

NRC Perspectives on Decommissioning Lessons Learned: Historical and Future Perspectives

Bruce A. Watson, CHP

Division of Decommissioning, Uranium Recovery, and Waste Programs

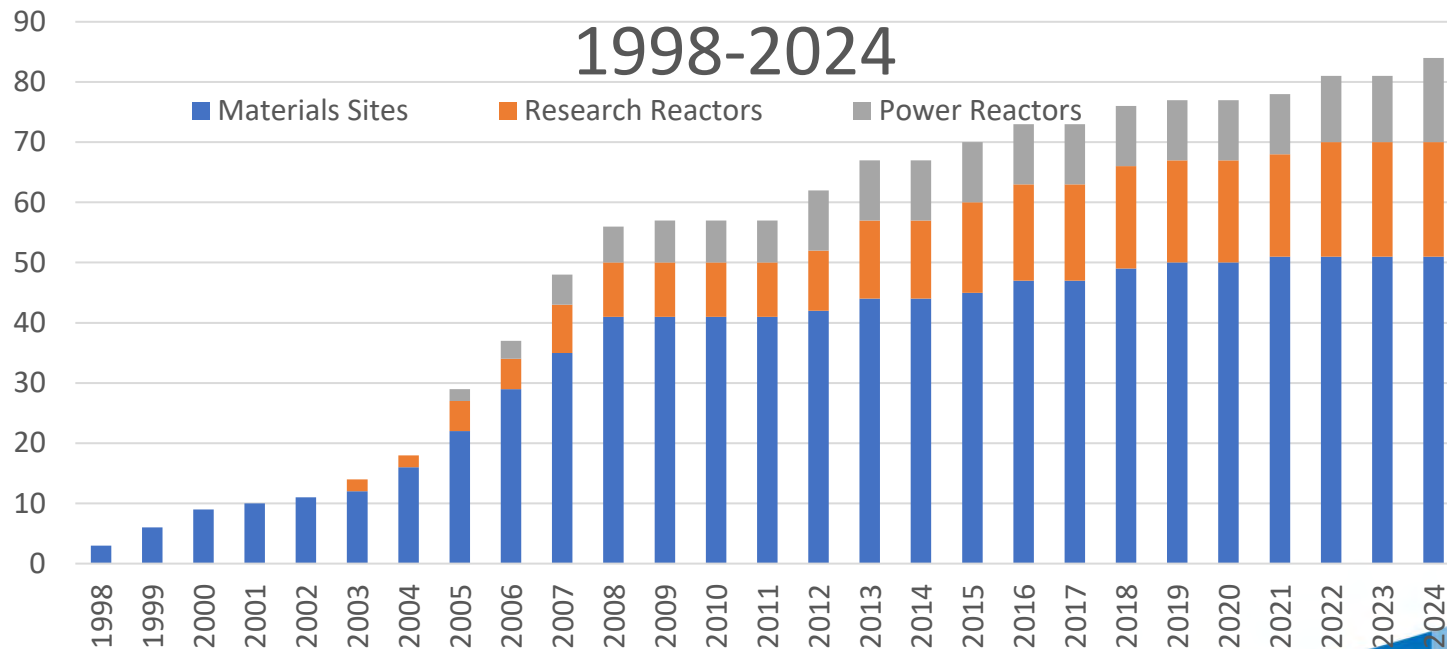
NRC Decommissioning Lessons Learned
Workshop

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Decommissioning Experience

Cumulative Completion of License Terminations

1998-2024



10 CFR 50.82

License Termination Plan

(9) All power reactor licensees must submit an application for termination of license. The application for termination of license must be accompanied or preceded by a license termination plan to be submitted for NRC approval.

