NUREG-1444
Supplement 1

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Site Decommissioning Management Plan

U.S. Nuclear Regulatory Commission

Office of Nuclear Material Safety and Safeguards

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Supplement 1

Site Decommissioning Management Plan

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ABSTRACT

The Nuclear Regulatory Commission (NRC) staff has identified 51 sites contaminated with radioactive material that require special attention to ensure timely decommissioning. While none of these sites represent an immediate threat to public health and safety, they have contamination that exceeds existing NRC criteria for unrestricted use. All of these sites require some degree of remediation, and several involve regulatory issues that must be addressed by the Commission before they can be released for unrestricted use and the applicable licenses terminated. This report contains the NRC staff's strategy for addressing the technical, legal, and policy issues affecting the timely decommissioning of the 51 sites and describes the status of decommissioning activities at the sites. This is supplement number one to NUREG-1444, which was published in October 1993.

CONTENTS

ABBREVIATIONS

ALARA	As Low As Reasonably Achievable
ALCOA	Aluminum Company of America
BPR	Business Process Redesign
B&W	Babcock & Wilcox
CFR	Code of Federal Regulations
DOD	Department of Defense
DOE	Department of Energy
DWM	Division of Waste Management (NRC)
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FCFF	Fuel Cycle Facilities Forum
FCSS	Division of Fuel Cycle Safety and Safeguards (NRC)
FR	Federal Register
FTE	Full-Time Equivalent
FY	Fiscal Year
GAO	General Accounting Office
GPRA	Government Performance and Results Act of 1993
IMNS	Division of Industrial and Medical Nuclear Safety (NRC)
IRM	Information Resources Management, Office of (NRC)
LLDP	Low-Level Waste and Decommissioning Projects Branch (NRC)
LLW	Low-Level Waste
MARLAP	Multi-Agency Radiological Laboratory Procedures Manual
MARSSIM	Multi-Agency Radiological Site Survey Investigation Manual
MOU	Memorandum of Understanding
NEI	Nuclear Energy Institute
NMSS	Nuclear Material Safety and Safeguards, Office of (NRC)
NRC	U.S. Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation, Office of (NRC)
OGC	Office of the General Counsel (NRC)
ONDD	Non-Power Reactors and Decommissioning Project Directorate (NRR)
ORISE	Oak Ridge Institute for Science and Education
ORNL	Oak Ridge National Laboratory
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RES	Nuclear Regulatory Research, Office of (NRC)
SDMP	Site Decommissioning Management Plan
SECY	Secretary of the Commission, Office of the (NRC)
SLDA	Shallow Land Disposal Area
SRM	Staff Requirements Memorandum

1. INTRODUCTION

Each year, the U.S. Nuclear Regulatory Commission (NRC) must evaluate requests, primarily from materials licensees, to discontinue licensed operations. The majority of those requests are routine, relatively straightforward, and acted on in a timely manner such that the sites are remediated, if necessary, and released for unrestricted use. However, termination of licenses at some sites is considerably more complex because of the presence of soils and structures with non-routine levels of radiological contamination.

In two reports submitted to the Office of the Secretary of the Commission (SECY), the NRC staff listed over 30 sites that involve unique and difficult issues requiring special attention to ensure timely decommissioning. (These reports were SECY-88-308, "Contaminated Material Licensee Facilities," dated October 31, 1988, and SECY-89-369, "Strategy for Decommissioning of Materials Licensee Sites," dated December 8, 1989.) While none of the listed sites represents an immediate threat to public health and safety, all of the sites have contamination that exceeds existing NRC criteria for unrestricted release. All of these sites require some degree of remediation, and several involve regulatory issues that the Commission must address before releasing the sites for unrestricted use and terminating the applicable licenses.

These problematic sites have buildings, former waste disposal areas, large piles of tailings, ground water, and soil contaminated with low levels of uranium or thorium (source material) or other radionuclides. Consequently, the sites present varying degrees of radiological hazard, remediation complexity, and cost.

