

**PROGRAM EVALUATION OF
CHANGES TO THE DECOMMISSIONING PROGRAM**

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Executive Summary

Under the Government Performance Results Act of 1993 (GPRA), Federal agencies are required to schedule, conduct, and report on program evaluations in selected areas. The U.S. Nuclear Regulatory Commission's (NRC's) Strategic Plan for FY 2000-2005 identified a program evaluation entitled *Changes to the Decommissioning Process* to be conducted in FY 2003. The NRC staff completed its evaluation in FY 2003 and this report summarizes the results including: background, objectives, scope, methods of evaluation, results, and recommendations. The attachments to this report provide the detailed evaluations.

The objectives of the Decommissioning Program Evaluation are to: 1) evaluate the effectiveness of NRC's Division of Waste Management (DWM) Decommissioning Program; 2) evaluate individual program changes/improvements; and 3) recommend future improvements. The scope of this program evaluation is limited to the regulation of decommissioning of nuclear materials facilities and fuel cycle facilities included on the Site Decommissioning Management Plan (SDMP) and complex site list during the FY 2001–FY 2003 time period. Also included within the scope of the program evaluation are those activities related to power reactor decommissioning that DWM was responsible for before the transfer of all power reactor decommissioning from the Office of Nuclear Reactor Regulation (NRR) to the Office of Nuclear Materials Safety and Safeguards (NMSS) during FY 2003.

A variety of different methods were used by the staff to evaluate the effectiveness of the overall program and each of the individual improvements to the program. The staff evaluated overall program effectiveness with: 1) NRC's Strategic Plan measures and targets; 2) NMSS Operating Plan accomplishments; and 3) the Office of Management and Budget (OMB) Program Assessment Rating Tool (PART). The staff used the PART questions as an independent methodology to systematically and comprehensively evaluate its program to identify areas of the program's effectiveness that might need further improvement. The staff also evaluated the effectiveness of 18 specific changes/improvements that were made to the program during the FY 2001–FY 2003 evaluation period. Independent reviews by the Commission and the Advisory Committee on Nuclear Waste (ACNW) were also used and add objectivity to the staff evaluations.

The Decommissioning Program has been effective at meeting the Agency's strategic and performance measures and removing sites from the SDMP list after completion of decommissioning and license termination. The program also has effectively used many types of self assessments and program changes to improve the regulatory framework, decommissioning processes, internal program management processes, and public involvement. The staff believes these improvements have been useful and those that are ongoing should continue to be used.

Although significant improvements have been completed, future improvements would be beneficial. In particular, the recommendations in the License Termination Rule (LTR) Analysis to resolve the LTR policy issues, when implemented as directed by the Commission, offer potentially significant future improvements for the program. To complement these recommended regulatory and policy improvements, this Program Evaluation makes additional recommendations that primarily would improve internal program management. These recommendations include:

- 1) Establish a comprehensive decommissioning program perspective.
- 2) Implement the new Consolidated Decommissioning Guidance.
- 3) Improve staff availability and efficient utilization.
- 4) Expand management reviews of all decommissioning sites.
- 5) Compare and evaluate NRC's Decommissioning Program to similar programs.
- 6) Revise annual Budget measures and targets.
- 7) Consider using incentives to facilitate licensee decommissioning.
- 8) Document and implement a continual improvement plan.

For many of these ongoing and future improvements, however, immediate efficiencies should not be expected. In fact, in the near-term more resources might be needed for persistent and diligent implementation of the LTR Analysis and Program Evaluation improvements by NRC staff and licensees before actual efficiencies can be eventually achieved. Furthermore, because of the uncertainty that the decommissioning challenges present, future efficiencies could be offset or difficult to measure because of new issues that might emerge.

Because of the persistent challenges facing the Decommissioning Program as well as the high cost to licensees for decommissioning, the staff believes that its near-term goal should be to continue improving the efficiency and timeliness of decommissioning activities at all decommissioning sites without impacting safety or public confidence.

Therefore, the recommendations from both the LTR Analysis and this Program Evaluation should be given the priority, time, and resources to be implemented effectively during FY 2004-FY 2005. After this period of persistent and diligent implementation, the program's effectiveness should be reevaluated in FY 2006 to support the scheduled evaluation of the Decommissioning Program using OMB's PART.

