

Role of Regulatory Body in Decommissioning of Research Reactors and Radiological facilities of BARC and Environmental Remediation

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Abstract:

Decommissioning of nuclear and radiological facilities and environmental remediation has always been a challenging task. Nuclear industry in India has completed more than six successful decades of functioning and resulted in completing useful life of few nuclear reactors and radiological facilities thus warranting serious efforts for evolving and implementing the cost effective and sustainable techniques for decommissioning and environmental remediation. Though, India has decommissioned successfully few experimental nuclear reactors and radiological facilities in recent past, still decommissioning is an area which requires international thrust and effort to standardize the methods and techniques of decommissioning and environmental remediation. In the new facilities, provisions for decommissioning are well thought and incorporated from design and inception stage itself but in older facilities these provisions were not thought of during initial days thus making decommissioning and environmental remediation task more difficult and challenging. Due to health hazards associated with radioactive wastes and activation products and their long lives, control and review by Regulatory authority becomes very important to protect the environment as per existing international norms of radiological protection.

1.INTRODUCTION:

BARC Safety council (BSC) is the regulatory body for safety review of nuclear and radiological facilities involved in the field of nuclear research in Bhabha Atomic Research Centre (BARC) in India. In the ambit of BSC there are many research reactors and radiological facilities which are being designed, erected, commissioned, operated, maintained and decommissioned after completion of their useful life.

2.METHODS:

A 3-tier safety framework is actively involved in pursuing the safety & regulatory review of the activities of these facilities of BARC. BSC is the apex body authorized for issuing directives. In second tier, there are various expert committees depending on their roles and responsibilities but for the activities related to decommissioning and environmental remediation, the two committees responsible are 'Operating Plants Safety Review Committee (OPSRC)' and Committee to Review Applications for Authorization of Safe Disposal of Radioactive Waste (CRAASDRW). These committees are assisted by Unit Level Safety Committees (ULSCs) which are seven in number depending on their domains of functioning and responsibilities. Each committee consists of 8-10 experts of their field having one Chairman and one Member-Secretary.

Metallurgical Operations Safety Committee (MOSC) is the committee responsible for safety review of front end activities of nuclear fuel cycle. Safety Committee on Radiological Operations (SCRO) is the committee responsible for safety review of activities related to fabrication of advanced nuclear fuel and post irradiation examinations of nuclear fuel. Research Reactor Safety Committee (RRSC) is the committee responsible for safety review of operations and maintenance related activities of research reactors of BARC. Unit Level safety Committee-Nuclear Recycle Group (ULSC-NRG), Unit Level safety Committee- Nuclear Recycle Board-Kalpakkam [ULSC-NRB (K)] and Unit Level safety Committee - Nuclear Recycle Board- (Tarapur) [ULSC-NRB (T)] are three committees responsible for safety review of back end activities of nuclear fuel cycle for the BARC facilities at Trombay, Kalpakkam and Tarapur sites respectively. Unit Level safety Committee - Particle Accelerator (ULSC-PA) is the committee responsible for safety review of operations and maintenance related activities of the particle accelerators of BARC. In addition to the 3-tier review by regulatory authority, there is a Plant Level Safety Committee (PLSC) in every Group of BARC which assist each ULSC and review first, any issue occurred in the facility.

3.RESULTS:

Decommissioning and environmental remediation are the planned activities which are implemented in field after thorough review by the group of experts in 3 tiers of safety and regulatory framework of BARC. Any proposal related to decommissioning and environmental remediation is first put up for initial safety review by the concerned facility to the respective PLSC. Proposal is taken up for review at the earliest by PLSC and along

with the recommendations of PLSC; the proposal is put up to ULSC for review by the facility. Depending on the urgency, ULSC meets and deliberates on the issue and gives its recommendations. Along with the recommendations of ULSC, Facility applies to OPSRC/CRRASDRW for the higher level review. OPSRC/CRRASDRW reviews the proposal and gives recommendations. Along with the recommendations of OPSRC/CRRASDRW, Facility applies to BSC for the necessary clearances. BSC, the apex body, reviews the request and grants the necessary clearances to the facility subject to certain stipulations. Facility implements the plan and submits the status report to the regulatory body from time to time.

4.CONCLUSIONS:

The role of regulatory body is of paramount importance in the activities related to decommissioning and environmental remediation in view of the fact that sometimes the jobs are outsourced and so strict quality control during implementation of plan becomes responsibility of not only facility but of regulatory body also. To achieve this, institution of periodic regulatory inspections or deputation of in-house representative of regulatory body becomes necessary.

Country or International Organization

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