

Long Term Access to Digital Records – The Challenge Facing Managers of Radioactive Waste

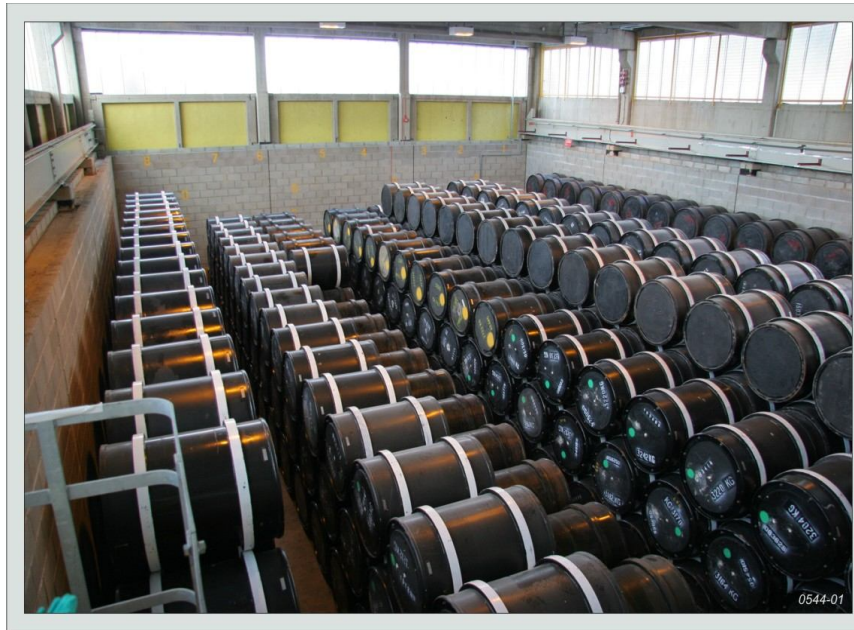
Ian Upshall
Information & Data Recording Manager