Some of the problematic sites still have active NRC licenses, whereas licenses for other sites were already terminated or were never issued. At some sites, the licensee is financially and technically capable of completing decommissioning in a reasonable time frame. At other sites, the licensee or responsible party may be unable or unwilling to perform decommissioning. In addition, the sites are currently in various stages of decommissioning. Some licensees have already initiated decommissioning, while others have not yet planned or initiated the process.

In the staff requirements memorandum (SRM) dated August 22, 1989, the Commission directed the staff to develop a comprehensive strategy for NRC activities to deal with these contaminated sites in order to achieve closure on decommissioning issues in a timely manner. In a subsequent SRM dated January 31, 1990, the Commission directed the staff to "...submit a list of contaminated sites in order of priority including the name and location of the site, name of responsible party, condition of the site, schedule and description of the next step in site cleanup, and other pertinent information. The list should be accompanied by a discussion of criteria used to ... each site."

On March 29, 1990, the staff submitted SECY-90-121, "Site Decontamination Management Program," as the original report outlining the planned strategy. The staff updated that report in April 1991 and May 1992, with the submission of SECY-91-096 and SECY-92-200, both entitled "Site Decommissioning Management Plan" (SDMP). The staff again updated the report in June 1993; however, to facilitate distribution to interested parties, and to simplify future reference, the update was published in October 1993 as NUREG-1444, "Site Decommissioning Management Plan."

NUREG-1444 contained detailed descriptions of each site, and discussed all policy issues that have been addressed since the inception of the SDMP in 1990. The NRC intends to supplement NUREG-1444 biennially with current information about program issues, site status, and schedules. The supplements will also discuss program management activities, as well as decommissioning activities conducted at each site over the preceding 2 years, and progress on remaining open issues. This report, NUREG-1444, Supplement 1, is the first of the planned biennial updates.

2. SDMP PROGRAM MANAGEMENT

2.1 Program Management Plan

This section discusses the objectives and background information underlying the NRC's plan for managing the decommissioning program. Section 2.2 then addresses specific program initiatives.

2.1.1 Objectives

The NRC's regulatory program for decommissioning has the following objectives:

- *Safety and Timeliness* — Ensure timely and safe decommissioning of licensed and unlicensed sites that are contaminated with radioactive materials associated with the possession and use of source, special nuclear, and byproduct materials.

- *Documentation* — Ensure that decommissioning decisions are thoroughly documented to develop a record that will withstand the test of time and avoid transferring a burden to future generations to redevelop information on the radiological status of formerly licensed sites.

- *Coordination* — Coordinate decommissioning actions with other regulatory agencies at the Federal, State, and local levels, with interested parties, and with members of the public to promote efficiency and finality for decommissioning actions.

- *Minimal Burden* — Minimize the regulatory burden imposed on licensees and other responsible parties consistent with accomplishing the other objectives.

- *Review Capabilities* — Develop and maintain NRC review capabilities, as required to fulfill the objectives of the decommissioning program.

The management plan identifies approaches that can be used to reduce the level of NRC resources devoted to decommissioning, while ensuring effective oversight of decommissioning projects listed in the NRC's SDMP and other significant decommissioning actions at materials facilities.

2.1.2 Background

Over the last 5 years, the level of NRC resources devoted to the SDMP sites and policy issues has increased, reaching a maximum in Fiscal Year (FY) 1993 at 48 full-time equivalents (FTEs). The budgeted FTEs include overhead (clerical and administrative support, as well as management at the Branch Chief level and above) and time expended on activities such as staff development, professional meetings, general administration, annual leave, and sick leave. Actual direct efforts have been far less than the budgeted levels (e.g., 24 FTEs in FY93 for all materials decommissioning).

These resources are distributed between the Office of Nuclear Material Safety and Safeguards (NMSS) and NRC regional offices (primarily Regions I and III). Staff members have a full complement of technical and regulatory expertise in the areas of decommissioning, environmental and operational health physics, nuclear engineering, and earth sciences.

