forming collaborative relationships with operators / contractors
    - Develop infrastructure investment process over several projects
    - Programme certainty is key to the development of facilities and stimulating the market to rise to the challenge

- **Optimising our Onshore solutions to client and contractors’ specific requirements**
  - Identified and Investigating Development options for future projects
  - Be it Subsea equipment, Piece Small materials, Modular receipt or Single Lift
The Future – Potential Infrastructure Developments
The Future - Study works & Development Options - Animation
The Future - Study works & Development Options - Animation

Existing
Development option - South
The Future - Study works & Development Options - Animation

Development option - North
The Future - Study works & Development Options - Animation

Development option – North
Phase 2 – extend to -20m
The Future - Study works & Development Options - Animation
The Future - Study works & Development Options - Animation
The Future – Uncertainties

- **The Uncertainties:**
  - Market Timing – Projects always slip to the right...

- These uncertainties hinder investment.
Integrated Approach – to Project Design & Programme Management

End of Field Life, Decom preparations & Hook-down,

Early inclusion of the Onshore team can allow optimisation

“Getting to the Beach…”
...is only part of the story.

Offshore Removal & Marine Transport Methodology

Ignoring Onshore concerns can only add cost

Uncertainties add Risk & Cost

Onshore Decommissioning Requirements
(Facilities and Methods for Decontamination & Deconstruction)

Programme Coordination

Onshore Infrastructure & Transport requirements
(quay, ground strength, trailers, cranes, skids etc)
Thank you – any Questions

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