

Development of Regulatory Framework on Decommissioning of Nuclear Facilities in the Philippines

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1. Introduction

The Philippine Nuclear Program started in 1958 with the creation of the Philippine Atomic Energy Commission (PAEC) under Republic Act 2067. The Philippines received a research reactor under the US Atoms for Peace Program, which went online in 1963, while the decision to build a nuclear power plant was initiated to meet the country's energy demands and decrease its dependence on imported oil in July 1973. Table 1 shows the current status of nuclear facilities in the Philippines.

The PRR-1 was obtained through the bilateral agreement between the Philippines and USA on July 25, 1955. The operation started in 1963 at 1 MW and converted to TRIGA type and shutdown on 1988. In 2005, the Philippine Nuclear Research Institute (PNRI) formally decided to decommission the reactor by internally regulating the process under the Nuclear Regulatory Division of PNRI based on PNRI Office Order in 2005 and granted authorization to start decommissioning in 2007. However, there are only few specific regulations and guidelines related to decommissioning of nuclear facilities. PRR-1 was accepted as a model reactor for the IAEA Research Reactor Decommissioning Demonstration Project (R2D2P) and currently receiving support and assistance from IAEA for the completion and implementation of decommissioning plan.

2. Materials and Methodology

In this study, the IAEA safety standards were analyzed to obtain key points related to decommissioning and to compare with the current regulations which can be applied in further developing the regulatory framework on decommissioning of nuclear facilities in the Philippines.

3. Results and Discussion

3.1 Status of Regulatory Framework in the Philippines

Current status of regulatory framework in the Philippines is shown in Figure 1. In 1958, the Philippine Science Act of 1958 (Republic Act 2067), created the Philippine Atomic Energy Commission which became the regulatory authority over the licensing and regulating facilities related to the peaceful use of atomic energy. In 1968, the authority of the Philippine Atomic Energy Commission was strengthened with the enactment of another law, Republic Act No. 5207, known as the Comprehensive Atomic Energy Regulatory and Liability Act of 1968. The Philippine Atomic Energy Commission was re-organized and re-named the Philippine Nuclear Research Institute (PNRI) under Executive order No. 128 issued in 1987. The PNRI retained its promotional and regulatory mandates over radioactive materials.

Table 1. Status of Nuclear Facilities in the Philippines

Facility	Philippine Research Reactor 1* (PRR-1)	Bataan Nuclear Power Plant (BNPP)
Capacity (MW)	3	621
Type	TRIGA (General Electric)	Light Water Reactor (Westinghouse)
Present Status	Decommissioning (since 2005)	Never Operated
Reason	Lack of Funding for Repair	Safety Issues

* PRR 1 was originally a 1 MW Open-Pool General Purpose type reactor which and was converted in 1988 to 3 MW TRIGA type reactor.

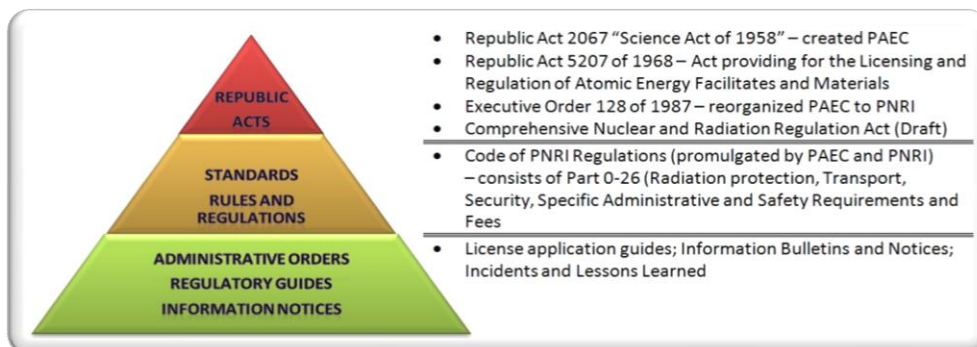


Figure 1. Regulatory Framework in the Philippines

The PNRI is the regulating authority of radioactive material for peaceful applications in the country. To protect the safety of the workers, public and the environment, the Regulatory Division of PNRI issued the Code of PNRI Regulations (CPR) which establishes specific safety and security requirements. It consists of 26 parts, covering radiation protection, transport, security, and specific administrative and safety requirements. In CPR Part 23: Licensing Requirements for Land Disposal of Radioactive Waste, decommissioning plan and rehabilitation of site is mentioned. Financial provision is also mentioned but not very well defined.