In addition to staff resources, the NRC has acquired technical support by contracting with Oak Ridge Institute for Science and Education (ORISE) to conduct radiological assessments (e.g., confirmatory surveys). The NRC has also contracted with Oak Ridge National Laboratory (ORNL) to acquire technical support for developing environmental impact statements (EISs). In FY95, the technical support for these two projects totalled approximately $3 million. An additional $160,000 of contractor effort by ICF, Inc. is required to support staff reviews of financial assurance mechanisms and special cases.

Under existing procedures and policies, the NRC staff typically reviews site characterization plans and reports to ensure that licensees have established the extent and type(s) of radiological contamination before initiating remediation. Site characterization provides the basis for developing the remediation or decommissioning plan, which is typically submitted as a license amendment request for a licensed site where decommissioning procedures have not already been approved or where decommissioning could result in impacts (such as effluents or doses) that have not been enveloped during operations. The decommissioning process is illustrated in Figure 1.

Remediation begins once the NRC has approved the licensee's decommissioning plan. For licensed sites, approval of the plan is implemented through a license amendment authorizing decommissioning. In issuing the amendment, the NRC staff may offer an opportunity for a hearing concerning the amendment, and may include a decommissioning schedule as a license condition. To promote broad acceptance and finality of the planned actions, the NRC coordinates extensively with State and local authorities and other interested parties in reviewing and approving the decommissioning plan.

At the conclusion of the remedial actions, the licensee or site owner conducts a termination radiological survey to demonstrate that residual radioactivity levels have been sufficiently reduced in accordance with NRC criteria. The NRC then conducts a confirmatory survey to confirm the results of the licensee's termination survey. (Confirmatory surveys are either conducted by NRC staff or under contract with ORISE.)

Despite the dedication of an increased amount of NRC resources and enhanced experience with decommissioning, progress in remediating the sites has not met the expectations of the NRC or the public. Delays continue for a variety of technical, legal, and policy-related reasons. In addition, several remediation projects have been placed on hold pending completion of EISs that assess the environmental impact and alternatives to onsite disposal of the radioactive waste.

At present, the number of sites on the SDMP list is increasing faster than sites are being remediated and released. In particular, sites are being added to the list as the regions review sites for which the licenses were initially terminated without sufficient radiological surveys or documentation to confirm that residual contamination levels are acceptably low.

