

Status of the U.S. Nuclear Regulatory Commission Decommissioning Program

Larry Camper and Larry Bell
U.S. Nuclear Regulatory Commission
(301) 415-7234

ABSTRACT

This paper provides an update, based on a staff briefing of the Commission in July 1999, on the status of the U.S. Nuclear Regulatory Commission's (NRC's) decommissioning program. It discusses the staff's rebaselining (management reviews of major milestones; staff review schedules; major technical and regulatory issues, etc.) of complex decommissioning cases and of sites listed in the Site Decommissioning Management Plan. The paper will also address the status of permanently shut-down commercial power reactors and touch upon the impacts related to the transfer of complex decommissioning sites and sites listed on the SDMP to Agreement States. The status of NRC's reviews of site decommissioning in accordance with: 1) NRC's Action Plan Criteria ["grandfathered," pursuant to 10 CFR 20.1401(b)]; and 2) site decommissioning under NRC's license termination rule criteria published in July 1997, will also be provided. In addition, this paper will offer an overview of NRC staff responsibilities related to reactor decommissioning and the measures that the staff has implemented to ensure a seamless exchange of decommissioning responsibilities among the involved NRC organizations.

INTRODUCTION

The major components of the U.S. Nuclear Regulatory Commission's (NRC's) decommissioning program consist of the Site Decommissioning Management Plan (SDMP), complex site decommissioning, and power reactor decommissioning. The major activity undertaken in the Decommissioning Program is to regulate the decontamination and decommissioning of power reactors, non-power reactors, fuel cycle facilities, and material licensees. Decommissioning program activities include the: (1) development of regulations and guidance; (2) conduct of research to develop data, techniques, and models used to assess public exposure from the release of radioactive material resulting from site decommissioning; (3) review and approval of decommissioning plans (DPs) and license termination plans (LTPs); (4) review and approval of license amendment requests; (5) inspections of licensed activities; (6) development of environmental assessments (EAs) and environmental impact statements; (7) review and approval of final site survey reports; and (8) conduct of confirmatory surveys.

The Offices of Nuclear Material Safety and Safeguards (NMSS), Nuclear Reactor Regulation (NRR), and Nuclear Regulatory Research (RES) all have responsibilities for decommissioning program activities. Steps have been taken by the staff to ensure that appropriate levels of integration of decommissioning activities within the Agency take place. These steps include the tracking decommissioning activities in the Agency Operating Plan and using management overview of decommissioning activities via the Decommissioning Management Board (Board). The Board meets bi-weekly and is composed of managers from NMSS, RES, NRR, and the Regions, and serves as an effective mechanism for integrating inter-Office and regional coordination of program activities and issue resolution.

BACKGROUND

NRC staff periodically provides reports on the various facets of the decommissioning program. In the past, the NMSS staff would brief the Commission on the progress of the remediation of the SDMP sites; NRR staff would brief the Commission on power reactors decommissioning issues. In June 1999 and August 1999, the Commission directed the staff to provide a single coordinated annual report on the Agency's decommissioning program. The first coordinated report is scheduled to be forwarded to the Commission in March 2000.

The majority of the sites remaining in the SDMP are all the more complicated decommissioning cases. A number of these sites are anticipated to be released as restricted-use cases and are the most technically complex, and generally require the largest expenditures of staff resources. Site-specific dose assessments, including complex groundwater modeling, will be required. Some of these sites may require "durable institutional controls" that, as specified in 10 CFR 20.1403(e), will be implemented on a case-by-case basis. There are 11 sites in Pennsylvania and Minnesota, States with pending applications to become Agreement States. It has not yet been determined whether their planned agreements would include the SDMP and complex sites.

POWER REACTOR DECOMMISSIONING

NMSS and NRR signed a Memorandum of Understanding (MOU) on March 10, 1995, which delineates the transfer of responsibilities for power reactor decommissioning from NRR to NMSS. In accordance with the MOU, NRR will be responsible for regulatory project management, oversight, and inspection support for a reactor undergoing decommissioning until all spent fuel is permanently transferred from the spent fuel pool. After the spent fuel is permanently transferred from the spent fuel pool, NMSS assumes responsibility for project management and oversight.

