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# **Management of Decommissioning Projects**

*B. Batandjieva, IAEA*

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## **Outline**

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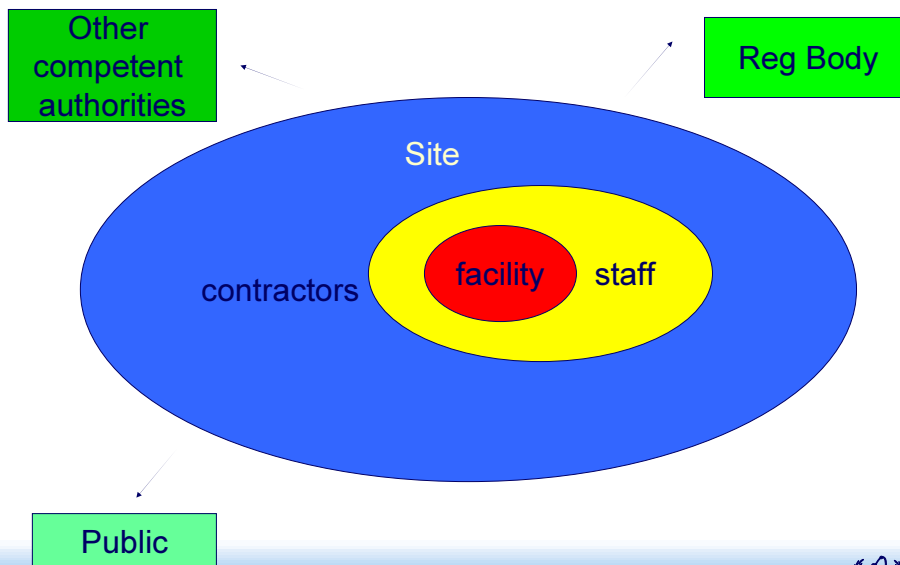


## Introduction

- The ultimate **responsibility for safety** decommissioning rests with the licensee (i.e., operator)
- Licensee management is responsible to:
  - **Maintain safety of the facility** (incl Spent fuel management, decontamination, dismantling and waste management)
  - **Obtain authorization** (including development of strategies, plans)
  - **Provide decommissioning project structure** (incl. staffing and contractor support)
  - **Communicate** with other competent authorities
  - **Communicate** and inform the public and interested parties

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## Introduction (cont)



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## Management of Decommissioning Project

- **Project Phases**
  - **Pre-Decommissioning activities (previous presentations)**
  - **Decommissioning planning (previous presentations)**
  - **Decommissioning execution and controls**
  - **Decommissioning project closeout**

## Decommissioning Execution

- This is the **decontamination** and **dismantlement** phase of the project
- This phase of the project involves the **most dynamic and cost-intensive** part of the work, and therefore must be closely monitored
- Project management **is essential** for control of safety, adherence to procedures, and quality assurance during this phase

## Decommissioning Project Controls

- Project controls allow for the routine **small changes** in scope, direction, and progress that occur repeatedly during a project
- Project controls consider initial decommissioning detailed plans/schedules (the baseline) against the **present condition** of the project
- **Routine reporting** detail is needed on task-specific performance, resources and costs expended
- This information allows management to **focus attention** or to reallocate resources or funds to assure the overall project stays on schedule and budget

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## Decommissioning Project Closeout

- When radiological and hazardous materials have been satisfactorily **removed or remediated**, the site license may be terminated by the regulatory authority
- Site management may still need to perform differing tasks to reach the agreed upon final end state
- If any long term **institutional controls** are needed, they are developed and implemented
- Once physical work is done to reach the end point, appropriate project **reporting and documentation** is completed

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## Typical Decommissioning Organizational Functions

- **Project Management**

- Overall project oversight
- Budget & finance
- Project planning/scheduling
- Authorisations

- **Administrative**

- Personnel
- Contracts & procurement
- Records management

- **Craft Support**

- Radiation protection
- Decontamination & dismantlement
- Maintenance and operations, etc.

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## Typical Decommissioning Organizational Functions (cont)

- **Non-Craft Support**

- Security/Fire Protection/Emergency Management

- **Technical Support Services**

- License documentation
- Health Physics
- Industrial Safety
- Waste Management
- Engineering Services
- Training
- Stakeholder Support

- **Quality Assurance (incl record keeping)**

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## Decommissioning Organizational Structure

- The operating organization should have access to **competent staff** in the following areas:
  - Project management (including finance and human resources)
  - Safety (radiological and industrial)
  - Engineering
  - Licensing
  - Facility plant and systems (operation)
  - Waste management
  - Physical protection
  - Emergency preparedness
  - Environmental monitoring
  - Quality assurance
- Essential to effectively **work as a team** toward the overall project objectives

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## Decommissioning Organizational Structure (cont)

- **Changes in site organizational structures** are required for a decommissioning project – these also vary over the course of the project
  - Typically permanent operations staff decreases
  - Typically decommissioning staff increases
- The decommissioning staff is typically augmented with **temporary support** including:
  - Consultants to work with site professional staff
  - Decontamination and dismantling contractors
  - Subcontractors in specific areas (e.g., demolition or robotics)