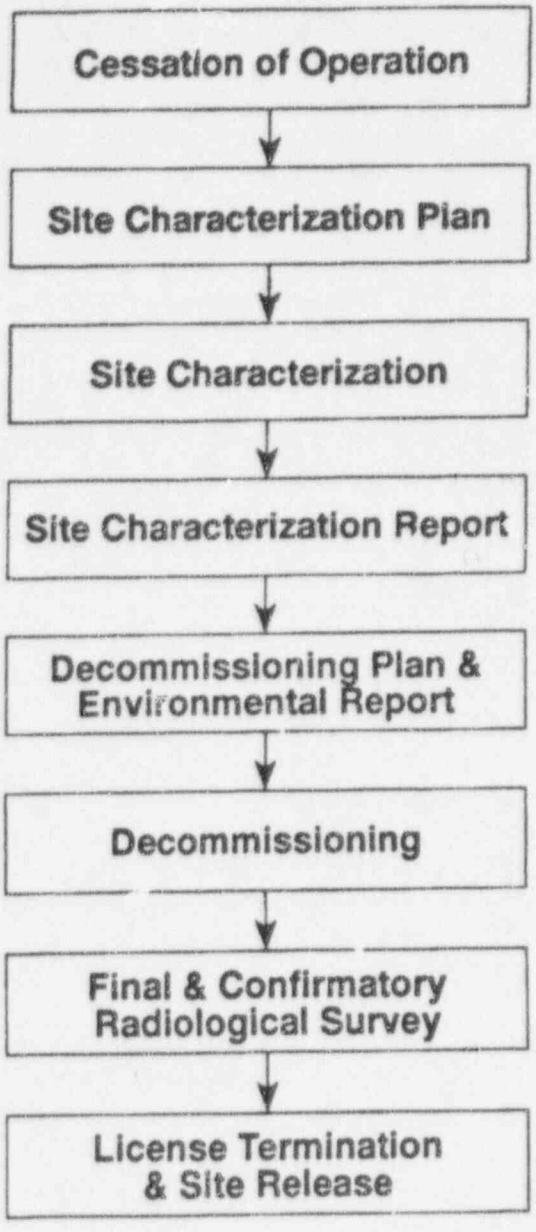

Figure 1: The General Decommissioning Process

Budget reductions and competition between NRC programs have forced the NRC to evaluate whether a more efficient and cost-effective regulatory approach could be used to oversee site remediation while ensuring the same level of public protection. In the FY96 budget, for example, the NMSS has been forced to reduce funding for ORISE confirmatory surveys by 66% (approximately $2 million) from baseline funding. In addition, consistent with direction from Congress and the Office of Management and Budget, staff resources dedicated to the SDMP program have been capped at existing levels to ensure that sufficient resources will be available to support other NRC programs during FY96 through FY98. At the same time, SDMP resources are increasingly being tapped to support non-SDMP work, such as review of formerly terminated licensed sites and more routine decommissioning projects. The NRC staff is also considering reducing support of mobile and fixed laboratories operated out of the NRC regional offices.

2.2 Program Initiatives

This section discusses the following decommissioning program initiatives:

- procedures for decommissioning
- revised performance measures
- site characterization reviews
- confirmatory surveys
- business process redesign
- the interactive resolution process
- preliminary hazards analysis
- the SDMP database
- deferrals to Environmental Protection Agency (EPA) and other programs

2.2.1 Procedures for Decommissioning

The 1989 General Accounting Office (GAO) report on decommissioning identified the lack of procedures as a principal deficiency of the NRC's regulatory program for decommissioning nuclear materials facilities. The GAO expressed concern that the NRC was not ensuring a thorough and effective evaluation of residual contamination levels before terminating licenses and releasing sites for unrestricted use.

The NRC staff has gained considerable experience over the last 5 years in overseeing the SDMP and other decommissioning activities involving significant radioactive contamination. In addition, since the inception of the SDMP in 1990, the NRC has promulgated new requirements on financial assurance, recordkeeping, and timeliness for decommissioning materials facilities. Further, the staff has developed specific procedures, standard review plans, and regulatory guidance on a variety of topics related to decommissioning materials facilities and SDMP sites. The program has now matured to the extent that development of standard procedures for decommissioning is appropriate and achievable.

Members of the NRC staff in the Low-Level Waste and Decommissioning Projects Branch (LLDP) are currently developing a comprehensive Manual Chapter to define the procedures for decommissioning SDMP sites and other licensed sites that used nuclear materials. The objective of the procedures is to promote consistent and efficient regulatory reviews concerning decommissioning activities. The procedures will also promote adherence to a consistent policy and set of practices for ensuring safe and timely decommissioning. In addition, development of the procedures will transfer experience from the SDMP program for use in decommissioning other nuclear materials facilities and sites, including unlicensed sites with elevated levels of contamination from source, special nuclear, or byproduct material use.

The Manual Chapter will provide a roadmap for NRC staff to follow in coordinating and reviewing decommissioning actions. In addition, the Manual Chapter will direct staff to consult established reference

documents, such as regulations, inspection procedures, policy and guidance directives, standard review plans, regulatory guides, NUREGs, and other documents that provide specific criteria for evaluating the adequacy of decommissioning actions.

A preliminary draft of the procedures to be included in the Manual Chapter was circulated to headquarters and regional offices, at the staff level, in June 1995. The preliminary draft was discussed during an NRC counterpart meeting scheduled for July 1995. The final procedures will be issued by the end of 1995, and will be implemented by the NMSS and NRC's regional offices. Implementation of these procedures should resolve the procedural deficiencies previously identified by GAO.

