

Strategic Technical Baselines for UK Nuclear Clean-up Programmes

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Report Documentation Page

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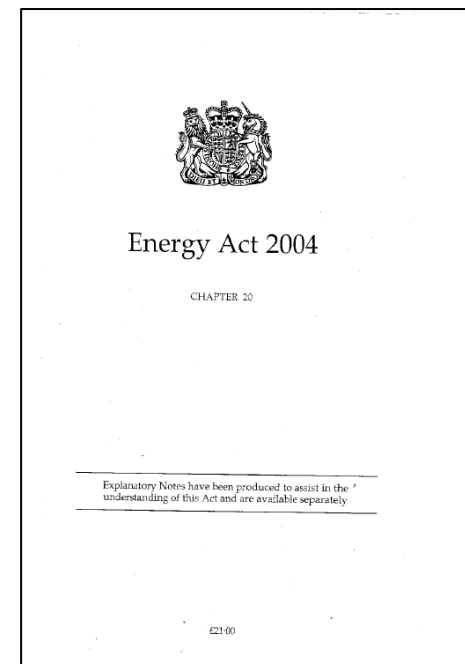
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Outline

- Background to NDA and our responsibilities
- Context of issues and challenges
- NDA approach to Technical Underpinning
 - Technical Baselines
 - Technology Readiness Levels
 - R&D needs, risks, opportunities
- Progress to date and way forward

Background

- NDA established by Government in April 2005 to:
 - Safely clean up the UK civil public sector nuclear legacy with due regard to the environment and socio-economic issues
 - Ensure that current commercial operations are run safely and efficiently on behalf of UK taxpayer



Statutory Duties – Energy Act 2004

- Ensure legacy is dealt with safely, securely and cost effectively in ways that protect the environment
- Promote competition in the decommissioning and clean up market
- Carry out Research & Development related to decommissioning
- Ensure maintenance & development of decommissioning skills
- Promote good practice and secure value for money
- Promote and encourage innovation

Context

Diversity of challenge



An aerial view of the Dounreay site as it was in the late 1970s.

Sellafield, Cumbria



Lifetime plans

Challenge:

- Meet the obligations in the Energy Act
- Provide structured approach for investment in “R&D” to ensure technical solutions are the most appropriate
- Consistent method for measuring performance of contractors
- OUR APPROACH....

Issues - complexity



Our Approach

- Technical **B**aseline and **U**nderpinning **R**esearch and Development **D**ocuments (TBURD)
- Underpin the short, medium and long-term activities and highlight any gaps
- Based on Technology Readiness Levels (TRLs) as compiled by our SLCs; site to site and not project to project
- Builds on existing good practice but NDA approach more site specific

Technology Readiness Levels

- 9 Actual System Proven through technology application
- 8
- 7 System prototype demonstration in an operational environment
- 6
- 5 Component and/or bench validation in relevant environment
- 4
- 3 Analytical and experimental critical functions - characteristic proof of concept
- 2
- 1 Basic principles observed and reported



Link to R&D requirements

- Systematic approach that provides an intrinsic link to underpinning R&D
- Decision and insertion points time-driven with visibility
- Highlight and grade the gaps
 - **Needs** required to underpin solutions
 - **Risks** required to reduce key risks
 - **Opportunities** innovations to the baseline
- Possible change to R&D similar to how TRL is measured and assessed for tracking progress

Progress to date

- Third cycle of TBURD production completed
- Consistent format – effective working
- Challenging budgets – challenging baseline technology
- Seeing common technical issues e.g. waste issues, materials characterisation
- Key decision points milestones
- Technology transfer interfaces SLC sites talking to other sites and exchanging/collaborating

Benefits to date

- Systematic process for underpinning - operational & decommissioning activities
- Consistent approach across all sites - common language across diverse situations
- Baselines are more robustly technically defined and risk and opportunities are visible
- Structured approach to technology investment to deliver what is needed and when
- Baseline for innovation and reward for success
- Method for sharing success

Way forward

- Need to look at applying Critical Technology Enablers
- Benchmarking against others to measure success and methods of operation i.e how do others do it
- Quantitative measuring of benefits realised by working/sharing with others in USA and worldwide
- Reward innovation through technical baseline - right commercial framework

WORLD CLASS