Generic Design Concept for final Disposal of very low level radioactive Waste (UMICORE – Olen)

Financed by: NIRAS - ONDRAF

Client: NIRAS – ONDRAF - Belgian Agency for Radioactive Waste and Enriched Fissile Materials

Date: 2002 – 2003

Budget: € 40 000

Location: Olen, Belgium

Assignment:

The study develops a generic concept for the final disposal of very low level radioactive waste (VLLRW) at the Umicore site in Olen.
NIRAS used this generic concept as a basic evaluation framework of the disposal facilities proposed by Umicore.

Scope of Services:

- Radioactive waste management
- Aboveground waste disposal facilities
- Site selection criteria
- Design and exploitation criteria
- Multilayer barrier engineering design

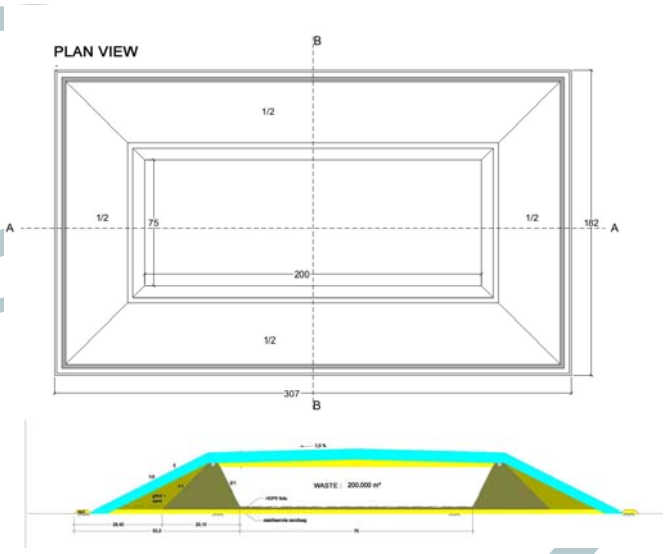
Technical Description:

In step 1 of the generic concept study a worldwide inventory of existing and future VLLRW disposal facilities is made. In close co-operation with NIRAS and SCK·CEN a generic concept in draft has been explored, based on this inventory.

In phase 2 of the study this generic concept is refined following requirements of rules and regulations valid in Belgium, the European Community, The Netherlands, France and Germany.

The final step defines general criteria for the site selection, the design and the exploitation. From that, a generic concept for a long-term managing period is developed.

Basically, the design is worked out with as many natural materials as possible. The final generic concept consists of an aboveground disposal, levelled up and based on a sand layer. The VLLRW and chemical waste is captured between natural radium emanation barriers, i.e. two clay dikes at the sides, drainage layer and clay layer at the bottom and an engineered cover layer.



Generic concept – Typical plan view & cross section

The generic concept is used by NIRAS as a base for the evaluation of the final disposal facilities proposed by Umicore.

The final disposal scheme for VLLRW forms an integrated part of the global restoration plan for the former radium production unit, operated by UMICORE at Olen. The restoration will be executed following the basic ideas of the generated scenario: a new repository will be constructed next to the IOK-UM discharge, the D1 dump will be excavated, the waste transported to the new repository and the D1 dump levelled up with clean soil.

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