

Packaging of Metallic Scrap Retrieved from the Sellafield Magnox Fuel Storage Ponds

Summary of Assessment Report

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Introduction

Sellafield Ltd has sought Final stage endorsement of proposals for the packaging of metallic scrap retrieved from the Magnox Fuel Storage Ponds (MFSP) in the Wastes Encapsulation Plant (WEP) at Sellafield.

This Endorsement Justification Report provides the basis by NDA Radioactive Waste Management Directorate (hereafter RWMD) for the endorsement of the waste packages. It is based on a demonstration of compliance with the Standard Waste Package Description (SWPD) for 500 litre drum waste packages containing cemented metallic waste. Compliance with the selected SWPD indicates that the proposed waste packages are suitable for safe transport to and disposal in a Geological Disposal Facility (GDF).

Background

The waste to be packaged forms part of that described as UK Radioactive Waste Inventory Identifier 2D14. The specific wastes to be packaged and covered by this assessment are described as items of redundant plant and equipment resulting from operations in MFSP and that currently reside in the open ponds and wet bays of MFSP.

Waste Packaging Proposal and Scope of Assessment

The wastes comprise principally carbon steel and mild steel items contaminated by 'pond sludge' which mainly derives from the corrosion of Magnox fuel elements (both the fuel cladding and the uranium metal fuel). The total volume of all of the materials in the waste stream is ~250m³ of which it is assumed ~50% would be packaged as ILW and which would result in a total of approximately 1000 off 500 litre drum waste packages.

The proposed packaging approach involves the manual retrieval of the waste from the ponds, visual examination and, where necessary, segregation (to remove proscribed materials including any discrete pieces of fuel) and/or size reduction to allow emplacement into a scrap basket. When full each basket would be rinsed with demineralised water to remove excessive sludge adhering to the waste, and monitored to permit initial sentencing as LLW or ILW. If identified as ILW the basket would be checked for compliance with the conditions for acceptance for WEP. Following transfer to WEP the baskets would be placed directly into 500 litre drum waste containers, which would be backfilled with a specified cement grout. Following curing of this grout, a capping grout would be added and the drum lid fitted. Following curing of the capping grout the waste package would be decontaminated, monitored and exported to the Sellafield Encapsulated Product Store.

The assessment of the disposability of the proposed waste packages has been carried out by demonstrating their compliance with the selected SWPD. This defines a disposable waste package in terms of the specific design of waste container used, the physical, chemical and radiological characteristics of the waste, and the conditioning processes used.

Outcome of Assessment

The assessment has demonstrated that the proposed waste packages are compliant with all aspects of the selected SWPD and that the packaging of the waste does not raise any issues regarding the transport of the waste packages to, and their disposal in, a GDF.

Conclusions

The proposed waste packages can be endorsed as disposable through the issue of a Final stage Letter of Compliance.