

Technical Meeting on Legal and Regulatory Aspects of Decommissioning



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***Research Reactor Decommissioning Demonstration Project (R2D2P)
26 - 30 June 2006, Manila, Philippines***

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Outline

- **Background**
- **Demonstration Project**
- **Technical Meeting**
 - **Scope**
 - **Objectives**
 - **Expected outcomes**
- **Approach to the meeting**

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Background

- **Increased recognition of safety during decommissioning**
- **Significant number (over 200) of research reactors:**
 - Most reaching the end of lifetime (e.g. China, Czech Republic, Hungary)
 - Temporary shutdown (e.g. Bulgaria)
 - Final shutdown (e.g. Phillipines, Romania, Serbia and Montenegro)
- **Different decommissioning strategies:**
 - Immediate dismantling
 - Deferred dismantling
 - Entombment

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Background (cont)

- **Common problems and issues**
 - No national decommissioning policy
 - No decommissioning plans
 - SNF management (storage and long term management) not defined
 - Decommissioning waste management not defined
 - No practical experience in decommissioning, project management
 - State owned facilities
 - Limited human resources
 - Limited or no funds for decommissioning
 - Legislation in review or development
- **Increasing number of requestes for IAEA assistance**

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Background

- **IAEA developed a project basis:**
 - A research reactor that has not yet begun the decommissioning process
 - Apply the IAEA safety standards
 - Provide a model for future decommissioning projects
 - A platform that can be used for “hands-on” and practical training in activities related to safe decommissioning
 - A focal point for the exchange of information on
 - Regulatory requirements
 - Decommissioning approaches
 - Decommissioning technologies

Research Reactor Decommissioning Demonstration Project (R2D2P)

- **Purpose**
 - Assist Member States in implementing the safe decommissioning of research reactors by establishing an international decommissioning demonstration project
 - Facilitate the exchange of information and experience, education and training
 - Serve as a model for projects in other countries

Research Reactor Decommissioning Demonstration Project (R2D2P)

- **Scope**
 - **Early stages of decommissioning**
 - **All aspects of the decommissioning process**
 - **From establishing a regulatory infrastructure for the regulatory body to**
 - **Final release of the facility from regulatory control**

Research Reactor Decommissioning Demonstration Project (R2D2P)

- **Scope (cont.)**
 - **Illustration of the interaction between**
 - **Regulatory body**
 - **Operator**
 - **Technical staff**
 - **Waste management organizations**
 - **Involvement**
 - **Radiation protection personnel**
 - **Waste management specialists**
 - **Transportation organizations**
 - **Decontamination and dismantling specialist, administrative personnel**
 - **Decision makers**

Research Reactor Decommissioning Demonstration Project (R2D2P)

- **Scope (cont.)**
 - Use only commercially available technologies would be considered for incorporation into the plan.
 - NOT be used as a research and development platform for new technologies

Research Reactor Decommissioning Demonstration Project (R2D2P)

- **Approach**
 - Reactor that has not yet started
 - Already shutdown or plans to be permanently shut down within the next 2 to 3 years
- **Three phases**
 - Phase 1 – planning
 - Phase 2 – implementation
 - Phase 3 – final survey and release

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- **Phase 1**
 - Assist the RB to establish a basis for decommissioning
 - Review the necessary approach being proposed by the operator
 - Ensure international safety standards are being appropriately applied
 - Technical assistance to the reactor operator/owner to help with the development of the safety documentation and supporting documents for the licensing process
- **Outcomes of Phase 1:**
 - Legislative framework
 - Transition plan implementation
 - Decommissioning plan
 - Approved by the Regulatory Body

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Research Reactor Decommissioning Demonstration Project (R2D2P)

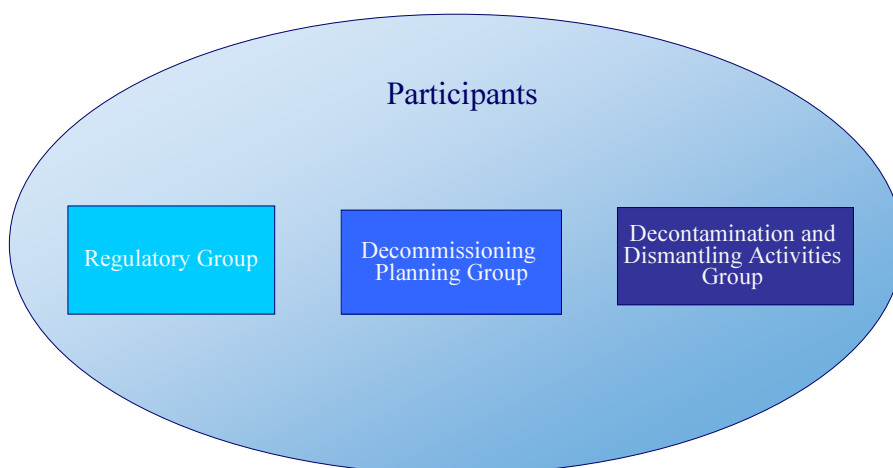
- **Phase 2**
- **Implementation of the decommissioning strategy**
 - Actual decontamination and
 - Dismantling activities
- **Training for decommissioning activities and allow hands-on application of procedures for participants, e.g.**
 - Using monitoring equipment
 - Perform various types of radiation surveys including operational and final release surveys
 - Disassemble systems and equipment and
 - Package this material for storage or disposal,
 - Regulatory oversight

