

Safety Related Documentation and Regulatory Review for PRR-1 Decommissioning Project

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Brief History



1958

60's

70's

80's

90's

2008

Legislative Framework

Legal Basis for R²D²P

- Three (3) Laws exist but not covering decommissioning , among others
 - RA 5207 (Atomic Energy Regulatory and Liability Act of 1968)
 - RA 2067 (The Science Act of 1958)
 - Presidential Decree 1586 (Philippine EIS System Law)

Legal Basis for R²D²P

- Draft Law “Comprehensive Nuclear Regulation Act of 2007” undergoing the legislative mill process, will cover decommissioning, among others.

Dual Role of PNRI

- The PNRI has the roles of promoting nuclear technology, providing services, and regulating the use of nuclear and radioactive materials
- PNRI's own nuclear and radiation activities are exempt from licensing

“This is addressed in the proposed
2007 Comprehensive Nuclear Law”

Rules & Regulations

Internal Regulatory Control Program of PNRI Facilities

- Established in 2004 to set up a system of authorization for PNRI nuclear and radiation facilities and laboratories – PNRI Office Order
- Rules for the Authorization of PNRI Radiation Facilities and Laboratories - PNRI Office Order No. 002, Series of 2008
- Rules for the Authorization of the PRR-1 (Extended Shutdown and Decommissioning)- PNRI Office Order No. 003, Series of 2008

Scope & Coverage

- **Philippine Research Reactor (PRR-1)**
- Co-60 Multi-Purpose Irradiation Facility
- Radioisotope Dispensing Laboratory
- Radioactive Waste Management and Interim Storage Facility
- Secondary Standard Dosimetry Laboratory and
- Some PNRI research laboratories where radioactive materials are used and handled

Nuclear Regulations, Licensing, & Safeguards Division (NRLSD)

- Tasked to implement the Program
- Consists of the following Sections:
 - Standards Development Section
 - Licensing, Review, and Evaluation Section
 - Inspection and Enforcement Section
 - Safeguards Section
 - Radiological Impact Assessment Section

Internal Regulatory Control Program (IRCP) of PNRI Facilities

The protection of individuals, society and the environment against radiological hazards related to decommissioning is subject to the following:

- PNRI Policy Instruction No 02 Series of 2001 entitled Radiological Health and Safety Policy
- IRCP of PNRI Facilities was established thru PNRI Office Order No 002 Series of 2004

Authorization of PRR-1

- Granted Authorization to maintain its shutdown condition on May 21, 2007
- Granted “Permission with Conditions” to perform some activities in preparation for doing a characterization survey on February 12, 2008
- Additional documents to support request for authorization to transfer some radiation sources to the Radioactive Waste Management Facility have been reviewed and communicated to the applicant.

Regulatory Requirements for PRR-1 Decommissioning

Application for Decommissioning Authorization of the PRR-1

- It is the responsibility of the PRR-1 operators to comply with all the requirements set out in the PNRI Internal Regulatory Control Program and related rules and regulations prior to the issuance of an authorization
- The application shall be accompanied by a **Decommissioning Plan**

Decommissioning Plan: Major Requirement of the Application for Decommissioning Authorization

- The PNRI Internal Regulatory Control Program requires facility operators to submit a decommissioning plan before an authorization can be issued
- The plan shall address all provisions to protect the health and safety of both workers occupationally exposed to radiation and members of the general public considering normal and accident conditions

Decommissioning Plan: Major Requirement of the Application for Decommissioning Authorization

- The plan shall provide all steps that lead to eventual complete decommissioning to the point that safety can be ensured with minimum or no surveillance
- A graded approach can be applied to the development of the plan

Decommissioning Plan (1)

- A description of the experience, resources, responsibilities and structure of the decommissioning organization, including the technical qualification/skills of the staff;

Decommissioning Plan (2)

- An assessment of the availability of special services, engineering and decommissioning techniques required, including any decontamination, dismantling and cutting technology as well as remotely operated equipment needed to complete decommissioning safely;

Decommissioning Plan (3)

- An assessment of the amount, type and location of residual radioactive and hazardous non-radioactive materials in the reactor installation, including calculational methods and measurements to be used to determine the inventory of each;
- A description of the waste management approach and strategy
- Safety and environmental impact assessment

