

Packaging of Jet Decommissioning Wastes (Further Response to Conceptual stage)

Summary of Assessment Report

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Background

UKAEA has tendered a submission seeking Conceptual Stage endorsement for the packaging of the wastes that would arise from the decommissioning of the Joint European Torus (JET) experimental fusion reactor at Culham.

JET is an experimental fusion reactor based at the Culham site in Oxfordshire. The plant comprises the torus, a large-scale vacuum system providing magnetic confinement of the fusion plasma, and the associated facilities for storing, handling and retrieving the various gases, including tritium, that provide the reactants used to generate the reaction plasma. The torus and associated components are massive, and the total mass of the ultimately redundant plant comprises several tens of thousand tonnes. Only a small fraction of this mass would be sufficiently activated or contaminated so as to necessitate packaging for disposal as ILW, and is the subject of the assessment summarised here.

Packaging proposals

An extensive programme of dismantling and decontamination would be undertaken prior to the packaging of the waste. This would include the recovery of remaining bulk tritium for reuse or treatment elsewhere.

It is proposed that the wastes would be packaged into stainless steel 2 metre Boxes. In order to meet the requirements for the containment of tritium, it is further proposed that a fully sealed inner container should be used within each 2 metre Box. The design of the inner container remains to be fully developed, but it is proposed that it would be closed with a welded lid and would be lined and capped with a 20mm thick polymer coating. The waste itself would be loaded into the inner containers using any necessary furniture. The proposal would lead to the wastes being packaged with a dry, inert void-fill to reduce the voidage within the package, and UKAEA may introduce a polymer in-fill to further reduce the voidage within the packages. Some of the wastes would be additionally immobilised into smaller containers using a polymer encapsulant, if required.

Conclusions

The assessment concluded that the proposals would be expected to be consistent with disposal under the Phased Geological Repository Concept (PGRC) and can be endorsed at the Conceptual stage.

A number of Action Points have been raised which will require to be addressed as part of any Interim stage proposals for the waste.