

Abstract for NKS decommissioning seminar

Title: Development and qualification of waste packages for SFR silo

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Abstract:

The Swedish repository for disposal of low and intermediate level radioactive waste SFR consists of four types of rock vaults. Intermediate level waste with the high activity concentrations will be placed in the Silo which is the vault designed for more than 90 percent of the total activity in the repository.

The Swedish nuclear industry has, based upon a common need, started a project to develop packages for scrap metal and other non burnable waste with activity up to 2 TBq per package and a surface dose rate of up to 500 mSv/h. NPP Ringhals has a special position since waste treatment of the PWR steam generators in Studsvik melting facility presently generates significant volumes of waste to be disposed in the SFR Silo.

A project team with participation of NPP Ringhals and Studsvik works with the design and qualification of a modern steel mould package with low weight and large inner volume that fulfils the requirements for disposal in the SFR Silo without requirements on composition or cementation of the waste. The resistance towards a fall from 9 meters and a pile of 42 mould with maximum load has been simulated in the package design phase to allow optimization of the package design.

A critical item is the request by Swedish Nuclear Fuel and Waste Management Co (SKB) to minimize the void (the free volume) in the packages. This must be done without negative impact on the pay-load. Intensive efforts are spend on finding materials with low density which not will have any negative impact on the long term safety or the waste material.

The presentation summarizes the main steps of the design and qualification of the new package.