

Assessment of Sellafield Ltd Responses to Interim Stage LoC Action Point B08/047 Silos Direct Encapsulation Plant Product Lifetimes Summary of Assessment Report

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Executive Summary

The Radioactive Waste Management Directorate (RWMD) endorsed proposals for packaging wastes from the Magnox Swarf Storage Silos (MSSS) at the Silos Direct encapsulation Plant (SDP) in July 2008, through provision of a Conceptual stage Letter of Compliance (LoC). The activities recommended for later stages of endorsement were summarised in the form of Action Points. The recommended development activities were formalised by Sellafield Ltd (SL) with RWMD's cooperation through individual Issue Resolution Strategies (IRS) which define the work required to address the Action Points. Formal closure of all interim stage LoC (iLoC) Action Points will be considered within the iLoC stage assessment. This Assessment Report provides the basis and findings of the assessment by RWMD of the deliverables for the Action Point B08/047. This Action Point was raised due to concerns over how the box and wasteform react to wasteform evolution/ageing stating the following:

Sellafield Ltd to work with RWMD to improve the prediction of when SDP packages challenge relevant acceptability criteria, including consideration of when/whether the container annulus should be filled and with what material, and to optimise the ullage space to accommodate wasteform expansion. Extend consideration of the effects of localised uranium corrosion to address the possible effects of uranium corrosion at the box base.

SL submitted the report 'SDP Product Lifetimes – RWMD Action Point B08/047 Close-out Report' with a number of references supporting that document for assessment by RWMD. A detailed review was provided by Ove Arup & Partners Ltd (Arup) against these activities with specific responses reproduced in Appendix A and Appendix B. It should be noted that RWMD value the work that has been completed as it has helped to focus on the ageing processes most likely to limit package disposability. RWMD does not require the resolution of each individual comment against the 30 activities but to address the five recurring key themes related to those activities:

1. Arguments need to be updated to be based on the SDP liner in-box concept;
2. Issues and queries concerning the definition of the design of the box modelled, application of finite element modelling, and definition of material properties/ characteristics need to be resolved;
3. Complete arguments are necessary to show that uranium corrosion will not threaten package integrity. In regards to the timing of annulus fill, late infilling of the annulus should be SL's default assumption in order to provide an opportunity for early bulk uranium corrosion. Justification would be needed for a case on early infill of the annulus;
4. There is a need to make a case that an aged package also results in a zero Release Factor (RF) during impact. There is unsupported claim of a zero RF for an impact involving a severely aged package;

5. There is a need to identify if and when stacking or handling ability will be affected by wasteform expansion.

SL and RWMD will need to work together to address these issues. Once these are addressed, RWMD will recommend that all the materials and findings of the assessments be used for the iLoC. SL should not attempt to address every individual comment/finding outlined in Appendix A and Appendix B.