Once issued, the NRC staff may revise the procedures from time to time to reflect significant developments in the decommissioning program, such as the amendments to the standards for residual radioactivity established by the *Code of Federal Regulations*, Title 10, Part 20 (10 CFR Part 20).

2.2.2 Revised Performance Measures

The Government Performance and Results Act of 1993 (GPRA) mandates the use of performance budgeting by all Federal agencies by FY97. As part of the approach required by the GPRA, agencies are required to identify, implement, and evaluate performance of government programs using specific performance measures. These measures are supposed to emphasize "outcome" (that is, the quality and impact of the program), rather than merely "output" or "economy" (the number of tasks completed or the unit cost of completing the tasks, respectively). The Administration's National Performance Review similarly focuses on "outcome" by emphasizing responsiveness to customers, reducing overlap and regulatory burden, and enhancing the efficiency and effectiveness of government programs.

Since the inception of the SDMP, the NRC has used a single performance measure for the program, namely the number of sites decommissioned and removed from the list of sites contained in the SDMP. On the basis of this measure, progress has been limited. To date, only five sites have been sufficiently remediated to be removed from the list. Other sites have been removed from the list for programmatic reasons. For example, Kerr-McGee's West Chicago site was removed from the list when regulatory jurisdiction for the site was transferred to the Illinois Agreement State program. However, the NRC did not take credit for removal of this site because contamination at the site was not remediated or ensured before the site was removed from the list. Other sites have fully or partially completed remediation, but have not yet been removed from the list for a variety of reasons.

From an objective standpoint, the number of sites removed is an inadequate performance measure for the program, and only partially reflects the overall objectives of the NRC's decommissioning program (see Section 2.1.1). In particular, this measure only evaluates output, and yields little or no insight about the quality of NRC performance. For example, the NRC could accelerate approval of decommissioning actions to improve the apparent performance against the measure. However, such an acceleration might sacrifice the desired outcome of a safe, coordinated, documented, and final decommissioning.

In addition, a performance measure based on the number of sites removed only indicates completion of the decommissioning process and provides no indication about interim progress. As a result, this measure is not useful for assessing performance at most sites that are at earlier stages in the decommissioning process. In fact, as the NRC staff commented in reviewing a draft GAO report on the SDMP program in early 1995, use of this measure ignores the considerable progress made in completing reviews of site characterization plans and reports, decommissioning plans, and termination surveys, *where the bulk of program resources have been devoted over the last couple years*. Successful completion of these earlier milestones is a necessary prerequisite to completing decommissioning in a safe, timely, coordinated, and final manner.

Consequently, the NRC staff is developing alternative performance measures that will better track the progress and outcome of the NRC's materials decommissioning program in general, and the SDMP program in particular. For example, the staff is considering alternative measures that would evaluate progress in reviewing and approving decommissioning plans.

2.2.3 Site Characterization Reviews

The performance of licensees and site owners listed in the SDMP varies significantly. Some have implemented effective programs, staffed by competent professionals, that are making timely progress in remediating contaminated sites. At other sites, various factors have resulted in more limited or non-existent progress.

Recognizing this significant variability in the performance of licensees and site owners, the NRC could conserve its resources and reduce licensee fees by conducting less in-depth reviews of licensees that exhibit a high level of performance. Specifically, the NRC could reduce the amount of oversight currently devoted to reviewing site characterization plans and reports.

The NRC emphasized the need for early and ongoing coordination between licensees and the NRC in planning and conducting site characterization. For example, the SDMP Action Plan, released in April 1992, encouraged such interactions and submission of characterization plans for NRC review. This approach was based on the NRC's experience with decommissioning SDMP sites, as well as the experience of the EPA and State agencies in the hazardous waste and Superfund programs.

Since the SDMP Action Plan was released in April 1992, the NRC has devoted considerable attention to site characterization at both the generic and site-specific levels. In November 1992 and November 1994, the NRC conducted public workshops concerning the SDMP program that featured the importance of site characterization to the success of decommissioning. In addition, the NRC published preliminary draft guidance on site characterization in July 1992, as well as the "Draft Branch Technical Position on Site Characterization for Decommissioning" in November 1994. The final rule on "Timelines in Decommissioning of Materials Facilities" published in the Federal Register (59 FR 36026) added a requirement to submit characterization data with the decommissioning plan. The NRC has clearly established and communicated expectations to the licensees and other responsible parties for site characterization in support of decommissioning.