Acronyms

ACNW	Advisory Committee on Nuclear Waste
BPI	Business Process Improvement
DOE	U.S. Department of Energy
DP	Decommissioning Plan
DWM	Division of Waste Management
EPA	U.S. Environmental Protection Agency
GPRA	Government Performance Results Act
LTP	License Termination Plan
LTR	License Termination Rule
MOU	Memorandum of Understanding
NMSS	Office of Nuclear Materials Safety and Safeguards
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
OMB	Office of Management and Budget
PART	Program Assessment Rating Tool
PBPM	Planning, Budgeting, and Performance Management
RES	Office of Research
SDMP	Site Decommissioning Management Plan

1. Introduction

Under the Government Performance Results Act of 1993 (GPRA), Federal agencies are required to schedule, conduct, and report on program evaluations in selected areas. NRC's Strategic Plan for FY 2000-2005 identified a program evaluation entitled *Changes to the Decommissioning Process* to be conducted in FY 2003. The NRC staff completed its evaluation in FY 2003 and this report summarizes the results including: background, objectives, scope, methods of evaluation, results, and recommendations. The attachments to this report provide the detailed evaluations.

2. Background

NRC regulates the decontamination and decommissioning of materials and fuel cycle facilities, power reactors, research and test reactors, and uranium recovery facilities, with the ultimate goal of license termination. Approximately 300 materials licenses are terminated each year by the NMSS. Most of these license terminations are routine, and the sites require little, if any, remediation to meet NRC's regulatory criteria for unrestricted use. Within NMSS, DWM is responsible for the Decommissioning Program that regulates the decommissioning and termination of licenses for 26 materials and fuel facility sites that are not routine and, therefore, are identified on the SDMP and complex sites lists. In addition, during FY 2003, DWM's Decommissioning Program became responsible for the decommissioning of 13 additional power-reactors after the spent fuel has been removed from the reactor vessel, and certain regulatory and safety milestones have been met. This responsibility was transferred from the Office of Nuclear Reactor Regulation (NRR) to DWM in FY 2003. NRR remains responsible for all stages of research-and test-reactor decommissioning and oversight of the initial stages of power-reactor decommissioning. NMSS's Division of Fuel Cycle Safety and Safeguards is responsible for decommissioning of uranium recovery facilities. Finally, the Office of Research (RES) provides substantial research support to decommissioning, and DWM also provides environmental reviews for NMSS's facility decommissioning.

Key activities conducted by DWM's Decommissioning Program include: resolution of policy issues; guidance development; licensing activities of SDMP and complex decommissioning sites and power reactor sites (e.g., reviews of decommissioning plans (DP s) for materials sites and license termination plans (LTPs) for power reactors); confirmatory radiological surveys, financial assurance reviews; and oversight of the West Valley Demonstration Project. The Regions support DWM's Decommissioning Program by inspecting the ongoing decommissioning activities of both materials and power reactor sites and providing project management for a few sites. The status of DWM's Decommissioning Program and other NRC decommissioning activities are given in the annual updates to the Commission for 2001, 2002, 2003 (SECY-01-0156, SECY-02-0169, and SECY-03-0161).

NRC's primary regulations used for decommissioning include the criteria for license termination in the License Termination Rule (LTR) in 10 CFR 20, Subpart E. This regulation was finalized in 1997. Other regulations in 10 CFR Parts 30, 40, 50, 70, and 72 provided additional requirements for decommissioning related to DP s, timeliness of decommissioning, financial assurance, and recordkeeping. Guidance is provided in NMSS's Consolidated Decommissioning Guidance (NUREG-1757) and the Standard Review Plan for Evaluating Power Reactor License Termination Plans (NUREG-1700, Rev. 1).

3. Program Evaluation Objectives, Scope, and Methods

3.1 Objectives and Scope

The objectives of this program evaluation are to: 1) evaluate the effectiveness of DWM's Decommissioning Program; 2) evaluate individual program changes/improvements; and 3) recommend future improvements.

The scope of DWM's Decommissioning Program and this program evaluation is limited to the regulation of decommissioning of nuclear materials facilities and fuel cycle facilities included on the SDMP and complex site list during the FY 2001–FY 2003 time period. Also included within the scope of the program evaluation are those activities related to power reactor decommissioning that DWM was responsible for before the transfer of most power reactor decommissioning from NRR during FY 2003. Furthermore, this program evaluation does not include other non-NMSS decommissioning activities such as the regulation of decommissioning of research- and test-reactors or uranium recovery facilities. Finally, the supporting research and environmental review activities are also not included in the scope of this NMSS program evaluation.

