

November 10, 2008

MEMORANDUM TO: Chairman Klein
Commissioner Jaczko
Commissioner Lyons
Commissioner Svinicki

FROM: R. W. Borchardt */RA Martin J. Virgilio for/*
Executive Director for Operations

SUBJECT: STATUS OF DECOMMISSIONING PROGRAM—2008 ANNUAL
REPORT

The purpose of this memo is to provide the Commission the draft NUREG on the status of the U.S. Nuclear Regulatory Commission's (NRC) Decommissioning Program (the program) for review and comment as required by the staff requirements memorandum (SRM) to SECY-04-0024, "Recommended Changes to the U.S. Nuclear Regulatory Commission's (NRC's) Decommissioning Program and Annual Decommissioning Program Report," dated March 12, 2004. In this SRM, the Commission approved several changes to the annual decommissioning report, including the publication of the annual report as a NUREG every 2 years. The Commission directed the staff to publish the report to better inform the general public about decommissioning. Staff will address any Commission comments prior to publication.

In the decade since the promulgation of the License Termination Rule (LTR), 10 CFR Part 20, "Standards for Protection Against Radiation," Subpart E, "Radiological Criteria for License Termination," the NRC Program has matured from one that focused on problematic sites, under the Site Decommissioning Management Plan, to one that is proactive and manages complex decommissioning under the Comprehensive Decommissioning Program. During the 1990's the NRC developed the regulatory infrastructure to effectively oversee the decommissioning of sites. This effort included the promulgation of regulations requiring timely decommissioning of materials sites, financial assurance for decommissioning, a separate approach for the effective decommissioning of power reactors, and the LTR establishing the dose-based cleanup criteria for decommissioning. In the early 2000's, the staff focused on the development of implementing guidance to support the new regulatory infrastructure. The staff developed a standard review plan for reviewing decommissioning plans (DP) and license termination plans (LTP), as well as guidance for performing surveys at sites undergoing decommissioning. Subsequently this guidance and over 80 other guidance documents were consolidated into NUREG-1757, "Consolidated Decommissioning Guidance." In addition to NUREG-1757, the Program has

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become more proactive in the approach to implementing regulations and guidance. The staff actively engages decommissioning licensees early and often during the development of the DP or LTP in order to ensure that a high-quality product is provided to the NRC for review. These efforts have led to a predictable and stable regulatory framework. This, along with an increasingly experienced staff and a commitment by licensees, has led to a significant increase in the number of completions in the last 4 years. Enclosure 1 depicts this trend, noting that 35 sites have completed decommissioning in the past 4 years.

Enclosure 2, Draft NUREG-1814, Revision 2, "2008 Annual Report on the Status of the Decommissioning Program," provides a comprehensive overview of the NRC's Decommissioning Program. The report summarizes the status of all major sites (including those in the Agreement States) undergoing decommissioning since the last report, through September 30, 2008. This includes the decommissioning of complex materials sites, commercial reactors, research and test reactors, uranium recovery facilities, and fuel cycle facilities. The report also discusses highlights in the Program since last year's report, and it informs the Commission of decommissioning issues that the staff will address in the coming year.

Summary of Status for Fiscal Year 2008

Substantial progress was made during FY 2008 in the Program. This progress includes the following significant events:

- completion of decommissioning activities at eight sites;
- continued progress toward completing work at complex sites where decommissioning had been long delayed;
- continued broadening of the Program to reflect a more national perspective;
- transfer of regulatory control and oversight of seven decommissioning sites to the Commonwealth of Pennsylvania, a new Agreement State;
- publication of Regulatory Guide 4.21, "Minimization of Contamination and Radioactive Waste Generation: Life Cycle Planning," as a mechanism to assure effective and efficient decommissioning of new plants;
- completion of the draft final rule to prevent future legacy sites;
- support from the Office of Nuclear Regulatory Research (RES) on decommissioning issues;
- review of a first-of-a-kind approach to decommissioning power reactors, which may become the model for future power reactor decommissioning; and
- development and implementation of an innovative approach to avoid dual regulation at U.S. Department of Defense sites undergoing remediation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

These activities are discussed individually in more detail below.

The sites completing decommissioning in FY 2008 consist of one power reactor (Connecticut Yankee), one research and test reactor (CBS Reactor), and six complex materials sites (Battelle Columbus Laboratories; Cabot Performance Materials, Inc.; Department of the Army-Fort McClellan; Great Lakes Naval Training Center (Engelhard); Homer Laughlin; and Salmon River Uranium Development). This represents a 2-year total of 19 sites, and a 4 year total of 35 sites, completing decommissioning. After FY 2008, 70 sites will remain in decommissioning.