(i) **The license termination plan must be a supplement to the FSAR or equivalent and must be submitted at least 2 years before termination of the license date.**

(ii) The license termination plan must include—

(A) A site characterization;

(B) Identification of remaining dismantlement activities;

(C) Plans for site remediation;

(D) Detailed plans for the final radiation survey;

(E) A description of the end use of the site, if restricted;

(F) An updated site-specific estimate of remaining decommissioning costs;

(G) A supplement to the environmental report, pursuant to § 51.53, describing any new information or significant environmental change associated with the licensee's proposed termination activities; and

(H) Identification of parts, if any, of the facility or site that were released for use before approval of the license termination plan.



Lesson Learned Information



- The 1st decommissionings lessons learned resulted in the 10 CFR 20, Subpart E License Termination Rule
- The 2nd wave, resulted in the 2002-2007 NRC Lessons Learned and Industry Reports*

*NRC.gov/waste/decommissioning/lessons-learned.gov

Lesson ID: 2006-03 Facility Type: Reactors, Material Facilities
Stage: Decommissioning Planning
Subject: Benefits of conducting a comprehensive characterization of the site before starting decommissioning activities.

Discussion: As discussed in the Regulatory Issue Summary 2002-002, the NRC staff noted in some submittals that characterization surveys for plant structures, systems, and components; surface and subsurface soils; and groundwater were, at times, incomplete. This issue is still occurring in some submittals reviewed by the NRC staff. A comprehensive site characterization is a key step in any decommissioning project. Adequate characterization before commencing decommissioning activities helps licensees identify and quantify the amount and extent of contamination that needs to be remediated. At a minimum, the site characterization must provide sufficient information to allow the NRC to determine the extent and range of expected radioactive contamination at a particular decommissioning site. The purpose of the site characterization is to define relevant features of the soil, water, and buildings in order to assess risk and develop adequate plans to complete decommissioning. By ensuring that enough reliable characterization data is collected during the planning of the project, licensees can obtain several benefits including:

- Early identification of potential issues that could complicate or delay cleanup activities (e.g., unexpected subsurface or groundwater contamination), and take any necessary actions;
 - It reduces the likelihood of revising plans and documents already approved by the NRC; and
 - Aids in planning and justifying the final status survey.
- References:** NUREG-1757: Consolidated Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria, Vol. 2, Rev. 1, Appendix O

Lesson ID: 2005-01 Facility Type: Reactors

Stage: Decommissioning Planning

Benefits: Facilitates Licensing & Decommissioning Work

Subject: Licensees should develop a unique radionuclide profile for each of the major types of materials expected to remain onsite after remediation.

Discussion: A unique radionuclide profile must be developed for each of the major types of materials expected to remain onsite after remediation. A commercial light-water power reactor facility will likely require profiles for contaminated soil or sediments, surface contaminated materials, and activated materials. The licensee must consider that activation products in steels and concretes vary with the constituents and operational history. Concrete will also differ between facilities because of different trace elements. While one generic list cannot be developed that would be applicable to all power reactor licensees and types of contaminated materials, once radioactive decay has been considered to the time when final status surveys (FSSes) will be conducted, a set of radionuclides may be developed for surface contamination and for activated materials. The licensee should confirm, by using characterization surveys and historical assessments, that the radionuclide lists developed are applicable to the facility and appropriate for each medium.

References: NUREG-1757: Consolidated Decommissioning Guidance: Characterization, Survey, and Determination of Radiological Criteria, Vol. 2, Rev. 1, Appendix O

Recent Challenges

- Tritium in effluents
- Tritium in under-vessel structures
- Tritium in concrete
- Ground water



Looking to the Future

- Follow NRC guidance
 - NUREG 1757 Vol 2, Consolidated Decom Guidance
 - NUREG 1700, SRP for LTPs
 - NUREG 1575, MARSSIM
 - Conference of Radiation Control Program Directors, Inc, published, " A Regulators Guide to MARSSIM"
- Alternative approaches will be considered
 - Recommend a technical report that NRC can approve
 - Approval may take a few years
- Training and Qualifications
- Licensing and Quality Assurance

Questions?

