Waste Led Decommissioning Methodology

Nuclear Technologies has used its extensive experience in dealing with legacy waste issues throughout the UK nuclear industry to come up with a robust, simple and proven methodology for the production of waste process maps (wiring diagrams).

Our methodology is based on the application of lessons learnt from a number of significant failings on large legacy waste projects and so we focus on developing approaches that identify uncertainty and risk at the earliest possible opportunity.

Our 'waste led' approach to the preparation of technical baselines is designed to ensure that the central focus of a waste processing project is the production of a compliant quality waste product. The site itself can be deemed a pile of waste awaiting to be processed, as shown in figure 1 below, therefore decommissioning can be brought into the overall waste process rather than treated as a separate entity.

These diagrams have proven themselves invaluable in conducting options studies and supporting BPEO/BPM/BAT assessments as they allow all options to be depicted in a consistent manner, thereby facilitating objective and fair options appraisal and scoring.

The detailed process wiring diagrams provide a comprehensive and readily understandable perspective of the technical baseline as they are produced to a standard and generic 'waste led' methodology which enables the reader to readily interpret the information and correlate it to other diagrams. The diagrams make use of a 'node' approach to defining a waste and decommissioning process as detailed in figure 2 below.

Each diagram details the flow of waste materials arising from either legacy waste remediation, decommissioning tasks or routine operations using a left to right, top to bottom approach. The diagrams are intended to indicate the progressive hazard reduction from current un-passivated status (red for radwaste, blue for non-radwaste) to eventual discharge of liabilities (green), and reflecting the overall safestore philosophy adopted for the sites' decommissioning.

The diagrams also highlight the numerous and complex interactions and interdependencies between projects and tasks. This approach clearly demonstrates that the sites' decommissioning strategy is robust and comprehensive. Clear identification of the interfaces is key to effective risk identification and management, thereby facilitating a high degree of predictability in scope, schedule and cost for all work areas.

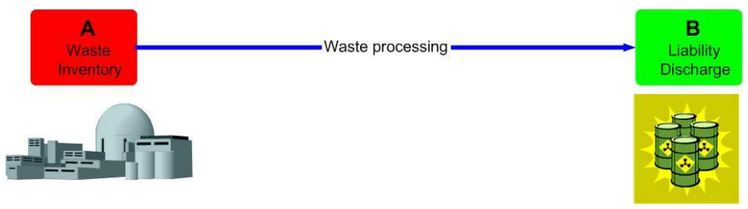

Figure 1—Waste Led Decommissioning Methodology

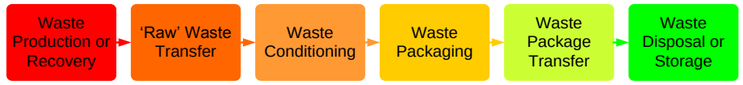

Figure 2— Node Approach

TBuRD and Process Wiring Diagram Examples

Nuclear Technologies have played a major role in the development and delivery of technical baselines since the requirement was introduced by NDA in LTP 2006/07. Specifically;

- NT produced the first TBURD diagram for Trawsfynydd for LTP 06/07, including the introduction of the 6 node wiring diagram methodology. This received top score in NDA assessment (121/128 points)
- For LTP 2007/08 NT were contracted to deliver a suite of TBURD's for Magnox North. These received a number of plaudits and were widely considered as a best practice exemplar
- NT have subsequently supported Trawsfynydd, Hunterston A and Chapelcross in annual iterations of their TBURD's
- NT supported NDA with advice and guidance in the development of revised TBuRD guidance EGG10, issued in April 2010
- In 2009 NT produced the NDA RWMD TBURD for the Geological Disposal Facility
- NT successfully supported Sellafield Ltd in the development of Technology Road Maps for the 2010 TBuRD submission. During this package of work NT worked closely with 19 of the 23 Programme areas to develop and produce the TRM. NT have therefore established technical contacts across all the areas and a detailed technical understanding of each area and the level of effort required to produce/update TRM.

- NT supported the B38 project team and Technical Directorate to establish a process for constructing the 2011 TBURD submission including TRM that can be applied to all the programme areas.
- NT supported EDF in the production of the Decommissioning and Waste Management Plan for Hinkley Point C EPR
- NT supported British Energy in the development of generic TBURD's for the AGR fleet and for the Sizewell B PWR in compliance with the revised NDA guidance.
- NT have undertaken a number of projects for clients in the recent past, where the production of a wiring diagrams has been integral to the delivery of the programmes of work. This has included:
- Production of the Sellafield B242 characterisation schedule.
- The alpha decommissioning improvements study, and development of an ALARP Tool.
- A concept study for the future treatment of Sellafield PCM wastes.
- An options screening study for the location of a PFR fuel casking facility at Dounreay, including fuel canister decontamination.
- Assisting the FGMSP STPTUP project with option screening to which we are applying wiring diagrams to help the understanding of the options amongst the technical community and broader stakeholders.

NT are the leading supplier of TBURD capability in the UK and have been instrumental in TBURD development and application across the majority of the UK nuclear industry."

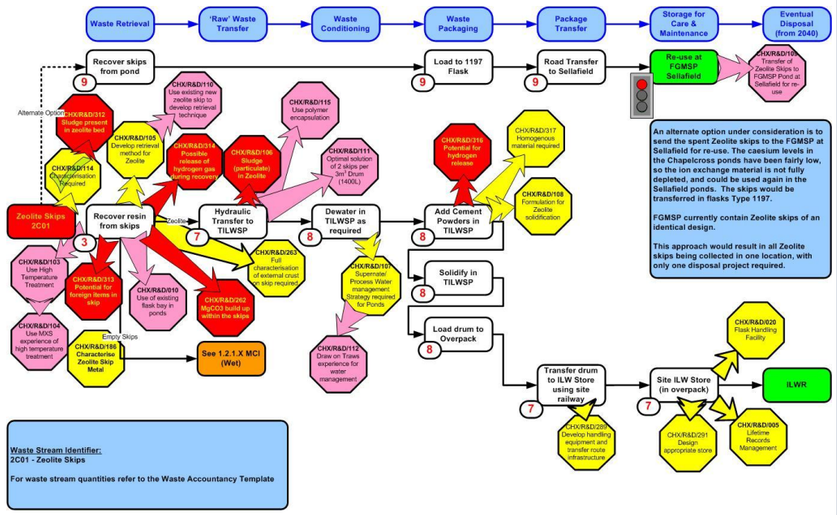

Figure 3—Example Wiring Diagram

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