In addition to the completions, substantial progress in decommissioning was made at the ABB Prospects Inc., Mallinckrodt Chemical Inc., and West Valley Demonstration Project materials sites. For example, at the West Valley Demonstration Project, a Core Team, comprising representatives from the U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), the NRC, and several New York State agencies, was created to resolve technical issues inhibiting development of a draft environmental impact statement (EIS) for the site. The Core Team process was successful in identifying a mutually agreeable path forward that has enabled the creation of the draft EIS for public review. The draft EIS is expected to be published in December 2008. In association with the draft EIS, the staff has worked with DOE in the development of a DP that will fulfill the intent of the Commission's West Valley Policy Statement (67 *Federal Register* 5003, dated February 1, 2002). It is expected that the DP also will be submitted in December 2008. These activities represent significant progress towards the completion of decommissioning at this complex site.

Before FY 2008, information on sites undergoing decommissioning in the Agreement States was limited to site name, location, and materials on site. This year, the staff completed implementation of an enhanced Comprehensive Decommissioning Program. This program allows the NRC to compile, in a centralized location, more complete information on the status of decommissioning and decontamination of complex sites and uranium recovery sites in the United States. Beginning in FY 2009, the NRC public Web site will include information about sites regulated by the Agreement States comparable to information available about NRC-regulated sites. This enhancement of the NRC public Web site increases public confidence by providing a more complete national perspective on decommissioning.

On March 31, 2008, the Commonwealth of Pennsylvania became an Agreement State, and the NRC transferred regulatory control of seven complex materials sites undergoing decommissioning to the Commonwealth. The sites were: Curtis-Wright Cheswick; Molycorp, Inc.; Quehanna; Safety Light Corporation; Superbolt; Westinghouse Waltz Mill; and Whittaker Corporation. The successful transfer of these sites required the coordinated efforts of the Office of Federal and State Materials and Environmental Management Programs (FSME), NRC Region I and the Commonwealth of Pennsylvania. The NRC retained responsibility for the Babcock and Wilcox Shallow Land Disposal Area site in Vandergrift, Pennsylvania, because of the presence of substantial quantities of special nuclear material at that site.

As the NRC's Program continues to mature, and fewer sites remain in the Program, the program is evolving to focus on ways to expedite the timely and effective decommissioning of sites with difficult issues (e.g., those with ground water contamination) and the prevention of future legacy sites. To help prevent future legacy sites, the NRC staff published Regulatory

Guide 4.21, and is in the final stages of preparation of the draft final rule “Decommissioning Planning (10 CFR Parts 20, 30, 40, 50, 70, AND 72).” This draft final rule is currently under consideration by the Commission. One aspect of the rulemaking focuses on ensuring that licensees have adequate financial assurance to complete decommissioning, while the other ensures that licensees have an adequate ground water monitoring program in place and will implement measures to minimize ground water contamination. Additionally, in certain cases, licensees will have new recordkeeping requirements for documenting spills, leaks, and unplanned releases.

RES provided fundamental support for: improvements to the dose modeling capability for decommissioning; assessment of the failure mechanisms of engineered barrier systems; and responses to emerging issues (e.g., use of bioremediation). Initiation of the Cement Partnership with DOE and the National Institute of Standards and Technology has proven to be very productive. The Cement Partnership shares the expertise and resources of three federal organizations to develop common data and tools to evaluate the use of cementitious materials for the isolation of environmentally mobile radioactive materials from the public and environment through solidification or containment. Finally, members of the RES staff have made significant contributions to two active decommissioning sites, Cimarron and Shieldalloy, and have initiated supporting research on bioremediation and the degradation of radioactive slags.

On January 25, 2008, Exelon, the Zion licensee, submitted a request to NRC to transfer the licensed ownership, management authorities, and decommissioning trust fund of the permanently shutdown facility to ZionSolutions (ZS), a subsidiary of Energy Solutions. ZS plans to construct an Independent Spent Fuel Storage Installation and transfer the site’s spent fuel to it. Following decommissioning, the license for the spent fuel would be transferred back to Exelon. The staff has completed an evaluation of the technical and financial qualifications of ZS, which is currently under review.

The staff completed its evaluation of the NRC’s jurisdiction and options for the NRC’s involvement in the ongoing remediation of the Hunters Point Shipyard site in San Francisco, California. The Navy is conducting remediation of this site under CERCLA, with State and EPA oversight. After consideration of the staff’s evaluation, the Commission issued an SRM to SECY-08-0077, “Options for U.S. NRC Involvement with the Navy’s Remediation of the Hunters Point Naval Shipyard Site in California,” dated June 26, 2008, that approved the option of relying on the CERCLA process with EPA oversight and limiting NRC staff involvement to monitoring activities at the site. This approach avoids the potential for dual regulation of the Hunters Point facility remediation.