The MOU gives NMSS responsibility for LTPs, and preparing related safety evaluation reports, EAs and license termination orders or amendments. NMSS is also responsible for confirmatory surveys and license termination activities, including assurance that appropriate site release criteria have been met.

Two power reactors (Shoreham and Ft. Saint Vrain) have been decommissioned and their licenses have been terminated. Currently, NRR has regulatory project management responsibility for 16 power reactors. The licensees have submitted Post Shutdown Decommissioning Activities Reports (PSDARs) for these power reactors. The purpose of a PSDAR is to provide the NRC and the public with a general overview of a licensee's proposed decommissioning activities.

Regulatory project management responsibility for two power reactors (Fermi 1 and Peach Bottom Unit 1) has been transferred from NRR to NMSS. NMSS staff is currently reviewing the LTP for Trojan and expects to receive and initiate reviews of LTPs for Saxton, Maine Yankee, and Connecticut Yankee in calendar year 2000.

The staff is in the process of developing guidance documents that will provide it with uniform criteria for staff reviews of licensee LTP submittals and to help licensees prepare acceptable decommissioning documents.

Decommissioning power reactors do not pose the same risk to public health and safety as they did during operations. However, under current regulations, they are subject to the same requirements. To address this shortcoming in the regulations, the staff has proposed the initiation of a rulemaking effort that would address emergency planning, insurance, safeguards, operator staffing and training, and backfit. The proposed regulations would apply to licensees that certified, pursuant to 10 CFR 50.82 (a), that they have permanently ceased facility operations and have permanently removed fuel from the reactor vessel. The proposed regulation would cover the following: (1) emergency planning; (2) insurance; (3) safeguards; (4) operator staffing and training; and (5) backfit. Proposed rulemaking efforts are also ongoing in the area of partial site release.

SDMP AND COMPLEX SITES

The staff created the SDMP at the direction of the Commission. In its directives to the staff, the Commission, in August 1989 and January 1990, directed the staff to develop a comprehensive strategy for achieving closure of decommissioning issues. Therefore, the major objectives of the SDMP, when initiated were: (1) to identify and manage specific problem sites through the decommissioning process; and (2) to resolve decommissioning policy issues.

The original five criteria use by the staff for placing sites on the SDMP were: (1) problems with the financial viability of responsible parties or organizations; (2) the presence of large volumes of contaminated soil, sludge, or slag, or onsite burials; (3) long-term presence of contamination of unused facility buildings; (4) license previously terminated that exceeded the existing unrestricted release criteria; and (5) contamination or potential contamination of the groundwater from on-site waste. The staff initially presented the SDMP to the Commission in SECY-90-121, dated March 29, 1990.

In the context of a comprehensive decommissioning program, the SDMP becomes primarily a management tool to track site-specific progress at complex decommissioning sites. Adding a new site to the SDMP will not necessarily indicate that the site is a "problem" site. Current SDMP listing criteria are as follows: (1) all restricted-use sites; and (2) complex unrestricted-use sites that require: (a) detailed site-specific dose modeling; (b) sites subject to heightened public, State, or Congressional interest; and (c) sites with questionable financial viability.

Sites released from the SDMP to date have been released using the criteria contained in the "Action Plan to Ensure Timely Cleanup of Site Decommissioning Management Plan Sites" SDMP Action Plan 57FR 13389. (1) In July 1997, the Commission published the License LTR. Draft guidance for demonstrating compliance with the LTR was published in August 1998, in draft Regulatory Guide DG-4006, "Demonstrating Compliance with the Radiological Criteria for License Termination." (2) The LTR initially authorized two different sets of cleanup criteria for SDMP sites: (a) SDMP Action Plan criteria; and (b) the dose-based criteria contained in 10 CFR Part 20, Subpart E.

Under the provisions of 10 CFR 20.1401(b), any licensee that submitted its DP before August 20, 1998, and received NRC approval of that DP before August 20, 1999, could use the SDMP Action Plan criteria for site remediation. Because of the advanced status of the reviews at 12 sites, in August 1999, the Commission granted an extension of the DP approval deadline to August 20, 2000, for these sites.

