

# Packaging of Harwell RHILW – Addition of RIPPLE Crate Waste

## Summary of Assessment Report

Issue date of Assessment Report: 12 March 2008

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### **Background**

In 1963, the Radio-Isotope Powered Prolonged Life Equipment (RIPPLE) project was set up by UKAEA to produce thermoelectric (RIPPLE X) generators. The generators used pure Sr-90 (as strontium titanate) for the power source. The production facility was subsequently dismantled and placed in “crates”. Two of the crates are the subject of this assessment and are understood to contain a glove box and a transfer tunnel.

UKAEA has tendered a submission seeking an extension to the Final stage endorsement of the packing of Harwell Remote-handled Intermediate Level Waste (RHILW) to allow the inclusion of RIPPLE crate wastes. This would also provide an extension to the Interim stage endorsement of the final encapsulation of Harwell Remote-handled Intermediate Level Waste (RHILW).

This document summarises the results of the assessment carried out by NDA Radioactive Waste Management Directorate (RWMD) in response to the submitted proposals. The assessment has been carried out as part of the Letter of Compliance process, whereby RWMD examines the disposability of the proposed waste packages by assessment against ILW packaging standards and specifications and the Geological Disposal concept. Further information on the Letter of Compliance process is available elsewhere<sup>1</sup>.

### **Packing proposal**

The ILW RIPPLE crate wastes are proposed to be transferred to a cell suite on the Harwell site for unpacking and assay. The waste would be monitored using a Geiger counter. The probe would be held around 4mm above the surface of the components as an initial check for any hotspots. It is anticipated that swabs would be taken and posted out for a gamma spectrometry analysis which should confirm that no other contaminants are present at significant levels. Following a decontamination process, it may be possible to assign components as low level waste, in which case they would be removed from the cell and stored prior to consignment to the LLWR.

The ILW RIPPLE crate wastes would be packed into Vertical In-cell Posting (VIP) can liners - stainless steel liners with a useable internal volume of 19 litres. Individual items would be size reduced or shredded as necessary to fit within the VIP liners.

Depending on the effectiveness of the decontamination effort, the waste is expected to occupy between one and ten VIP liners. The liners would be placed into VIP cans for transport to the RHILW head-end cells. On receipt, the liners would be emptied and the RIPPLE crate waste sorted and co-packaged with other RHILW. Empty VIP liners would be compacted and co-packaged with other RHILW.

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

## **Assessment**

This assessment is restricted in scope, limited to consideration of Action Points that were placed in the Conceptual stage Assessment Report. These Action Points have all been satisfactorily closed out.

The addition of RIPPLE crate waste to the Harwell RHILW would not affect the average or bounding radionuclide inventory. No additional chemo-toxic hazards would be introduced, and the assumed impact and fire release fractions would be unchanged. The case for transport to the Geological Disposal Facility, case for handling, emplacement and retrievable storage at a Geological Disposal Facility and case for post closure safety for Harwell RHILW<sup>2</sup> would remain valid.

## **Conclusions**

The assessment has concluded that the information provided is complete and shown to be adequate to enable closure of the Action Points raised at the Interim (Packaging) and Final (Packing) stages.

The proposal has been judged against the regulatory prioritisation scheme and the view of RWMD is that it be considered as LOW priority<sup>3</sup>. UKAEA is advised to seek the necessary interaction with regulators to confirm this position.

With the close-out of the Action Points, NDA RWMD has concluded that the proposed waste packages can be endorsed as an extension to the Interim (Packaging) and Final (Packing) stages for Harwell RHILW. Two Letters of Compliance will be issued.

No changes to the Harwell RHILW Assessment of Disposability are anticipated for these wastes.

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<sup>2</sup> Nirex, *Harwell Remote Handled ILW (RHILW) Interim stage Assessment Report*, NDA Document Reference #502218, July 2006

<sup>3</sup> *The Management of Radioactive Waste on Nuclear Licensed Sites – Part 1: The Regulatory Process*, Guidance from the Health and Safety Executive, the Environment Agency and the Scottish Environment Protection Agency to nuclear licensees, December 2007.