Fiscal Year 2009 Outlook

Although progress in completion of decommissioning activities at certain sites will continue, the overall trend of completing decommissioning at complex sites is anticipated to decrease substantially. This decrease results from fewer sites being in decommissioning and the fact that many reactors and research and test reactors are in safe storage and not in decommissioning at this time. Thus, the staff expects that only 3-5 sites including one power reactor will complete decommissioning in FY 2009. During FY 2009, New Jersey and Virginia are expected to become Agreement States. As a result, one site (Shieldalloy) is likely to be transferred to New Jersey.

In terms of new initiatives, the staff intends to place special emphasis on certain areas, as noted below:

In FY 2008, the staff sent letters to current in situ leach (ISL) facility licensees reminding them of their responsibilities under 10 CFR 40.42, "Expiration and Termination of Licenses and Decommissioning of Sites and Separate Buildings or Outdoor Areas" for meeting NRC's timeliness requirements for decommissioning. In those letters, the staff noted that the timeliness requirements for decommissioning are applicable to the restoration of mine units/well-fields at the end of production. The purpose was to ensure that licensees do not overlook their responsibility for the timely decommissioning of facilities because of the strong incentive to develop and begin production of new uranium recovery capacity. The staff will be working with licensees in FY 2009 to ensure that required ground water restoration plans for ISL facilities clearly identify scheduled actions that would result in timely restoration of each mine unit/well-field.

The staff will be reviewing the status of sites with inadequate financial assurance. The likelihood that certain sites will ever be cleaned up for restricted or unrestricted release with current levels of financial assurance is remote. For these sites, the staff will be considering alternative approaches for decommissioning. The Salmon River Uranium Development site serves as an example of the type of innovation necessary. At the Salmon River Uranium Development site, NRC staff requested technical and financial assistance from EPA. EPA performed a removal action at the site with NRC technical support, which allowed the site to be released for unrestricted use.

The U.S. Department of Army (DOA) has identified the existence of depleted uranium (DU) contamination at as many as 12 locations related to the use of DU spotter rounds in the 1960s. The DOA is preparing a license application for submittal to the NRC for the possession of DU at the identified locations. The license application is expected to outline site-specific environmental monitoring plans for the DOA sites.

If the Commission approves the Decommissioning Planning Rule in calendar year (CY) 2009, implementation of the rule is expected to begin before the end of CY 2009. To facilitate implementation of this rule, the NRC will issue a NUREG-series publication addressing the financial assurance aspects of the rule. The staff will also prepare a draft regulatory guide for public comment in March 2009, to reflect the contamination monitoring aspects of the rule. The final regulatory guide is planned to be completed in November 2009.

As directed by the Commission in the SRM to SECY-07-0177, "Proposed Rule: Decommissioning Planning (10 CFR Parts 20, 30, 40, 50, 70 and 72: RIN: 3150-AH45)," dated December 10, 2007, the staff is addressing additional improvements to the decommissioning planning process for the remediation of significant radioactivity during the operational phase of facilities. The objective is to reduce or avoid complex decommissioning challenges that can lead to legacy sites. The staff is planning to engage stakeholders in developing a technical basis for mandating remediation, possible dose limits, or alternatives to the dose limits to help prevent future legacy sites. The technical basis will support a proposed rule to include

requirements for licensees to promptly remediate radioactively contaminated areas and, thereby, minimize the occurrence of legacy sites.

The Division of Waste Management and Environmental Protection (DWMEP) is conducting an evaluation of the uses and applicability of computer codes used in carrying out DWMEP licensing activities, particularly those codes used for the demonstration of compliance with the decommissioning dose criteria. This evaluation is intended for DWMEP management use, to enhance the efficiency of the use of codes and models and to establish consistency and relevance in the selection of these computer codes and models.

Trends in Fiscal Year 2010 and Beyond

Decommissioning activities are expected to decline slightly in the future. New sites entering the Decommissioning Program (e.g., DOA sites) and additional programmatic responsibility (e.g., decommissioning and financial assurance reviews for new fuel cycle facilities) will largely offset reductions that result from the few sites completing decommissioning.

The staff plans to continue to make progress in the decommissioning of the remaining nuclear power reactors (13 sites), research and test reactors (10 sites), complex materials sites (14 sites), fuel cycle facilities (1 site), and uranium recovery facilities (32 Title I and Title II sites). However, progress will come in forms other than license terminations, as the pace of completions will decrease relative to past years. In that regard, the staff plans to develop programmatic activities that will aid in the protection of public health and safety, as well as the prevention of future legacy sites, while making effective use of resources.

Site summaries for all decommissioning sites are accessible to the Commission and the public through the NRC's Decommissioning Web Site (<http://www.nrc.gov/about-nrc/regulatory/decommissioning.html>). To ensure that the Web site is current, project managers in FSME, the Office of Nuclear Material Safety and Safeguards, and the Regions routinely review and update the program information. The agency expects that the Agreement States will partner with the NRC in maintaining the decommissioning status information for sites in their States.

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Enclosures:

1. Operational Effectiveness Chart
2. Status of the Decommissioning Program—2008 Annual Report

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