Decommissioning Plan (4)

- Operational Radiation Protection
- Human and Financial Resources

Waste Management (1)

- Identification and characterization of waste inventory by type, RN content, volume, etc.
- Classification of radioactive waste generated
- Proposed strategy for waste processing, transport, storage, or disposal

Waste Management (2)

- Application of clearance levels for reuse or recycling
- Effluent control and discharges
- Other considerations, as appropriate

Quality Assurance (QA)

- Quality Assurance is part of the authorization process for PRR-1 and is subject to periodic inspection by the regulatory body
- The QA program shall consider the management of spent and fresh fuel

Operational Radiation Protection (1)

- The Internal Regulatory Control Program (IRCP) clearly defines
 - exposure limits involving sources of ionizing radiation for both workers occupationally exposed to radiation and members of the general public (BSS based)
 - regulations also prescribe the appropriate corrective measures to be implemented to control the release of radioactive materials into the environment and to mitigate its effects

Operational Radiation Protection (2)

- The PRR-1 operators are required to submit radiation protection and safety program which includes functions, responsibilities, and qualification and training of individuals
- The PRR-1 operators are required to submit a safety analysis report to demonstrate that the facility will meet all operational radiation protection provisions in fulfillment of the requirements of the IRCP for PNRI Facilities

Human and Financial Resources

- The personnel responsible in the decommissioning activities must demonstrate that they are qualified by reason of training and experience to carry out the activities for which the license or authorization is sought in a manner that protects health and minimize danger to life or property

Human and Financial Resources

- The PRR-1 operators shall show that it either possesses the necessary funds and/or has reasonable assurance of obtaining the necessary funds, to cover the estimated costs of conducting all authorized activities including costs of construction and disposal

Emergency Preparedness

- The PRR-1 operators are required to prepare and submit a facility emergency response plan for approval of the NRLSD
- The level of preparedness is commensurate to the level of hazards expected in the facility

Inspection and Enforcement

- Compliance with the requirements of authorization regarding nuclear safety and security and radiation protection is verified and enforced by the Inspection and Enforcement Section of the NRLSD
- An Inspection Manual for decommissioning of Research Reactors based largely on the USNRC manual is in the final stages of preparation

Inspection and Enforcement

- This is done by reviewing submissions of the facility operators which includes safety analysis report during the authorization process and also by conducting announced and unannounced inspections during decommissioning

Regulatory and Safety Standards (1)

- The CPR PART 3 Standards for Radiation Protection is largely consistent with the IAEA SS 115 International Basic Safety Standards.
 - Establish the standards for protection against radiation arising from the use of nuclear and radioactive materials and related activities