3.2 Methods

A variety of different methods were used by the staff to evaluate the effectiveness of the overall program and each of the individual improvements to the program. The staff evaluated overall program effectiveness with: 1) NRC's Strategic Plan measures and targets; 2) NMSS Operating Plan accomplishments; and 3) the Office of Management and Budget (OMB) Program Assessment Rating Tool (PART). The staff used the PART questions as an independent methodology to systematically and comprehensively evaluate its program to identify areas of the program's effectiveness that might need further improvement. The PART questions provide a consistent approach to rating programs across the Federal government. The 31 questions for a regulatory program address the following four elements of a program: purpose/design; strategic planning; management; and results/accountability. For the purpose of identifying areas of improvement, the staff decided that following the OMB guidance for addressing the questions with a Yes or No and the "high standard" for Yes would be an effective approach to identify areas of potential improvement. Therefore, this evaluation is not a formal Agency PART evaluation of the Decommissioning Program, and did not involve the scoring or full documentation of evidence required by a formal Agency PART. A formal Agency PART for the Decommissioning Program is scheduled for FY 2006.

The staff also evaluated the effectiveness of 18 specific changes/improvements that were made to the program during the FY 2001–FY 2003 evaluation period. These improvements included a wide variety of self assessments of major program activities such as licensing, inspections, laboratory analyses, guidance, financial assurance, and implementation of the regulations. Where possible the staff relied on evidence from Agency documents for its evaluations. In addition, interviews were conducted with over 15 NRC project managers responsible for implementing activities within the Decommissioning Program. These interviews provided information for qualitative evaluations that involved identifying: accomplishments, outcomes

relative to the Agency's four performance goals, and lessons learned that were considered in recommending future improvements. Methods to quantify the effectiveness of improvements are not available and may be difficult to develop for decommissioning.

Independent reviews by the Commission and the Advisory Committee on Nuclear Waste (ACNW) were also used and add objectivity to the staff evaluations. The Commission is independent from the staff and provides general oversight of the program, while ACNW, as an independent advisory committee to the Commission, reviews selected high priority staff regulatory products and technical issues.

4. Results

4.1 Evaluations of Overall Program Effectiveness

4.1.1 Strategic Plan and Annual Performance Plan Measures

Detailed program results for all the Agency measures are reported in NRC annual performance and accountability reports for FY 2001 and FY 2002. These results are summarized below along with preliminary results for FY 2003 for those measures that are applicable to the Decommissioning Program.

The Decommissioning Program has met all four strategic goal measures. These four measures have been established to determine the program's success in meeting its strategic goal to "Prevent significant adverse impacts from radioactive waste to the current and future public health and safety and the environment, and promote the common defense and security." These top-level, outcome measures define NRC's success in overseeing decommissioning and consist of: 1) no deaths from acute radiation exposure; 2) no events resulting in significant radiation exposure; 3) no release of radioactive waste causing an adverse impact on the environment; and 4) no losses, thefts, diversions, or radiological sabotage of special nuclear material or radioactive waste.

In addition to the strategic goal, NRC has four performance goals that pertain to the Decommissioning program: 1) maintain safety, protection of the environment, and the common defense and security; 2) increase public confidence; 3) make NRC activities and decisions more effective, efficient, and realistic; and 4) reduce unnecessary regulatory burden on stakeholders. For the first performance goal, the Decommissioning Program met all of its measures regarding radiation overexposures; breakdowns of physical protection; radiological releases; and handling of radioactive waste and materials. For the second goal, the program met its only measure of implementing the public outreach activities described in the decommissioning communication plans. For the third goal, the program met its measure by completing the following key process improvements: Consolidated Decommissioning Guidance; focused the Regional inspection program; phased review of DP s for restricted release sites; and guidance for LTP reviews. Finally, there were no measures for the fourth performance goal that were applicable to the Decommissioning Program.

The annual output measure in the NRC's Budget for the Decommissioning Program is to remove one site from the SDMP list each year after completion of remediation and license termination. The Decommissioning Program has met this measure by removing the following

sites from the SDMP each year: Cabot Revere in FY 2001; Lake City Army Ammunition Plant in FY 2002; and GSA Watertown in FY 2003.

4.1.2 Key Program Accomplishments

The key program accomplishments and associated outcomes are summarized below for each of the Agency's four performance goals. These accomplishments demonstrate the productivity of the Decommissioning Program and progress toward achieving each of the performance goals. Many of these accomplishments resulted in improvements to the Decommissioning Program.

Maintain Safety

1) Completed cleanup and decommissioning at 3 sites, reducing the number of complex sites undergoing decommissioning from 29 to 26.

2) Continued ongoing decommissioning oversight activities at 26 SDMP and complex materials sites and 15 power reactor sites (after the FY 2003 transfer of power reactors from NRR to NMSS). Key activities include reviews of licensee DP s and LTPs, inspections of licensee decommissioning activities, confirmatory radiological surveys, reviews of licensee final status survey reports, and preparations of safety evaluation reports.

2) Completed the Decommissioning Criteria for the West Valley Demonstration Project at the West Valley Site; Final Policy Statement, which was required under the 1980 West Valley Demonstration Project Act for NRC to establish the criteria to be used for remediation and decommissioning of this site.