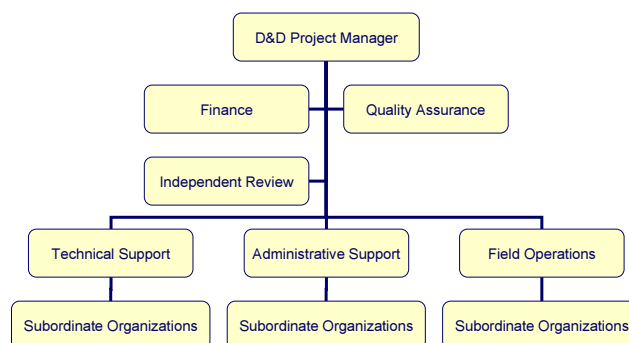
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## Decommissioning Organizational Structure

- The **final structure** should be described in the facility Decommissioning Plan (DP)
- **Clear authority and responsibilities** should be defined for each organizational unit and the management chain within the organization
- The **quality assurance function** needs to be independent of the decommissioning organization
- Attention should be given to **retaining key personnel** familiar with facility operations and history.

## Typical Decommissioning Organization Chart



## Project Scheduling

- Project schedule developed as a portion of **overall project planning**. The schedule is based on a Work Breakdown Structure (WBS) approach
- The project schedule ties **project activities, project resources, costs and task durations** together (with a graphical output)
- Once fully established, the project schedule becomes one of the **most essential management tool** to ensure the project arrives at the anticipated end-state, at the anticipated time and for the anticipated cost.

## Project Scheduling (cont)

- **Specific elements** often addressed in a decommissioning project schedule include:
  - Preliminary site characterization
  - Preparation of the decommissioning plan
  - Safety basis and licensing documentation
  - Obtaining required permits and approvals
  - Facility design/engineering/modifications to support decommissioning
  - Decontamination
  - Dismantling
  - Waste management
  - Final status surveys
  - License termination



## Project Scheduling (cont)

- Each specific element in the schedule should be tied to the **resources and time** needed to complete the task.
- **Routine (frequent) reporting and updating of the schedule** of actual performance against the schedule is important to ensure the overall success of the project schedule and plan

## Personnel Training

- **Training mechanisms** (programme, procedures) for staff to ensure safe and effective conduct of the decommissioning
- Specialized training is useful and required for certain activities including the use of **mock-ups and models in training**
- **Facility staff and contractors staff**
- Some examples of typical decommissioning training include:
  - Facility orientation and entry requirements – all employees
  - Radiation worker and/or safety training – differing classes based on worker exposure potential
  - Special task or function training
    - Decontamination activities
    - Decommissioning activities
  - Quality assurance – all employees

## Quality Assurance

- An approved **QA program** should be in place for use by the decommissioning team
  - before decommissioning operations begin
  - included in the project decommissioning plan
- An effective QA program focuses on three **key areas**:
  - Management
  - Task performance
  - Assessment
  - Record keeping
- **IAEA guidance** documents are available to support the development of effective QA programs
  - Management Systems for Facilities and Activities, Safety Standards Series – GS-R-3

## Records Management

- Acquisition and retention of records from the decommissioning activities are a **key component** in a QA program
- Records maintained should be **available for future** decommissioning projects and as dictated by regulatory authority requirements
- Records retention **periods and storage locations** should be routinely reviewed to ensure those in use are appropriate

## Records Management (cont)

- When prolonged periods of **deferred dismantling** are planned, it is critical that
  - accurate and complete information be maintained on **radioactive materials remaining** at the facility for use in the eventual final decommissioning
  - reports of on-going **surveillance and maintenance results** and the needs for future S&M needs should be maintained and documented
- **Progress** of decommissioning, once underway should be documented by the managing organization

## Examples of Records

- Survey instrument calibration records
- Survey results (material, buildings, land)
- Inspection and certification of test and measurement equipment (e.g., lifting equipment)
- Waste records (on site or transported off-site)

## Communication

- Management and staff
- Management and contractors
- Operator with RB and competent authorities
- Operator with public
- Operator with other interested parties

## Typical Decommissioning Concerns

- **Uncertainties** associated with SF and waste management activities (disposal)
- Maintenance and motivation of **key competent staff**
- Assurance of **financial provisions** during the whole project
- **Inability to access records** due to changes in records storage technology
  - It is never too early to start compiling key decommissioning records or to start planning for eventual decommissioning
  - Duplicate records should be maintained in at least two separate secure locations

## Summary

- **The entire decommissioning process must be well planned and have the roles of all the various parties clearly defined**
- **Project management covers planning, execution and completion of decommissioning**
- **Consideration of regulatory, technical, financial, human and administrative aspects**
- **Requires maintaining key staff and adequate financial resources**
- **Requires control measures, periodic review and feedback experience and lessons learned in the decommissioning process**