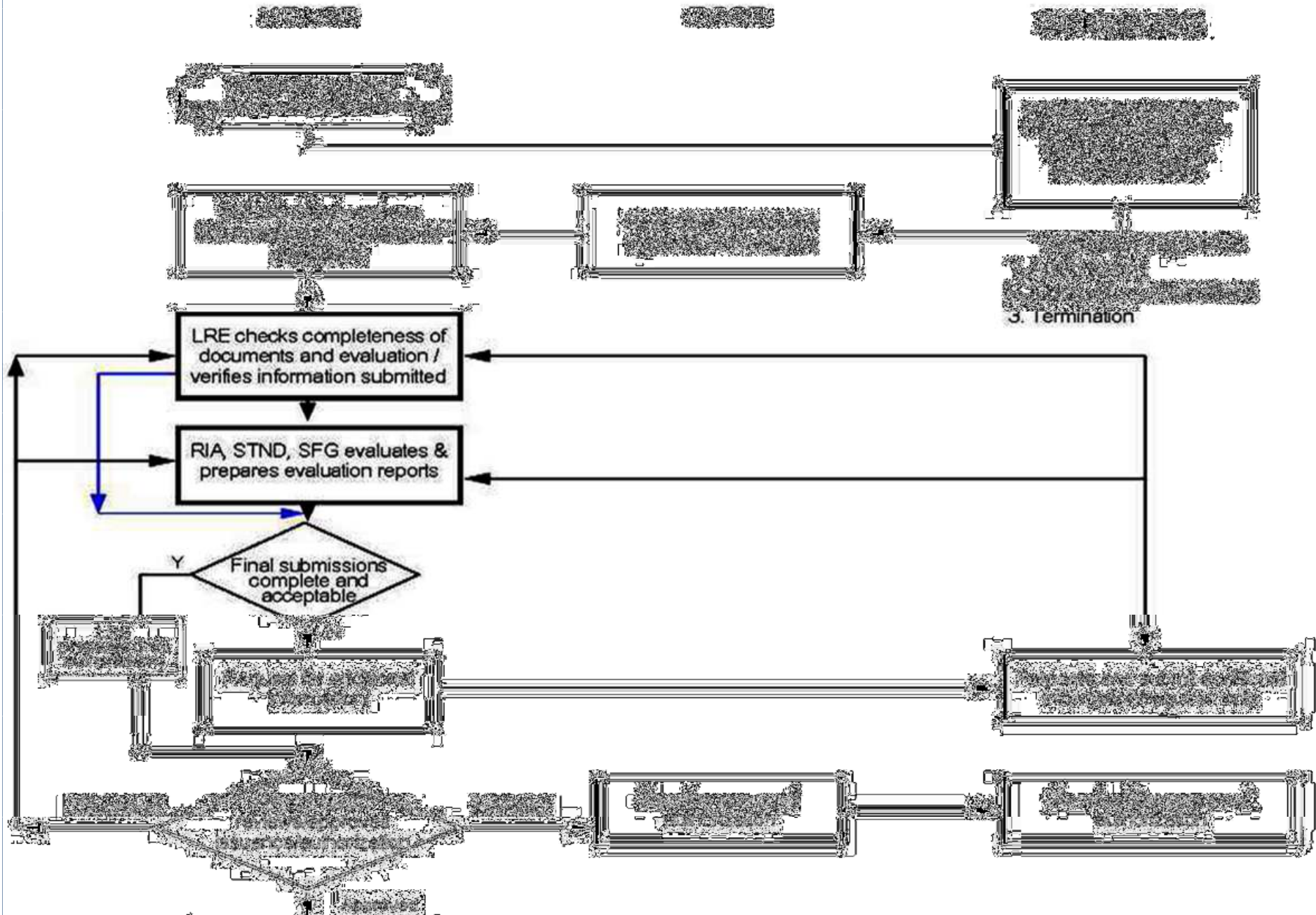
Regulatory and Safety Standards (2)

- Provision for the general requirements involving waste management and disposal of licensed radioactive material
 - Storage under controlled conditions
 - Control of environmental discharges
 - Monitoring of discharges
 - Regulatory limit for airborne and waterborne discharges
 - Clearance levels for solid waste materials

Regulatory and Safety Standards (3)

- CPR PART 4 Regulations for the Safe Transport of Radioactive Materials in the Philippines based on IAEA ST-R-1, Regulations for the Safe Transport of Radioactive Materials
- CPR PART 26 Security of Radioactive Sources
- Other internationally acceptable standards (IAEA, WHO, NEA, USNRC, etc)

FLOWCHART OF REGULATORY CONTROL PROGRAM ACTIVITIES



Application for Decommissioning Authorization of the PRR-1

- Single authorization or multi-authorization according to each defined decommissioning phase of the project
- Authorization to be granted will be based on the approved decommissioning plan

NON-RADIOLOGICAL HAZARDS

Survey of Regulatory Requirements: Non-Radiological Hazards

- Department of Environment and Natural Resources (DENR) is the lead implementing government agency
- Exempted from the Philippine EIS System Law are projects operating prior to 1982.
- Department of Labor & Employment (DOLE), Occupational Health & Safety Agency (OSHA) is responsible for workers safety
- Demolition of physical infrastructures in general, shall comply with the demolition procedure in accordance with the National Building Code of the Philippines (PD 1096)

Summary

- The PNRI Internal Regulatory Control Program established a system of authorization that is now in place and continuously reviewed for a more effective implementation
- The Regulatory Review Process for the PRR-1 Decommissioning has adopted a multi – phase authorization process in accordance with the defined phases of the PRR-1 Decommissioning Plan
- The Comprehensive Nuclear Law of 2007, now undergoing the legislative mill process, addresses the many gaps identified in the legislative framework and the need for an effectively independent regulatory body

THANK YOU

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