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Decommissioning of Nuclear Facilities

Record keeping

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Lesson Objectives

- **Identify issues associated with the establishment of a records management system**
- **Explain the process for selecting appropriate decommissioning records, the document types and hierarchies**
- **Describe the various records media types available to users for record keeping purposes**
- **Describe lessons learned and concerns relevant to record keeping for, during and from the decommissioning process**

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Introduction

- Records are generated at each step in the design, operation, shutdown and decommissioning of a nuclear facility
- Many of the records are important to the safety and cost efficient planning for decommissioning
- The early development of a systematic approach to records management to support decommissioning is important
- Numerous lessons learned have been developed that indicate the necessity of an effective records management system



RMS - The Record Management System

- Comprehensive
- Flexibility for future subsystems
- Ease of use
- Efficiency
- Redundancy
- Documented
- Future use
- Compliant with regulatory requirements



RMS - Management Responsibilities

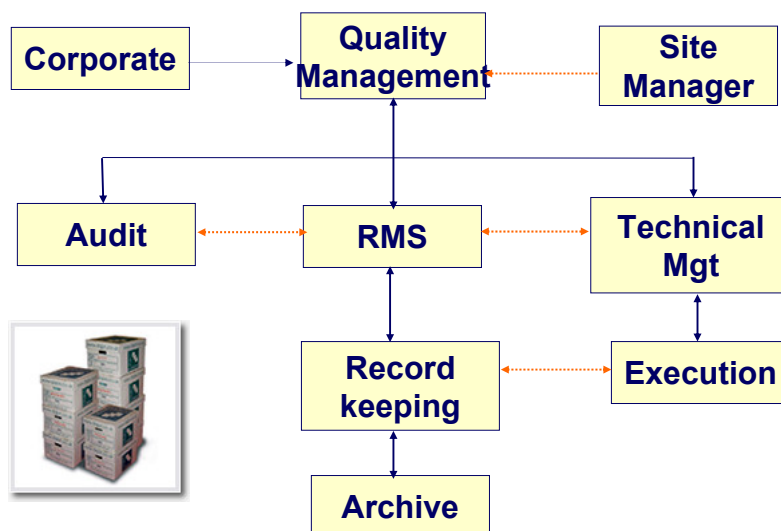
- Establish records management requirements
 - Define relationships
 - Assign responsibility and authority
 - Assure regulatory requirements are met
- Manage and maintain the RMS
- Decide what records to maintain
- Control access to the RMS
- Provide quality assurance of records
- Determine specific technical approaches to the RMS
 - Records storage and retrieval
 - Backup and secondary methods

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RMS - Typical Organization



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RMS - Transfer of Ownership

- **At the end of useful operating life**
- **Industry consolidation**
- **Economic incentives**
- **At the end of a decommissioning cycle**



Document Hierarchy

- **Standards - international and national**
- **Laws and legislation**
- **Regulations and directives**
- **Policy statements**
- **Requirements**
- **Program manuals**
- **Technical basis documents**
- **Procedures**
- **Work directives**



Document Types

- **Contracts**
- **Transmittals and Submittals**
- **Information documents, Safety bulletins**
- **Engineering documents**
 - **Design and changes**
- **Reports**
 - **Production**
 - **Maintenance**
 - **Quality Assurance**
- **Change notices**
- **Personnel actions**
- **Monitoring data (ES&H, QA/QC)**



Documents – Example Filing System

- **Organization**
 - **Subject**
 - **Purpose**
 - **Submittal**
 - **Letter (external or internal)**
 - **Type**
 - **Procedure**
 - **Drawing**
 - **Memo**
 - **Work breakdown structure**
 - **Safety, engineering, administration**
 - **Planning, construction, operation, closure**



Documents - Change Control

- **Change number**
- **Type change**
- **Purpose and basis for the change**
- **File reference and revision number**
- **Document preparation**
 - **Draft, publication, changes**
- **Review and approval**
 - **Calculations**
 - **Drawings**

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Documents - Distribution Control

- **Controlled copies**
 - **No duplication of controlled copies**
 - **Sign for each revision**
 - **Return original or document its destruction**
- **Post record of changes at the front of the document**
- **Effective date on each change**
 - **Allow time to post**
 - **Allow time to train**

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Decommissioning Records - Storage

- Protection versus availability
- Environmental controls
- Backups
- Information systems
- Replacement
- Archive standards



Decommissioning Records - Criteria

- Is record needed to support continued safe operation?
- Is record needed as a license requirement?
- Is record needed to quantify/ characterize waste?
- Is record needed for future decommissioning tasks?
- Is record needed for long-term care/ maintenance?
- Is record needed to preserve exposure information?
- Is the record new data since last records review?
- Is record needed in potential litigation?
- Is record one that should be retained although not directly related to operations or decommissioning?
- Is record considered to be non-permanent?