3) Completed the LTR Analysis of implementation issues and recommended solutions for the Commission's decision. The recommended improvements could make regulations and guidance more risk informed and efficient as well as make some provisions viable (i.e., restricted release and alternate criteria). Such changes should facilitate the decommissioning of existing complex decommissioning sites. In addition, the recommended improvements would resolve financial and licensee operational problems at future sites and reduce or mitigate the potential for future decommissioning funding shortfalls (i.e., prevent future legacy sites).

4) Published the NMSS Consolidated Decommissioning Guidance that consolidated approximately 80 existing guidance documents into three volumes, improved the risk-informed implementation of the guidance, and enhanced guidance based on lessons learned and comments from stakeholders.

5) Improved the risk-informed implementation of the LTR and reduced unnecessary conservatism by: describing the risk-informed process in the consolidated guidance; grouping sites by relative risk; developing the risk-informed graded approach for institutional controls; developing and applying a probabilistic dose assessment computer code with parameter distributions; recommending to the Commission an approach for selecting more realistic exposure scenarios; and using risk ranking to prioritize inspections.

6) Completed the Terminated License Review Project, conducted since 1990, that resulted in reviewing about 37,000 terminated license files to determine the potential for residual radioactivity above the LTR's unrestricted release limit. The project identified 42 sites where further cleanup was needed. By the end of FY 2003, 30 of these sites have been cleaned up and cleanup is underway or planned for the remaining 12.

Increase Public Confidence

1) Conducted a decommissioning workshop to explain decommissioning guidance and specific issues and obtain feedback from licensees and stakeholders.

2) Involved stakeholders in preparing the Consolidated Decommissioning Guidance by involving State representatives on the writing and review team, including guidance prepared by the Nuclear Energy Institute and reviewed by the staff, and seeking public comments on the draft guidance.

3) Published a best practices report on public involvement with decommissioning sites and held a training session for licensees and other stakeholders.

4) Developed communication plans for the Decommissioning Program and each site undergoing decommissioning that identifies specific stakeholders and gives planned communication activities and schedules.

5) Continued noticed and open meetings with licensees and provided publically available meeting summaries. Used public meeting feedback forms to evaluate the effectiveness of each meeting.

5) Improved coordination and collaboration with other Federal agencies (U.S. Environmental Protection Agency (EPA), U.S. Department of Energy (DOE)), and interagency working groups (e.g., the Interagency Steering Committee on Radiation Standards and the Environmental Council of States Long-Term Stewardship subcommittee) to share knowledge, develop solutions to common problems, and avoid dual regulation.

6) Increased interactions with international groups to share regulatory cleanup expertise and experience and seek solutions to common problems.

Make Activities More Effective, Efficient, and Realistic

1) Completed transfer of power reactor decommissioning from NRR to NMSS, which resulted in consolidating most power reactor decommissioning activities in a single organizational unit along with decommissioning of materials sites. This transfer further concentrates the staff's decommissioning skills which should improve the efficiency and consistency of dealing with decommissioning issues.

2) Continued to implement the rebaselining and streamlining of the decommissioning processes (e.g., expanded acceptance reviews, phased reviews, early and ongoing consultations, in process confirmatory surveys).

3) Conducted many self assessments and lessons learned studies to improve the Decommissioning Program: LTR Analysis, Licensing Business Process Improvement (BPI), Region Lab evaluation, Region inspection efficiency, Reactor decommissioning transfer, and a pilot study for decommissioning simple sites without a DP.

4) Completed the Program Evaluation of Changes to the Decommissioning Program, which comprehensively evaluated the effectiveness of many improvements made during the past three years and integrated the lessons learned into recommendations for additional improvements.

5) The Program Evaluation, LTR Analysis, and other self assessments conducted over the past three years demonstrates a culture that uses self assessments and lessons learned to seek program improvement.

6) Implemented the Agency's Planning, Budgeting, and Performance Management (PBPM) process by developing tools for operating plan preparation, tracking and reporting performance, as well as budget development.

Reduce Unnecessary Regulatory Burden on Stakeholders

1) Completed a Memorandum of Understanding (MOU) between NRC and EPA regarding consultation and finality of decommissioning and began implementation of the MOU, which is expected to improve interagency communication and coordination and avoid potential for dual regulation and impacts on licensees.

2) Evaluated staff reviews of DP s and LTPs to identify lessons learned by staff and licensees and published the results in a Regulatory Issue Summary for licensees and stakeholders. These lessons learned are expected to improve implementation of the staff's guidance and facilitate preparation of high quality DP s and LTPs by licensees.

