

## Packaging MAETP IONSIV Cartridges

(Interim stage)

### Summary of Assessment Report

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#### **Background**

Magnox North has provided Interim stage proposals for the packaging of IONSIV Cartridges at Hunterston A in a form that will allow for their acceptance at a future disposal facility. The submission covers IONSIV Cartridges, which have arisen from the implementation of effluent clean-up processes at Hunterston Decommissioning site.

This document summarises the results of the assessment carried out by NDA Radioactive Waste Management Directorate for the Modular Active Effluent Treatment Plant MAETP IONSIV Cartridges. The assessment has been carried out using the Letter of Compliance process, whereby the disposability of the proposed waste packages by assessment against intermediate level waste (ILW) packaging standards and specifications and the Geological disposal concept. Further information on the Letter of Compliance process is available elsewhere<sup>1</sup>. The regulators' view is that packages conditioned in anticipation of geological disposal, and assessed under the Letter of Compliance process, will also be also suitable for long-term storage in accordance with Government policy in Scotland.

#### **Scope of the Proposals**

IONSIV is an ion-exchange medium which is used to selectively remove radioactive isotopes of caesium from liquid effluent waste streams. The IONSIV Cartridges are a component part of the Modular Active Effluent Treatment Plant (MAETP), developed specifically for effluent treatment use at the Hunterston Decommissioning site, prior to eventual discharge of the treated water to sea.

The packaging of the waste is expected to give rise to up to 4 off 3m<sup>3</sup> Box waste packages. The waste represents less than 0.005% of the total volume of waste being considered in the reference case for the Geological Disposal Facility. It is suggested that the proposals be considered as LOW priority under the current regulatory prioritisation scheme. The principal reasons for this judgement are the low significance of the inventory and relatively small volume.

#### **Packaging Proposals**

Following removal from service, it is proposed that the IONSIV Cartridges would be prepared for interim storage by conditioning and packaging in a standard container. The proposal is that one cartridge will be transferred into a ductile cast iron shielded 500 litre Drum and the unit immobilised with polymer. The drum would finally be overpacked into a standard 3m<sup>3</sup> Box and the voidage filled with cement grout. This approach is expected to lead to the production of 4 off standard 3m<sup>3</sup> Box waste packages.

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<sup>1</sup> Guide to the Nirex Letter of Compliance Process, Nirex Document WPS/650, June 2006.

## ***Assessment of Disposability***

The acceptability of the proposed packages has been assessed against criteria established for geological disposal and the associated Generic Waste Package Specification (GWPS). The proposed package has been found to be compliant with the requirements of the GWPS.

The Assessment of Disposability is based upon an inventory derived from sampling data supplied by Magnox North.

The assessment of Transport safety shows that it would be possible for packages containing IONSIV Cartridges to comply with all relevant transport safety criteria. This assumes that the packages would be transported in a Type B transport container (as defined by IAEA Transport Regulations), for example the Standard Waste Transport Container (SWTC).

Similarly, the assessment of Operational safety shows that it should be possible for the packages to be handled and stored safely within a Geological Disposal Facility.

The post-closure assessment has revealed no significant areas of concern that should prejudice disposal of packages containing MAETP IONSIV Cartridges.

## ***Future Development***

Having determined that the proposed waste product is, at this Interim stage, capable of being compliant with disposal requirements, RWMD have identified a number of issues that need to be incorporated within Magnox North's forward programme for Hunterston Decommissioning site to provide the level of evidence required for Final stage endorsement.

At the Final stage RWMD would expect to see the details of the proposals further developed and substantiated through the provision of evidence in the following general areas:

- Development of final data measurement and recording proposals;
- Compilation of a final Waste Product Specification.

## ***Conclusions***

The assessment has concluded that the proposed packages would be compliant with the Generic Waste Package Specification and safety and environmental assessments that support the Geological Disposal concept.

The use of a 3m<sup>3</sup> Box as an overpack for the ductile cast iron container provides a standard waste package for handling, transport and disposal, avoiding the need for special measures for just a small number of waste packages. The alternative option of making the case that the drum be considered as the disposal container could be considered if this was seen to be advantageous to Magnox North. Options might include maintaining a ductile cast iron design or adopting a shielded stainless steel design, as proposed for the associated MAETP post-filters.

It is concluded that the proposed package, based on a ductile cast iron 500 litre Drum, overpacked into the standard 3m<sup>3</sup> Box waste package can be endorsed as disposable through issue of an Interim stage Letter of Compliance.