Records - Design and Construction Data

- Site characterization, geological, background
- As built drawings
- Design calculations
- Construction photographs (detailed captions)
- Construction modifications and drawings
- Construction procurement records
- Engineering codes
- Equipment/ component specifications
- Construction material samples
- Quality certifications
- Preoperational testing and commissioning
- Preliminary decommissioning plans

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Records – Before Decommissioning

- Decommissioning strategy selection document
- Decommissioning plan
- Decommissioning project QA Program
- Decommissioning safety assessment and reports
- Work packages
- Manufacturing and as built records
- Initial radiological surveys
- Environmental assessment reports
- Project management plan
- Funding and financial documents
- Licensing documentation
- Decommissioning organization
- Waste management plan

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Records – After Decommissioning

- Facility status at end of each phase
- Personnel dose records by activity
- Safety performance records by activity
- Hazardous material waste management records
- Released material records
- Photographs/ movies during decommissioning activities
- Details of abnormal events
- Project progress reports
- Intermediate and final survey reports
- Routine surveillance maintenance and monitoring
- Lessons learned



Decommissioning Records - Considerations

- Legal/ regulatory requirements
- Volume of documentation
- Historical format
- Type of documentation
- Search retrieval requirements
- Security of records
- Cost to implement versus long term management
- Time scale for retention (decommissioning strategy)
- Suitability for future use



Records Media - Examples

- Hard copy
- Microfilm/ microfiche
- Magnetic tape/ disk
- Optical disk/ CD/ DVD
- Scanning/ OCR
- Digital records
 - TIFF
 - PDF
- Photographs and clips



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Records Media - Indexes

- Index method
 - Unique number
 - Keywords
 - Date
 - WBS
 - Author
 - Department
 - Type document
 - Document title
- Index fields
 - Size
 - Number
 - Type

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Records Media - Photographs and Video



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Records Media - Electronic Files

- **Control**
 - e-mail
 - Changes
 - Filing
- **Hardware**
- **Operating systems**
- **Programs**



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Typical Record Keeping Concerns

- **Late realization of need to start compiling key decommissioning records**
- **Avoidable loss of institutional control of records (and institutional knowledge) critical to the success of the decommissioning process**
- **Inability to access records due to changes in records storage technology**
- **Duplicate records should be maintained in at least two separate secure locations**



Typical Record Keeping Concerns (cont'd)

- **Definition of records that will constitute the project data package and that will be available to both operator and regulator staff to document the process used for successfully completing decommissioning. Copies of this package should be readily available for auditing**
- **If it is not properly and accurately documented, it cannot be expected to be performed properly by others or even accepted by others as having been performed**



Lessons Learned in Records Management

Problem category	Title
Lack of records	Saxton reactor, USA
Lack of records	Trawsfynydd nuclear power station, UK
Lack of records	Berkeley nuclear power station, UK
Lack of records	Hot laundry, USA
Lack of records	Auxiliary reactor area II facility, USA
Lack of records	Buildings B47, B48 and B54, Harwell, UK
Lack of records	Jason reactor, UK
Unchecked or inaccurate	Ames Laboratory research reactor, USA
Unchecked or inaccurate	Janus reactor, USA
Unchecked or inaccurate	East Tennessee Technology Park (former Oak Ridge Gaseous Diffusion Plant), USA
Unchecked or inaccurate	Decommissioning of Italy's old facilities
Unchecked or inaccurate	Niederaichbach NPP, Germany
Unchecked or inaccurate	Decommissioning record keeping experiences in the CEA
Unchecked or inaccurate	Vandellos 1 reactor, Spain
Wrong interpretation of	IRT-M research reactor, Belarus
Wrong interpretation of	AM-1 research reactor, Russian Federation
Wrong interpretation of	Korea research reactors



Summary

- **Effective records are necessary to support a cost effective decommissioning activity**
- **Good records require planning**
- **Records must be easily retrievable to be useful**
- **Technological changes may cause records retention methods to become obsolete**



References

- IAEA WS-R-2
- IAEA Safety Guide WS-G-2.1
- IAEA Safety Guide WS-G-2.2
- IAEA Safety Guide WS-G-2.4
- IAEA DS 332 – Release of Sites from Regulatory Control on Termination of Practices
- IAEA DS 333 – Decommissioning Safety Requirements
- IAEA TRS #411

