



Peter Booth  
Senior Technical Director

International Knowledge Transfer

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# Some of the challenges faced by the nuclear industry

## Let's go back a decade or so.

- NPP's operating lifetime starting to come to an end.
  - New NPP's required.
- Skills shortages.
  - Ageing workforce.
  - No new build in the UK for decades.
- Waste volumes building up.
  - Increased surface storage.
  - LLWR capacity was starting to run out.
  - No ILW/HLW and Spent Fuel repository.
  - Concerns about contaminated land being classed as "waste".

# Some of the challenges faced by the nuclear industry

- Research
  - Research fairly minimal and relatively uncoordinated.
  - No real “owner” for research.
- Trust
  - Limited back end solutions to the fuel cycle.
  - Safety and health concerns.
    - Waste stockpiles.
    - NPP’s.
    - Plutonium.
    - Leukaemia clusters.
  - Lack of transparency due to secrecy.
  - Lack of stakeholder engagement.

# Some of the challenges faced by the nuclear industry

## Some of the detail within these challenges

- Historic facilities were not built with decommissioning in mind.
  - Many plants share services and infrastructure.
- Detailed waste inventories and drawings often not available.
- Some sites have potentially significant volumes of contaminated land and groundwater.
  - Characterisation and assessment required to allow management strategies to be justified and approved.
- NIMBY syndrome very real for deep geological disposal.
  
- General perception that UK plc was not making forward progress, especially with respect to legacy issues.

# Roll the clock forward

- NPP's operating lifetime starting to come to an end.
  - ONR/EA – GDA process.
  - Horizon (E.ON and RWE) and NuGen (GDF SUEZ and Iberdrola).
  - E.ON and RWE decision to pull out of Horizon may lead to further delays!
- Skills shortages.
  - National Skills Academy.
  - National Nuclear Laboratory.
  - Increased university nuclear related courses and research.
- Waste volumes building up.
  - NDA encouraging utilisation of the waste hierarchy.
  - LLWR have constructed Vault 9.
  - More VLLW being sentenced to landfill.
  - RWMD moving forward with their programme.
  - Volunteer communities for deep geological disposal sites exist.

# Roll the clock forward

- Research examples
  - NDA invest in and oversee research.
    - Direct Research Portfolio (DRP).
    - University Research and Development Programme.
    - Statement of Intent (SOI) with USDOE.
  - ONR have a nuclear safety research programme – includes overseeing licensee research.
  - EA conduct research.
  - UK involved with international programmes.
  - £15m put aside for collaborative nuclear research.
    - Governments Technology Strategy Board, NDA, EPSRC, DECC .
  - Dalton Cumbrian Facility - NDA and University of Manchester.
    - Irradiation facilities, computer modelling etc.
    - Academic access to NNL facilities at Workington and Sellafield.

# Roll the clock forward

- NDA commenced duties on 1<sup>st</sup> April 2005.
- NDA role being to deliver the decommissioning and clean-up of the UK's civil nuclear legacy in a safe and cost-effective manner, and where possible to accelerate programmes of work that reduce hazard.
- UK's nuclear waste agency Nirex integrated into the NDA in April 2007.
  - Deep geological disposal work now within the Radioactive Waste Management Directorate (RWMD).
- NDA have a series of bilateral agreements where information is exchanged – JAEA, EDF, NAGRA, ANDRA, USDOE etc.
- The historic UK government oriented organisations have been split up.
  
- NDA produces Business Plans – key challenges set out.
- SLC's have Lifetime Plans – key challenges set out.
- New site licence companies established with Parent Body Organisations .

# Parent Body Organisations

Sellafield Ltd – PBO is Nuclear Management Partners Ltd, a consortium of URS, Amec and Areva.

Magnox Ltd – PBO is Reactor Sites Management Company Ltd, owned by Energy Solutions.

Dounreay Site Restoration Ltd – PBO is Babcock Dounreay Partnership, a consortium of Babcock International Group, CH2M HILL and URS.

Research Sites Restoration Ltd – PBO is UKAEA Ltd, owned by Babcock International Group.

LLW Repository Ltd – PBO is UK Nuclear Waste Management Ltd, a consortium of URS, Studsvik, Areva and Serco.

Springfields Fuels Ltd - PBO is Westinghouse Electric Company, a subsidiary of Toshiba.

Great potential to bring in international expertise!

# Are the key challenges different today?

## NDA Strategic Themes

- Site Restoration - restore our designated sites and release them for other uses.
- Spent Fuels - ensure safe, secure and cost-effective lifecycle management of spent fuels.
- Nuclear Materials - ensure safe, secure and cost-effective lifecycle management of our nuclear materials.
- Business Optimisation - create an environment where existing revenue can be secured, and opportunities can be developed against criteria agreed with UK Government and the Scottish Government.
- Critical Enablers - to provide the stable and effective implementation framework that enables the delivery of our mission.

# The Workshops

- General perception that UK plc was not making forward progress, especially with respect to legacy issues.
- PBO competition process has facilitated transparent and healthy competition, and enabled the international community to play a part in the UK's nuclear industry.
- The PBO provides\*:
  - The vision for the SLC in line with the NDA Strategy;
  - Key personnel to be seconded into the SLC to provide the leadership, innovation and management support to the SLC to deliver best value for money whilst maintaining high safety, security and environmental standards;
  - Knowledge and expertise in culture change and performance management; and
  - A reservoir of talent in the parent organisation(s), wide experience and a skill base to be deployed as appropriate.

# The Workshops

- Reaching back into the parent organisations will hopefully allow the PBO's to bring into the UK tried and tested approaches from overseas which will;
  - Further increase safety.
  - Assist in the acceleration of D&D activities.
  - Resolve some of the long standing legacy issues where previous progress has been minimal.
  - Bring in systems of work and management approaches which facilitate smarter working and decreased costs.
- SAFESPUR has put together two interlinked workshops;
  - The first is intended to highlight examples of where international learning has provided benefit to the UK's nuclear industry.
  - The second will aim to discuss some of the research and/or internationally proven services and approaches that has potential to provide benefit to the UK's nuclear industry.

# Summary

- The UK's nuclear industry faced (and still faces) many varied challenges.
- Today the industry is very different in terms of;
  - Its structure.
  - The need to be financially more efficient.
  - A greater coordination of activities.
  - A real desire to accelerate decommissioning activities and resolve legacy challenges.
- Increased research, innovation and technology application from outside of the nuclear industry as well as from overseas is being applied.
- The aim of these two interlinked workshops is to;
  - Highlight examples of where international learning has provided benefit to the UK's nuclear industry.
  - Discuss some of the research and/or internationally proven services and approaches that could continue to assist this process.