Currently, 26 sites remain in the SDMP, and three sites are classified as complex decommissioning sites (these sites have not yet been added to the SDMP). In addition, there are three complex decommissioning sites undergoing decommissioning. Twenty sites have been removed from the SDMP after successful remediation.. Another 14 sites have been removed from the SDMP after transfer to an Agreement State or the U.S. Environmental Protection Agency.

A preliminary analysis of information related to SDMP and complex sites yields the following: (1) five of 29 SDMP and complex decommissioning sites have not yet submitted DPs; (2) the staff has approved nine of 22 DPs submitted to date; and (3) last site should be removed from the SDMP by 2020 based on assumptions used by the staff during rebaselining. Each site schedule was developed independently, using standard assumptions developed by the staff. Changing the site-specific or standard assumptions may have a significant impact on the site decommissioning schedules.

The site decommissioning schedules are based on the standard assumption that the NRC will retain regulatory responsibility for SDMP and other complex decommissioning sites located in States scheduled to become Agreement States in the near future. However, it is possible that as many as 11 of the current SDMP sites may be transferred to Agreement States (Minnesota-1; Pennsylvania-10).

In addition to its oversight of decommissioning efforts at SDMP and complex decommissioning sites, the decommissioning program is responsible for following and regulating decommissioning activities at contaminated sites identified under the Oak Ridge National Laboratory (ORNL) Terminated License Review Project. As a result of the ORNL review, and subsequent follow-up by the Regions, 37 formerly licensed sites were found to have residual contamination levels exceeding NRC's criteria for unrestricted release. Seventeen of these sites have been closed after successful remediation or transfer to Agreement States. Twenty sites remain open pending remediation. Two of the formerly licensed sites have been added to the SDMP because these sites will require non-routine decommissioning activities. The remaining sites are considered to be non-complex and therefore do not warrant placement on the SDMP at this time. However, it is possible that these sites may be added to the SDMP if site conditions change.

REBASELINING OF THE DECOMMISSIONING PROGRAM

Because the remaining SDMP and complex sites are expected to require larger staff resources than previously removed sites, the staff has undertaken a rebaselining initiative. The purpose of the rebaselining initiative is to add more efficiency and effectiveness to the decommissioning process. The staff intends to use the rebaselining to establish priorities and schedules for each of the remaining SDMP and complex sites.

The rebaselining initiative commenced in September 1999, with the key activities including the following: (1) update and assess the current status of each SDMP and complex decommissioning site; (2) develop comprehensive integrated plans for addressing major milestones for each SDMP, LTPs, and complex decommissioning sites; and (3) develop and implement realistic schedules for each SDMP, power reactor LTP, and complex decommissioning site to either successfully bring the sites to closure, or to establish priorities for effective and efficient use of staff resources.

In addition, as part of the rebaselining process, the staff is seeking efficiency improvements through the following two means: (1) participation in the overall Agency effort to streamline licensing procedures; and (2) continued implementation of the Integrated Licensing and Inspection Program (ILIP). The streamlining licensing process is intended to facilitate staff reviews and licensing decisions in accordance with defined and agreed-upon schedules. The staff developed the ILIP in 1997. The ILIP assures that resources for decommissioning activities are prioritized and that licensing and inspections activities are properly coordinated. The staff believes that its resources required for decommissioning of SDMP sites and power reactors can be significantly reduced through the streamlining process and ILIP.

CONCLUSIONS

The staff is in the process of finalizing a report, in accordance with Commission direction, on the Agency's decommissioning program. It has taken steps to ensure that appropriate levels of integration of decommissioning activities within the agency occur. These steps include: (1) tracking decommissioning activities in the Agency Operating Plan; and (2) using management overview of decommissioning activities via the Decommissioning Management Board (Board).

The staff's rebaselining initiative will establish goals for individual decommissioning cases, to either successfully bring the sites to closure, or to establish priorities for effective and efficient use of staff resources.

REFERENCES

- (1) Action Plan to Ensure Timely Cleanup of Site Decommissioning Management Plan Sites, Federal Register, Vol. 57, Thursday, April 16, 1992.
- (2) U.S. Nuclear Regulatory Commission, U.S. Code of Federal Regulations 10 CFR Part 20, et al., "Radiological Criteria for License Termination, Final Rule," Federal Register Vol.62, No. 139, Monday, July 21, 1997, pp 39058-39095.