

Analysis of Advanced Project Management Techniques and Structures for the Decommissioning of NPPs

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I. Introduction

- ◆ NPPs are particular concerns with the safe, timely and cost effective removal and disposal of radioactive materials.
- ◆ Provides guidance in the area of structured and methodical framework for the management of NPPs projects from their initiation to their closeout
- ◆ Respond to regulatory requirements and meet normal engineering, economic and occupational safety goals.

II. A Project Management System

- Projects are different from other ongoing operations within an organization because unlike operations, projects have a definite beginning and an end.
- To describe a high-quality project management process for a NPP Project, an international tool can be applied, as shown in Figure 1.

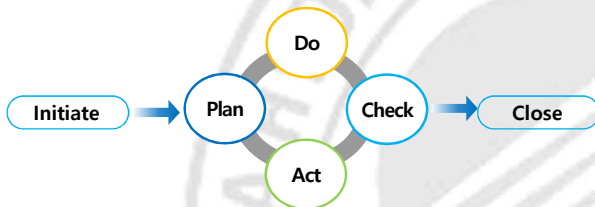


Figure 1. Typical Project Life Cycle(PDCA) [1]

- PDCA and close might be necessary for each sub-process
- How to plan for its preparation ('plan')
- How to write it and initially get it approved ('do')
- How to confirm that it meets requirements based on experience during initial stages of the projects ('check')
- How to implement necessary changes by requesting a revision to be initiated ('act')
- Finally back to 'plan' and 'do' for the revision process.

❖ NPP development project using the phases defined in the IAEA's Milestones Approach.

Table 1. Defining phase for Npps Project [2]

Index	Activity
Phase 1	Pre-Project Activities
	• The pre-feasibility and feasibility studies
Phase 2	Project Development Activities
	• Project planning
	• Approval to proceed to development stage
	• Siting and evaluation
	• Infrastructure and industrial involvement planning
	• Grid integration planning
	• Licensing
• Procurement	
Phase 3	• Radiation dose and radioactive waste management
	• Emergency Planning and Response(EPR)
	• Security and safeguards
	Construction & Decommissioning
Phase 3	• Project management activities
	• Contracting
	• Construction (contract management)

❖ Reference

- [1] IAEA, Managements of Nuclear Power Plant Projects, Technical Reports Series No. NG-T-1.6, International Atomic Energy Agency, VIENNA, 2020.
- [2] IAEA, Milestones in the Development of a National Infrastructure for Nuclear Power, IAEA Nuclear Energy Series No. NG-G-3.1 (Rev. 1), 2015.
- [3] PROJECT MANAGEMENT INSTITUTE, Guide to the Project Management Body of Knowledge (PMBOK Guide), 6th ed., Project Management Institute, Newtown Square, PA, 2021.
- [4] INTERNATIONAL ORGANIZATION FOR STANDARDIZATION, Guidance on Project Management, ISO 21500:2012, ISO, Geneva, 2012.
- [5] AXELOS, Managing Successful Projects with PRINCE2® 2017 Edition, 5th ed., TSO (The Stationery Office), Norwich, UK, 2017.

❖ Describes several international project management frameworks that an organization can adapt and incorporate into its own project management system

Table 2. Comparison of Global Project Management Techniques

Global Standard	Life cycle	Techniques
PMBOK [3]	<ul style="list-style-type: none"> • Initiating • Planning • Executing • Monitoring and Controlling • Closing 	<ul style="list-style-type: none"> • Integration • Scope • Human Resources • Schedule • Cost • Risk
ISO21500 [4]	<ul style="list-style-type: none"> • Initiating • Planning • Implementing • Controlling • Closing 	<ul style="list-style-type: none"> • Quality • Procurement • Communication • Stakeholder
PRINCE2 [5]	<ul style="list-style-type: none"> • Initiating • Directing • Managing a Stage boundary • Controlling stage • Managing Product Delivery • Closing a project • Starting up 	<ul style="list-style-type: none"> • Business Case • Organization • Quality • Plans • Risk • Change • Progress
IAEA NG-T-1.6 [1]	<ul style="list-style-type: none"> • Identification • Initiation • Development and Definition • Execution • Closeout 	NUCLEAR SPECIFIC FIELD <ul style="list-style-type: none"> • Radiation dose and radioactive waste • Licensing • Emergency planning • Security and safeguards

III. Conclusion

- The concept of the process group and knowledge domain of PMBOK and ISO 21500 can be utilized as the core of the project management system.
- Some of the principles and themes of PRINCE 2 are applied to help develop a standard functional organization.
- It is necessary to identify the types and characteristics of the work to be performed in the NPP decommissioning project.