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International Decommissioning Planning and Cost Estimating Feedback

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Agenda

- Introduction
- Background
- Decommissioning Planning
- Waste Led Decommissioning Planning
- Decommissioning Cost Estimation
- Lessons Learned and Feedback
- Conclusions
- Q&A
Introduction

- Westinghouse involved in D&D for more than 40 years
- Decommissioning is an expanding market, continuously challenging suppliers to improve and evolve offerings
- Global projects with different boundary conditions and cultures, demanding high flexibility and ability to adapt
- Decommissioning planning critical for a successful project
Background

- Credible decommissioning planning to ensure:
  - Sufficient funding
  - Regulatory compliance
  - Waste disposal capacity
  - Logistical requirements
  - Waste route evaluation
- Starts several years before final shutdown

Do not underestimate the planning phase
Decommissioning Planning

• Main content of a decommissioning plan
  – General plant description
  – Plant characterization
  – Technical platform
  – Material & activity inventories
  – Waste handling
  – Waste volume estimates
  – Staffing during all phases
  – Decommissioning program
  – Cost estimates
Decommissioning Planning

- ... for funding
- ... for implementation
- ... for licensing
- ... for knowledge transfer
Decommissioning Planning

Important to include the complete scope in the planning.
Waste Led Decommissioning Planning

- Plan from Z to A
  - Start with waste disposition, end-state and waste acceptance criteria
Waste Led Decommissioning Planning

- Evaluate available waste routes:
  - Geological disposal
  - Landfill
  - External treatment (e.g. melting)
  - Free release

- Divide waste streams into proper categories:
  - Metal
  - Large components
  - Concrete
  - Incinerables
Waste Led Decommissioning Planning

- Start with a Decommissioning Waste Strategy
- All waste streams quantified and evaluated for each disposal route regarding
  - Cost
  - Risk
  - Environmental impact
- Include applicable decontamination, transportation and handling costs
Decommissioning Cost Estimation

- International Structure for Decommissioning Costing of Nuclear Installations (ISDC)
- Standardized list of cost items with related cost-item definitions
- Facilitates comparison between different decommissioning cost estimates
- Developed by OECD/NEA, IAEA and the European Commission
Decommissioning Cost Estimation

- The Basis of Estimate (BoE) is the foundation of a cost estimate
- The BoE describes:
  - Assumptions
  - Exclusions
  - Boundary Conditions
  - Starting point
  - End state
  - Scope
  - Uncertainty calculations
- Elements of a cost estimate
  - Project baseline estimate
    - Base Cost
    - Estimating Uncertainty
  - Risk
    - Funded (included)
    - Unfunded (excluded)
Lessons Learned and Feedback

- Planning with the end state in mind minimizes the risk of re-work
- Create a waste strategy early to identify and evaluate available waste routes
- A holistic view of the decommissioning program is necessary to avoid sub-optimizations
  - Do not look at separate scope individually
Lessons Learned and Feedback

• Using the International Structure for Decommissioning Costing (ISDC) facilitates understanding of and comparison between different cost estimates
• Experience from real decommissioning projects is invaluable for making a credible planning
• Decommissioning cost estimates should include actual cost experience
  ‒ Will lower contingency values and give more exact base costs
Conclusions

• Understand and include the complete scope of the decommissioning in the planning
• Plan backwards from the end of the decommissioning project
• Waste led decommissioning planning minimizes risk of bottlenecks and re-conditioning of waste
  – These are two of the major cost drivers in a decommissioning project
• Define the Basis of Estimate properly
• Incorporate feedback from actual costs into the estimate
Thank you for your attention!