3) Completed a financial analysis of sites and developed a process to aggressively take action to reduce the risk of licensee funding shortfalls and avoid requesting Federal funding of cleanup.

4) Continued to conduct reviews to assure sufficiency of licensee financial assurance to avoid decommissioning funding shortfalls.

4.1.3 OMB PART Questions

Of the 31 PART questions for regulatory programs, the staff concluded that 19 questions were considered effective, and, therefore, no improvements are needed. Improvements could be made to eight questions and improvements are already underway for four other questions to achieve OMB's high standard for effectiveness. Attachment 1 provides detailed results in a matrix of the PART questions, staff answers, and recommendations. A summary is provided below for each of the four program areas addressed by the PART questions.

Purpose and Design. Of the five questions for this program area, the Decommissioning Program is considered effective for three. Improvements are already underway for the

remaining two questions. The Decommissioning Program has a clear purpose and addresses the specific problem of regulating decommissioning and license termination of contaminated NRC licensed sites. Furthermore, program resources are considered effectively targeted. Improvements are underway and need to be completed to avoid duplication with other regulatory programs (i.e., implementation of the MOU with EPA to avoid dual regulation with EPA) and to resolve major flaws (i.e., implementation issues identified in the staff LTR Analysis for institutional controls/restricted release, realistic exposure scenarios, and preventing future legacy sites)

Strategic Planning. Of the nine questions for this program area, the Decommissioning Program is considered effective for six. The program has outcome measures and targets, short-term performance measures, and its budget is tied to its goals. Improvements are needed for three questions that address ambitious annual targets, regular independent evaluations of the program, and explaining how regulations contribute to achieving goals .

Program Management. Of the eleven questions for this program area, the Decommissioning Program is considered effective for eight and improvements are needed for three. The staff concluded that managers are held accountable; funds are obligated and expended; there is strong Agency financial management; the program collaborates and coordinates with related programs; the staff seek the views of affected parties; there is adequate regulatory impact analyses; and regulations allow maximizing net benefits. Improvements are needed for: collecting site performance information; procedures to measure and achieve efficiencies; and regular systematic reviews of regulations.

Program Results.

Of the six questions for this program area, the Decommissioning Program is considered effective for two questions, effective to a large extent for two other questions, and effective to a small extent for the remaining two questions. Thus, some improvement is needed for four questions. The staff concluded that the Decommissioning Program has demonstrated progress in achieving its goals and has met all of the Agency strategic and performance goals and measures. To a large extent it has qualitatively demonstrated improved efficiency and cost effectiveness but improvements would be needed develop a system to track and analyze staff FTE expenditures in order to better reallocate resources and attempt to measure efficiencies and cost effectiveness. For comparisons to other programs, the Decommissioning Program is effective to a large extent by comparing issues shared by similar programs. However, improvement could be made by comparing the staff's lessons learned using the LTR with the Agreement States who are required to implement the LTR for decommissioning sites in their States. For independent evaluations, the program is effective to a small extent with limited reviews done by the Commission and the ACNW for selected topics; however, there are no periodic reviews of the overall program by a independent group outside of NRC. Such reviews might be considered; however, they may not be cost effective, and technically capable review groups may be difficult to arrange. Finally, the program seeks to maximize the net benefit of its actions through it management and by using a risk-informed and performance based approach. However, recently completed guidance for this approach needs to be fully implemented by both staff and licensees, and the staff needs to further prioritize its work and consider the feasibility of methods to measure cost effectiveness for site decommissioning.

4.2 Evaluations of Individual Changes/Improvements

The staff evaluated the 18 individual changes/improvements and detailed results are given in Attachment 2. These changes are summarized below.

4.2.1 Regulatory Framework Improvements

The key improvements to the regulatory framework consist of revising and consolidating guidance, making available more realistic dose modeling tools, and seeking resolution of key implementation issues for the LTR.

The staff completed several guidance improvements. The first is the NMSS Consolidated Decommissioning Guidance, which was a three-year effort to consolidate approximately 80 existing guidance documents into a three volume set with clearer guidance grouping sites by risk and referencing appropriate sections of the guidance. Guidance was added regarding flexibility, risk-informed approach, more realistic dose modeling, and partial site release. In addition to the Consolidated Decommissioning Guidance, the staff also revised the guidance for reviewing power reactor LTPs, including a cross-reference to the technical guidance in the Consolidated Decommissioning Guidance. The staff also used another form of guidance for licensees by publishing a Regulatory Issue Summary of lessons learned from the first four power reactor LTPs reviews and DP s reviews of materials sites.

