

Strategic aspects on waste management in decommissioning of nuclear facilities

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ABSTRACT

A team composed of experts from the facility owner OKG, Westinghouse and Studsvik (today Cyclife Sweden and Studsvik Consulting) was asked to develop a basis for decision on an overall strategy for the management of the material and waste arising from the decommissioning of two BWR NPPs at the Oskarshamn site in Sweden.

To be able to provide a good basis for decision the full waste management chain from generation to disposition, i.e. clearance or disposal had to be assessed, categorised, quantified and analysed with regards to costs, environmental impact and risks.

A systematic approach was applied taking benefit of the decommissioning studies made previously for the two facilities, the decommissioning concepts developed by ndcon (the partnership in decommissioning between Studsvik and Westinghouse) and the combined knowledge and experience in the project team.

In total four different waste management concepts were compared individually and in combinations. The four concepts evaluated were based on

- direct disposal in the national geological repository,
- treatment of the waste for volume reduction and where applicable clearance in an external waste treatment facility
- decontamination and clearance in an on-site waste treatment facility
- direct disposal in a near surface repository at the NPP site

It was important to be able to compare the different options in a quantifiable way. Therefore the project team set up a matrix with parameters for the different options gained from the utility, the national waste management company, external vendors and the experience of the team. In this way a quantitative analysis could be done with the four different waste management options.

In addition to the quantitative analysis the team summarised decades of experience in radioactive waste management and decommissioning recommendations and risk analyses. Special attention was given to risk mitigation and redundancy in the waste management chain.

The development of an overall waste management strategy was the first critical task in the strategic planning. Using a waste led decommissioning approach this work has set the scene for the further strategic and overall decommissioning planning.

This paper will discuss the important aspects in the work to develop a state of the art waste management strategy for a safe, fast and cost efficient waste management in decommissioning. It will also contain reflections and give certain recommendations for decommissioning planning in general as well as an overview of some specific findings, results and recommendations from the actual project at Oskarshamn.