

Interim Storage of Higher Activity Waste Packages

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Summary and Recommendation:

This paper provides a summary of the Interim Storage of Higher Activity Waste (HAW) Packages.

1. Background

In 2006, the Committee on Radioactive Waste Management (CoRWM) recommended to Government that a robust programme of interim storage must play an integral part in the UK's long-term management strategy for higher activity waste (HAW).

An integrated Project Team (IPT) lead by the NDA was formed, the first output from the IPT programme was published in August 2011 for a period of 'road testing'. Work on the Industry Guidance, involved a first-time collaboration between store operators across the nuclear industry and has led to the compilation of a comprehensive set of guidelines on the interim storage of HAW packages.

The NDA released in November 2012 Industry Guidance for Interim Storage of HAW Packages, intended for use by organisations and businesses involved in nuclear operations and decommissioning.

The guidance was compiled over three years and addresses wide-ranging technical issues associated with both storing the packages and the stores.

2. What Does the Guidance say?

The Guidance seeks to cover all the significant technical issues arising from interim storage of packaged HAW, be practicable in implementation, and relevant to all UK storage system designs.

The Guidance has four main sections which cover the key elements of a robust approach to interim storage.

1. package performance and design;
2. store performance and design;
3. operation of the storage system and
4. Provision of assurance of the system over an intergenerational timescale.

The Guidance, in line with UK and Scottish Policies and CoRWM recommendations, seeks to support NDA strategy that allows for the safe and secure storage for a period of at least 100 years.

The Guidance describes common principles and approaches covering the lifecycle of interim storage and variation in HAW properties and includes good practice guides and tool kits, as described in Appendix 1.

3. How will it affect Copeland?

Site licence companies will be required to use the guidance to ensure that the facilities are safe to store HAW for the next 100 years. Within the overall framework the priority at Sellafield is risk reduction by dealing with waste in ageing storage facilities and placing it into safer modern storage conditions.

The Council needs to ensure that the proposed guidance is implemented in any future proposed storage facilities.

It is also important to consider what the potential implications may be on any future Geological Disposal Facility (GDF) especially as the guidance states that the first barrier is the conditioned waste the second being the waste container. The HAW is likely to be placed in the repository in the same form as it has been stored for over 100 years. Therefore we need to ensure that Sellafield are implementing storage facilities that are robust and will be able to last 100 years.

Also as West Cumbria is considering hosting a GDF then we have an interest in the way that operators treat and store the HAW.

Appendix one: Summary of Interim Storage Guidance

(a) Six Principles:

| | | | |
|---|-----------------------------|---|--------------------------------|
| A | Cradle-to-grave lifecycle | D | Prevention is better than cure |
| B | Right Package ↔ Right Store | E | Foresight in design |
| C | Minimising waste generation | F | Effective knowledge management |

(b) 30 Good Practices concerning:

| | | | |
|----|--|----|---------------------------------------|
| 1 | Stakeholder engagement | 16 | Store design – environmental controls |
| 2 | Technical terminology | 17 | Store design – contaminants |
| 3 | Technical competence | 18 | Operational limits and conditions |
| 4 | Human factors | 19 | Import contaminant checks |
| 5 | Research and development | 20 | Minimising movements – opportunities |
| 6 | Peer groups | 21 | Package sentencing groups |
| 7 | Package designs | 22 | Maintaining contingency space |
| 8 | Package materials | 23 | Maintaining intervention plans |
| 9 | Maintaining transportability | 24 | Access to rework facilities |
| 10 | Package evolutionary processes | 25 | Extending store operational lives |
| 11 | Package care and management – controlled | 26 | Establishing system baselines |
| 12 | Package care and management – uncontrolled | 27 | Recording system performance |
| 13 | Local planning constraints | 28 | Monitoring and inspection rates |
| 14 | Store design – monitorability | 29 | Maintaining an archive |
| 15 | Store design – life-limiting components | 30 | Deployment of dummy packages |

(c) 26 Approaches concerning:

| | | | |
|----|---|----|--|
| 1 | Package Performance | 14 | Package Emplacement |
| 2 | Integrated Human Factors | 15 | Maintaining Package Safety Functions |
| 3 | Modifications to Existing Stores | 16 | Maintaining Environmental Conditions |
| 4 | Selecting Package Designs | 17 | Maintaining Store Life-limiting Features |
| 5 | Package Evolution and Assessment | 18 | Extending Store Lifetimes |
| 6 | Lifetime Package Care and Management | 19 | Baselining |
| 7 | Development of Outline Store Design | 20 | Monitoring and Inspection (Techniques) |
| 8 | Store Longevity | 21 | Monitoring and Inspection (Rates) |
| 9 | Environmental Controls | 22 | Archiving |
| 10 | Environmental Operational Limits and Conditions | 23 | Inactive Samples and Simulants |
| 11 | Package Movements – Import | 24 | Auditing |
| 12 | Package Movements – Operations | 25 | Knowledge Management |
| 13 | Package Movements – Export | 26 | Human Resources |

(d) 23 Toolkits concerning:

| | | | |
|----|--|----|---|
| 1 | Human factors | 13 | Non-physical package intervention |
| 2 | Basic container designs | 14 | Physical package intervention |
| 3 | Container materials | 15 | Environmental control changes |
| 4 | Encapsulants | 16 | Life-limiting component repairs |
| 5 | Package evolution models | 17 | Baselining |
| 6 | Packaging innovations | 18 | Sample types |
| 7 | Outline store designs | 19 | Package inspection and monitoring |
| 8 | Store life-limiting features | 20 | Environmental condition monitoring |
| 9 | Temperature and relative humidity controls | 21 | Monitoring life-limiting components – unshielded stores |
| 10 | Moisture controls | 22 | Monitoring life-limiting components – shielded stores |
| 11 | Contaminant controls | 23 | Monitoring and Inspection rate models |
| 12 | Microbial and animal controls | | |