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- **Outcome of Phase 2**
 - **Completed decontamination and dismantling activities**
- **Phase 3**
 - **Final characterization**
 - **Release of the facility from regulatory control**

Planned Activities (cont)



Research Reactor Decommissioning Demonstration Project (R2D2P)

- **Mechanism**
 - Participant's attendance at site
 - Agency expert missions
 - Equipment
 - Attendance at conferences
- **Main decommissioning activities carried out by the host country**

Planned Activities

- **2006**
 - Legal and Regulatory Aspects of Decommissioning of Research Reactors
 - The Basics of Decommissioning - Planning
- **2007**
 - Characterization surveys
 - Decommissioning plan
 - Decommissioning technologies

Planned Activities (cont)

- **2008**
 - Decommissioning cost estimates
 - Review of decommissioning plan
 - Preparation for decommissioning
- **2009**
 - Decontamination exercise 1
 - Dismantling exercise 1
- **2010**
 - Dismantling exercise 2
 - Dismantling exercise 3
 - Decontamination exercise 2

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Planned Activities (cont)

- **2011**
 - Final radiological survey – buildings
 - Final radiological survey – environment
 - Preparation of the final decommissioning report

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- **Documentation (key element)**
 - To capture lessons learned from the activities that will be performed and
 - To make this information available to as many people as possible.
- **Approaches**
 - Papers for technical journals
 - Papers for international scientific conferences
 - Web site (Sept 2006)

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- **Outcomes**
 - Reports and Agency documents sharing lessons learned
 - Feedback to the safety standards and that can be used to update Agency safety standards and technical documents
 - A set of safety related decommissioning documents that can be used as a model by other countries beginning the decommissioning process.
 - A group of experts that can provide future decommissioning expertise to other Member States
 - A model for other reactor decommissioning projects
 - A decommissioned facility

Research Reactor Decommissioning Demonstration Project (R2D2P)

- **Schedule**
 - 6 years
 - Phase 1– development of regulatory infrastructure and planning activities (32 months)
 - Phase 2 – decontamination and dismantling activities (40 months)
 - Phase 3 – few months
- **2006**
 - Draft regulations on decommissioning would be prepared
 - Parts of the decommissioning plan available for review
 - Characterisation of the facility underway (50%)

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Research Reactor Decommissioning Demonstration Project (R2D2P)

- **Schedule (cont.)**
 - **2007**
 - Approval and enforcement of regulations
 - Completion of decommissioning plan
 - **2008**
 - Submission of the plan to RB
 - Review of the decommissioning plan by RB
 - **2009**
 - Approval by RB
 - Implementation of the decommissioning plan

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Research Reactor Decommissioning Demonstration Project (R2D2P)

- **2005 Philippines Government offered to the IAEA for the demonstration project**
- **To use the Philippine Research Reactor (PRR-1) located at the Philippine Nuclear Research Institute to demonstrate various techniques used throughout the decommissioning process**
- **Agreement - 2006**

Philippines Research Reactor

- **PPR-1 - 1 MW open-pool general-purpose General-Electric research reactor provided by the U.S.A. under the Atoms for Peace program**
- **Start up in 1963**
- **1984-1988 – convert to TRIGA reactor**
- **1992 – corrosion caused leak**
- **1999 – operational license expired and spent fuel shipped**
- **Decision on decommissioning**

Technical Meeting „Legal and Regulatory Aspects of Decommissioning“, 26 -30 June 2006

- **Objectives:**
 - Present and discuss the main elements of the legal framework on decommissioning
 - Present and discuss the safety requirements and good practice and international recommendations
 - To present and discuss good practices and lessons learned, and experience of countries
 - To provide assistance on establishment of legal and regulatory framework on decommissioning of the PRR-1 reactor
 - Discuss the establishment of the necessary systems and the importance of audits and inspections during the decommissioning process
- **Scope:**
 - Legislative aspects
 - Regulatory aspects of the project

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- **Planned activities:**
 - Presentation of the IAEA safety standards, recommendations and recent activities on decommissioning of research reactors
 - Presentation of the national reports (Phillipines, etc.)
 - Presentation of experience on establishment and implementation of :
 - legal framework for decommissioning
 - Regulatory system for control of decommissioning activities and termination of licenses.
 - Lessons learned
 - Visit to the Phillipines TRIGA reactor site
 - Practical exercise
 - Round table discussions
 - Lessons learned and recommendations
 - Needs for future assistance on establishment of a regulatory framework on decommissioning in the Phillipines
 - Results from evaluation

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- **Expected outcomes**
 - Update on the safety standards on decommissioning planning and cost estimation
 - Exchange of lessons learned and good practice on legal and regulatory framework on decommissioning
 - Areas for future cooperation and assistance
- **Participation**
 - Over 14 experts from Asia, Latin America, Africa and Europe
 - 11 countries – Argentina, Brazil, China, Egypt, Indonesia, Libya, Malaysia, Mexico, Philippines, Romania, Serbia and Montenegro
 - **Lecturers**
 - L. Leopando (Philippines)
 - I. Lund (Sweden), C. Stoiber (USA), IAEA

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Appreciation

- **Host organisers**
- **Lecturers**
- **Participants**

Wish all a successful and productive meeting!

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