Dose modeling is a primary assessment tool that both licensees and the NRC staff use to determine if the dose criteria for license termination in the LTR have been met. Concerns have been raised regarding unnecessary conservatism in dose assessments. As a result the staff made the following improvements: 1) recommended an approach for selecting more realistic exposure scenarios; 2) implemented the probabilistic RESRAD computer codes developed by RES; 3) implemented default parameter distributions for use in conducting sensitivity analyses; and 4) developed new guidance for the flexible and risk-informed approaches to dose modeling. These improved computer codes and guidance address primary sources of conservatism. Thus, licensees have tools available that allow greater flexibility and can reduce the cost and time needed for decommissioning.

The staff also evaluated key policy issues (e.g., restricted release, realistic scenarios, changes to prevent future legacy sites) that were identified from implementing the LTR and recommended options to resolve the issues for the Commission's consideration. The Commission's direction may result in future rulemaking and revised guidance for licensing reviews, inspections, and enforcement. The staff's recommendations have the potential for facilitating the decommissioning of existing sites by addressing key challenges these sites must address. In addition, the recommendations for changes in financial assurance and licensee operations should reduce or mitigate the potential for future "legacy" sites that may not have the financial ability to complete decommissioning.

4.2.2 Decommissioning Process Improvements

The staff continued to implement changes to streamline the decommissioning processes used by both the staff and licensees. In particular, early and ongoing consultations before DP s and LTPs are submitted together with expanded acceptance reviews of DP s and LTPs and phased

reviews of DP s for restricted release sites contribute to more efficient preparation of plans by licensees that are of higher quality. Completing an MOU with EPA is intended to enhance communications, avoid dual regulation, and achieve finality of decommissioning.

The staff also conducted a variety of self assessment that resulted in improvements to internal management and administrative processes. For example, power reactor decommissioning responsibilities in NRR and NMSS were evaluated and consolidated into DWM's Decommissioning Program during FY 2003. The staff also completed a financial analysis of sites and developed an approach to take aggressive actions to reduce the risk of licensee funding shortfalls. The staff conducted a review of the most cost effective and efficient options for conducting laboratory analyses of radiological samples and decided to cease all NRC laboratory operations conducted by the Regional offices and rely on a contractor for sample analysis. Assessments were conducted of inspection procedures for the decommissioning of both materials sites and power reactors. Techniques such as risk ranking were used to revise inspection guidance that prioritizes inspections activities and make more efficient use of limited inspection resources. Finally, the staff conducted the first phases of a Licensing BPI assessment of decommissioning and an evaluation of OMB PART questions to identify recommendations for future improvements.

4.2.4 Stakeholder Communication Improvements

The staff conducted four stakeholder workshops on the decommissioning process and issues, pilot program lessons learned, plans for the Consolidated Decommissioning Guidance development, and guidance for effective public involvement in decommissioning. The staff also developed and implemented a Communication Plan for Regulation of Decommissioning and site-specific communication plans for each decommissioning site. Conducting the decommissioning workshops and communication plans increased the attention and importance of effective stakeholder involvement. This guidance also provided knowledge and tools for the staff and licensees to use. Site-specific plans help focus the staff on the appropriate stakeholders and their needs. The staff expects that these planning efforts, when implemented over time, will improve stakeholder understanding of the decommissioning regulatory process and issues as well as provide more opportunities for stakeholders to give input to the process. Opportunities were also provided for active stakeholder involvement in developing regulatory guidance. This involvement brought stakeholder experience and perspective to complement the staff's experience. Finally, communication, cooperation, and information sharing with Federal agency stakeholders on key regulatory issues was enhanced as were interactions with international groups to share regulatory cleanup experience and seek solutions to common issues.

4.3 Evaluations by Independent Groups

The Commission and the ACNW, that provides technical advise to the Commission, are the two groups independent from the staff who have provided reviews of the Decommissioning Program.

During the evaluation period the staff continued it process of annual reports and briefings on the status of the program to the Commission. Likewise, the Commission continued to provide its regular oversight of the overall program and policy level issues affecting the program based

on the staff's annual reports as well as other staff reports. The most significant result from the Commission's oversight during the evaluation period that impacts the effectiveness of the overall Decommissioning Program was the Commission's direction for the staff to conduct an analysis of LTR implementation issues and recommend options to resolve the issues for Commission consideration. The Commission's direction in response to the staff analysis and recommendations, will result in many future improvements to the program as described in SECY-03-0069.

The staff briefed the ACNW on six high priority decommissioning issues during the evaluation period. No major concerns about these issues or how the staff was addressing them were raised to the Commission by the ACNW. Specific comments were provided for the Commission to consider when it finalized the West Valley Policy Statement.

4.4 Near-Term Goals and Challenges

The staff used the results of this program evaluation to identify near-term goals and recognize challenges to future improvement.