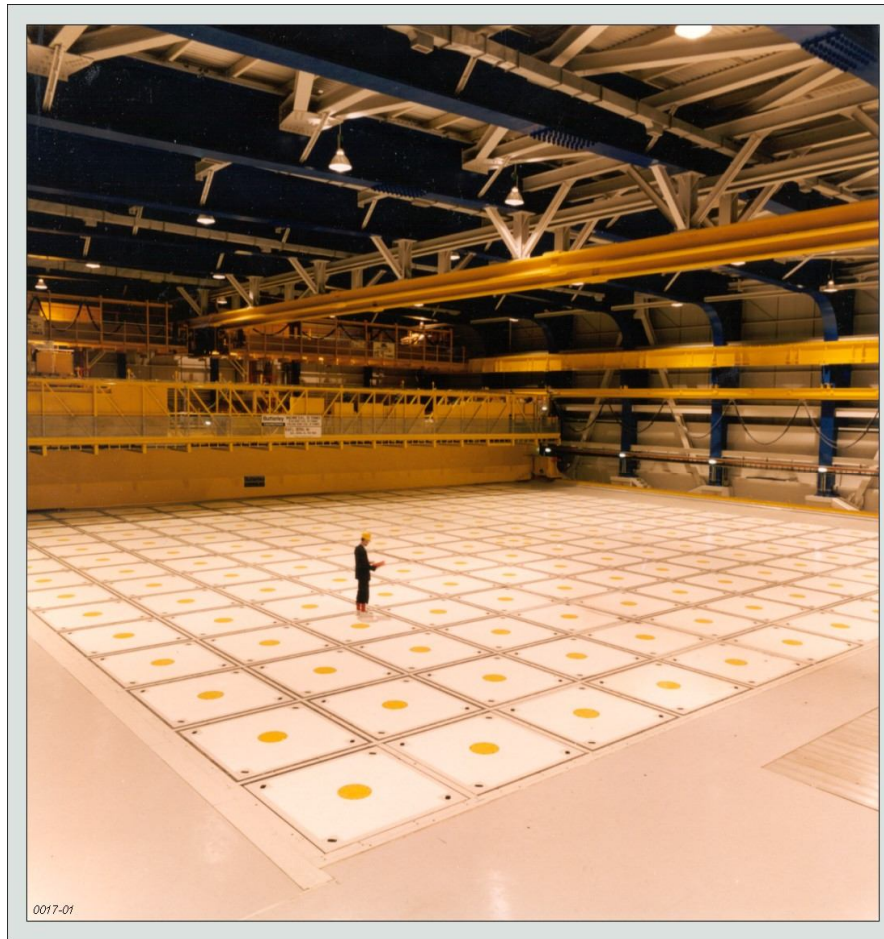
Radioactive Waste



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The Need for Waste Records

Strategic Needs

- **societal expectations**
- **regulatory expectations**
- **international reporting obligations**
- **government requirements**
- **national decision making**

Operational Needs

- **management of a hazardous material**
- **safety and quality assurance**
- **informing stakeholders**
- **operational decision making**

How Long is 'Long Term'?

Factors affecting record retention time:

- radiological impact of the waste
- repository oversight period
- regulatory requirements
- societal expectations

Potential record retention times:

- LLW: 50+ years after repository closure?
- ILW/HLW: 100-1000+ years after repository closure?

Recorded Information

Documents contain a combination of:

- **metadata**
- **contextual information**
- **tabulated data**
- **descriptive text**
- **references to other records**
- **photographic images and diagrams**
- **mathematic and scientific formulae**

Other records, including:

- **databases, spreadsheets, macros, software code, programmes (e.g. MS Project files), CAD engineering drawings**

Records Currently in Use

- **Hard copy records**
 - **paper (all qualities and types), microform**
- **Digital records**
 - **removable (magnetic and optical), online and offline**

(a typical waste package record will comprise a combination of these)

- **Other record media**
 - **material samples (rock, metals, concretes, polymers)**

Status of Current Records

- **waste records are generally co-located with the waste on the nuclear site**
- **few records are stored in recognised, managed 'archive' facilities**
- **some additional (contextual) records are held by non-waste management stakeholders**
- **some records are already up to 50 years old and may already be inaccessible using 'conventional' tools**
- **records directly associated with a specific item or activity may employ different media and file formats**

Guidance for Records Managers

- **IAEA Guidance Reports:**
 - **data requirements, media, management systems**
- **Regulator Guidance:**
 - **based upon IAEA guidance, UK specific**
- **Consultancies and SMEs**
- **Suppliers**
 - **archives, materials & equipment**
- **Nuclear Decommissioning Authority**
 - **policy, best practise, guidance**

Generic Challenges

Generic

- **timescales**
- **profligacy of records – particularly digital**
- **maintenance of provenance and authenticity**
- **transfer of responsibilities over time**
- **changing status – operational/historic/public**
- **‘physical’ access – security considerations**
- **‘informatic’ access:**
 - **readability, intelligibility, usability**
- **changes in language and terminology**

Digital Record Challenges

Specific

- **transferable and sustainable file formats**
- **managing explicit digital links**
- **accurate transfer of complex objects:**
 - **CAD drawings, photographs, video**
- **quantity of recorded information**
 - **impact on search and find**
- **post-creation digitization**
 - **potential loss of provenance and links**
- **digital record media management**
 - **quality, validation, change control**

CAD Example

Historic

- **2D based repository design application**
- **e.g. use of AutoCAD**

Contemporary

- **Building Information Management (BIM)**
- **3D object-based**
- **multiple interconnected supporting databases**
- **change control and 'audit trail'**
- **maintaining the links 'up and down'**

What is Needed

- **internationally recognised ‘digitisation standards’ for strategies and file formats**
- **recognition of long term implications**
- **guidance on best practise**
- **guidance on ‘what not to do’**
- **‘simple’ and ‘complex’ digital record strategies**
- **cooperation and support that transcends time and organisational structures (national and international)**

Current Projects

- **development of regulator guidance on records management**
- **development of a National Nuclear Archive (NNA)**
- **consideration of the merits and potential difficulties associated with the implementation of a National Nuclear Network (a UK WAN)**

Thank You



NDA