In addition to that, PNRI Office Order No.02 dated February 20, 2004 entitled "Regulatory Control Program for PNRI Nuclear and Radiation Facilities and Laboratories" was created to set up an internal authorization process for all PNRI nuclear and radiation facilities and laboratories, which includes the PRR-1.

As of today, the only document which contains the definition of "Decommissioning" is a draft of the Comprehensive Nuclear and Radiation Safety Regulation Act of 2011. This draft is still pending for consideration in the House of Representative of the Philippines.

Table 2. Key points related to decommissioning of nuclear facilities from the IAEA Safety Standards Series: General Safety Requirements

IAEA Safety Standard	Para. No.	Key Points
GSR Part 1	2.3	Responsibility for Safety by the Operator
	5.10	Review and Assessment by the Regulatory Body
GSR Part 5	3.4	Provision for National and Regulatory Framework
	3.11	Safety Assessment and Development of Safety Case
GSR Part 6 (Draft)	1.1	Definition of Decommissioning
	1.4	Graded Approach in Decommissioning
	1.6	Decommissioning Plan
	1.8	Authorization and Termination of Authorization for Decommissioning
	4.4	Individual skills, expertise and training in Decommissioning
	5.2	Selection of Decommissioning Strategy
	6.1	Adequate Financial Resources for Decommissioning
	7.5	Periodic Review and Update of Decommissioning Plan
	8.5	Preparedness and Response for a Nuclear or Radiological Emergency

3.2 Analysis of IAEA Safety Standards

The IAEA Safety Standards are documents use to provide a system of fundamental safety principles, safety requirements and safety guides for ensuring safety. In this study, General Safety Requirements (GSR) Part 1, Part 5 and the draft of Part 6 was used.

Table 2 shows key points on decommissioning of nuclear facilities. GSR Part 1 states the responsibility for safety is by the operator and the role of the regulatory body to review and assess the decommissioning plan. GSR Part 2 gives the importance of provisions for national and regulatory framework in decommissioning. GSR Part 6 states the importance of integrating definition of decommissioning, graded approach, decommissioning plan, how to authorize and terminate authorization, skills of the personnel, decommissioning strategy and emergency preparedness and response to the regulatory framework.

The analyses shows that there are provisions on decommissioning plan and site rehabilitation, periodic assessment and update of decommissioning plan, and financial resources for decommissioning present in CPR Part 23. But it is recommended that decommissioning plan should be submitted before the construction phase and not before the operation phase and the source for financing the decommissioning should be clearly stated. It is also strongly recommended that the definition of decommissioning be included in the CPR.

An additional Part in the CPR specific for decommissioning is also suggested to explain more in detail the provisions of decommissioning nuclear facilities and to improve the current regulatory framework.

4. Conclusions

Comparing with the IAEA Safety Standards, key points which are not present should be incorporated in developing the current regulatory framework on decommissioning of nuclear facilities in the Philippines.

REFERENCES

- [1] IAEA Safety Standard Series, General Safety Requirement Part 1: Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety
- [2] IAEA Safety Standard Series, General Safety Requirement Part 5: Predisposal Management of Radioactive Waste
- [3] IAEA Safety Standard Series, General Safety Requirement Part 6: Decommissioning of Facilities (Draft)
- [4] Comprehensive Nuclear and Radiation Safety Regulation Act, 2011 (Draft)
- [5] The Code of PNRI Regulations (CPR) Part 23: Licensing Requirements for Land Disposal of Radioactive Waste