4.4.1 Near-Term Goals

Generally, decommissioning sites do not present a serious radiological hazard because of the low concentrations of radionuclides contaminating these sites. However, most material sites have large volumes of soil contaminated with long-lived radionuclides and in some cases groundwater is also contaminated. Decommissioning these sites, therefore, can be complex and costly. Therefore, the first near-term goal is to continue improving the efficiency and timeliness of decommissioning activities at all decommissioning sites without impacting safety or public confidence. A second goal is to minimize or mitigate future decommissioning problems for operating licensed sites.

4.4.2 Challenges

The staff recognizes that the nature of licensee sites, the decommissioning activities, LTR requirements, and the external environment that affects decommissioning combine to present a variety of challenges to efficient and timely decommissioning. Recognizing these challenges is an important step in targeting future improvements. Licensee and other external challenges are described below.

- 1) **Complex sites with difficult issues.** Implementing the LTR at the remaining materials and power reactor decommissioning sites is expected to be complex with emerging, difficult policy, technical, and public involvement issues that must be addressed in a consistent and efficient manner.
- 2) **Dynamic and uncertain environment.** The changing and uncertain nature of decommissioning complex sites can detract from efficient and timely decommissioning. Unexpected changes can occur resulting from new issues, new information, or changes in cleanup methods as decommissioning progresses.

3) **Limited licensee resources or incentive.** Some licensees or former licensees have limited resources or incentive to complete decommissioning. Some licensees or former licensees are in bankruptcy or are financially weak, while delaying or minimizing decommissioning costs might be attractive to others. In addition, because decommissioning is not typically a revenue generating activity, licensees may not be motivated to perform decommissioning as aggressively as the staff would prefer.

4) **Limited licensee capability and experience.** There is limited licensee capability or experience implementing the LTR and using the fundamental analytical tools of decommissioning such as dose modeling or radiological surveys. Furthermore, there is limited understanding or experience implementing the new Consolidated Decommissioning Guidance or LTR recommendations for restricted release and realistic scenarios. Licensees typically only decommissioning once at the end of a facilities operational life. Therefore, decommissioning is a new and unfamiliar activity that is different from operating the facility.

5) **Stakeholder concerns.** Licensees are required to obtain and demonstrate consideration of the views of a wide variety of stakeholders that might be affected by site decommissioning. These groups can raise significant concerns and often have strong views or even objections to aspects of decommissioning. Such concerns often gain high visibility or even political attention. Time and effort will be needed by both licensees and staff to address stakeholder issues when they are raised.

Challenges can also be internal to NRC, such as the following:

1) **Organizational inefficiencies.** Multiple organizations involved with aspects of decommissioning require greater communication and coordination. Furthermore, consistently and efficiently addressing key policy and technical issues can be difficult to achieve.

2) **Limited staff experience.** At this time and until training is provided, there is limited staff experience implementing the Consolidated Decommissioning Guidance and some of the LTR issues. Lessons learned need to be better shared among staff.

3) **Limited staff resources.** There are limited staff resources and competing priorities within the Decommissioning Program, with other DWM programs, and with unbudgeted work. Limitations in critical disciplines such as health physics, dose modeling, hydrogeology have the greatest impact on licensing review schedules.

5. Recommendations

The following recommendations have been made to help achieve the near-term goals. These recommendations are based on the staff's lessons learned, considering the challenges described above, and the OMB PART questions that need improvement. Where there is an OMB PART question addressed by a recommendation, its number is given in parenthesis.

1) Establish a Comprehensive Decommissioning Program Perspective

- a) Redefine the objectives and scope of the Decommissioning Program for all decommissioning sites and subsume the SDMP sites.
- b) Redefine the roles of organizations involved with the Comprehensive Decommissioning Program (DWM, Regions, other NRC Divisions, Commission). No longer require Commission approval role for removing sites from the SDMP list.
- c) Consider centralizing DP project management and review for complex materials sites.
- d) Define and manage all decommissioning sites using a graded approach to prioritize, allocate, and track both licensing and inspection activities and resources in both Headquarters and all the Regions. The graded approach could be based on site-specific risk insights and decommissioning challenges (see types of licensee and external challenges identified in section 4.2.2).

2) Implement the new Consolidated Decommissioning Guidance tailored to staff and licensee needs. Emphasize key topics such as using flexibility, risk informed approaches, and realistic dose modeling (PART Q 4.RG1)

- a) **Develop case histories and lessons learned** as examples of flexibility, risk informed approaches, realistic dose modeling, and prioritization of sites/activities using risk;
- b) **Train staff** in DWM, Regions, other divisions on the Consolidated Guidance and key topics tailored to their decommissioning roles, sites, and decommissioning phase. Share lessons learned and case studies for implementing the guidance at specific sites, especially for issues cross cutting many sites (realistic scenarios, restricted release, engineered barriers, use of risk insights):
- d) **Conduct frequent and in-depth consultations with individual licensees** to implement guidance and share lessons learned/case studies tailored to specific sites.
- e) **Establish a Decommissioning Lessons Learned Page** on the Decommission Web site to share among all licensees site-specific lessons learned; issues, and example case studies.

3) Improve staff availability and efficient utilization

- a) **Reorganize/reassign/add staff** so that the Decommissioning Program and specific sites have sufficient resources, especially for critical disciplines (e.g., health physics, dose modeling, hydrogeology)
- b) **Improve the resource tracking process and system** to allocate budgeted resources and then track actual staff resource expenditures for individual sites/projects. Use the new process to support management decisions to reallocate resource loading

to respond to emerging issues, changing licensee schedules, and approved unbudgeted work. (PART Q 3.4, 4.3)

c) **Establish a baseline for decommissioning costs** for specific sites and explore the feasibility of a method to measure efficiency and cost effectiveness (PART Q 3.4, 4.3)

4) Expand management reviews of all decommissioning sites among all NRC organizations involved with existing and future decommissioning (PART Q 3.1)

a) Coordinate and review information from Headquarters and Regions for existing decommissioning sites to monitor progress, consistency, and efficiency of resolving common policy and technical issues

b) Coordinate and review information with currently operating licensed sites to identify and resolve conditions or events that could complicate future decommissioning

5) Compare and evaluate NRC's Decommissioning Program to similar programs (PART Q 2.6, 4.4, 4.5)

a) Share decommissioning lessons learned among NRC and Agreement States.

b) Consider options and feasibility for an independent review of NRC's Decommissioning Program (e.g., American Society of Mechanical Engineers, Agreement States, others).

6) Revise annual Budget output measures and targets, to be outcomes that are representative of expected key accomplishments for the year, including improvements (PART Q 2.4)

7) Consider using incentives to facilitate licensee decommissioning, where appropriate. Evaluate options for potential incentives such as staff dose modeling for licensees or assigning special high priority for staff reviews under conditions such as bankruptcy.

8) Document and implement a "continual improvement" plan that systematically and periodically reevaluates and adjusts the program, includes the following initial phases: (PART Q 1.3, 1.4, 2RG1, 3RG3)

a) **Plan and budget the recommended new Program Evaluation improvements** using the Agency's PBPM process during the next budget cycle and determine which recommendations to implement and the appropriate schedule;

b) **Implement the new Program Evaluation improvements and Commission directed LTR Analysis improvements** during FY 2004-FY2005;

d) **Reevaluate the program and LTR** in FY 2006 to support the scheduled OMB PART for the Decommissioning Program; and

e) **Plan future reevaluations.**

6. Conclusions

The Decommissioning Program has been effective at meeting the Agency's strategic and performance measures and removing sites from the SDMP list after completion of decommissioning and license termination. The program also has effectively used many types of self assessments and program changes to improve the regulatory framework, decommissioning processes, internal program management processes, and public involvement. The staff believes these improvements have been useful and those that are ongoing should continue to be used.

Although significant improvements have been completed, future improvements would be beneficial. In particular, the recommendations in the LTR Analysis to resolve the LTR policy issues, when implemented as directed by the Commission, offer significant future improvements for the program. To complement these recommended regulatory and policy improvements, this Program Evaluation makes additional recommendations that primarily would improve internal program management such as prioritization of staff work, expanded management reviews of site progress as well as ensuring the effective implementation of the Consolidated Decommissioning Guidance.

For many of these ongoing and future improvements, however, immediate efficiencies should not be expected. In fact, in the near-term more resources might be needed for persistent and diligent implementation of the LTR and Program Evaluation improvements by NRC staff and licensees before actual efficiencies can be eventually achieved. Furthermore, because of the uncertainty that the decommissioning challenges present, future efficiencies could be offset or difficult to measure because of new issues that might emerge.

Because of the persistent challenges facing the Decommissioning Program as well as the high cost to licensees for decommissioning, the staff believes that the staff's near-term goal should be to continue improving the efficiency and timeliness of decommissioning activities at all decommissioning sites without impacting safety or public confidence.

Therefore, the recommendations from both the LTR Analysis and this Program Evaluation should be given priority, time, and resources to effectively implement during FY 2004--2005. After this period of persistent and diligent implementation, the program's effectiveness should be reevaluated in FY 2006 to support the scheduled evaluation of the Decommissioning Program using OMB's PART.