The NRC complemented these generic efforts by reviewing numerous site characterization plans and reports for specific sites between 1992 and 1995. In typical cases, the NRC staff invested approximately one-half to a full person-month of effort (spread out over several months) in reviewing each site characterization plan and report. Although the reviews raised substantive issues that required resolution by the licensees and responsible parties, they proved costly and delayed decommissioning that could otherwise have proceeded in parallel with resolving outstanding issues. In addition, ultimate resolution of some issues depended upon the licensee's preferred approach for decommissioning, which is not established until the licensee submits a proposed decommissioning plan. In some cases, such as the Babcock & Wilcox (B&W) Parks Township Shallow Land Disposal Area (SLDA), discussions about site characterization issues were placed on hold pending the licensee's submission of its preferred approach.

As an alternative, the NRC plans to forego review of site characterization plans and reports for most licensees and responsible parties. Instead, site characterization information will be considered in the NRC's review of the decommissioning plan. This alternative is consistent with NRC regulations, which require characterization data to be submitted with the decommissioning plan.

The NRC's alternative approach will also promote a more coordinated and focused review of site characterization information. This is because reviewers will be compelled to emphasize issues that affect the selection and implementation of a decommissioning approach. (By contrast, the current approach allows reviewers to consider issues that are more academic in nature and may have little bearing on actual performance of decommissioning.) As a result, the new approach will allow the NRC staff to focus on the decommissioning plan reviews that are more critical to ensuring protection of the public and the environment.

The new approach may delay identification of significant information gaps. However, the NRC will partially compensate for this risk by increasing routine contact with licensees through site visits and meetings. In addition, the NRC will pay heightened attention to licensees and responsible parties that have lower levels of performance. Resources thus conserved will then be focused on sites needing increased staff attention, or on other NRC priorities.

The NRC would generally use the following criteria to identify a licensee or responsible party warranting heightened attention during site characterization planning:

(1) a Severity Level I, II, or III violation on the most recent inspection

(2) issuance of an order or other escalated enforcement on the most recent inspection, or based on a licensing review or petition response

(3) inclusion of a "management paragraph" in the cover letter transmitting the notice of violation on the most recent inspection; a management paragraph requires that the licensee describe how it is ensuring adequate management control over the licensed program

(4) occurrence of a significant event requiring a reactive inspection

(5) repetitive violations

(6) failure to take appropriate short-term corrective measures to mitigate or control existing contamination resulting in current public doses that are a significant fraction of the public dose limit or that are actively migrating in soil, groundwater, or other environmental media

(7) limited financial and technical viability of the licensee or responsible site owner

The goal of these criteria is to predict sites where past performance indicates a likelihood that characterization may be inadequate or incomplete. For these sites, it will likely be more efficient to apply staff resources to early review of the characterization plan developed by the licensee or responsible party.

In addition, for some sites, very limited information may exist as to the type(s) and location(s) of contamination present. This information shortage may result from a lack of individuals with institutional memory of operations and waste disposal practices at the site, or from a lack of reliable records. This may be the case for a significant number of the sites identified through the ongoing NRC review of files concerning terminated materials licenses.

Another common problem at the sites identified through the terminated license review is the lack of an organization with demonstrated capabilities to perform the characterization in accordance with NRC regulations and guidance. For these cases, increased NRC staff attention early in the characterization process, including the review of characterization plans and reports, may still be the most efficient method for ensuring timely remediation.

Licensees and responsible site owners that are judged not to need heightened NRC staff attention during characterization planning, may nevertheless request NRC review of site characterization plans and reports. The NRC would entertain such requests on a resource-available basis. A limited (e.g., 1- to 2-day) review of such documents may be conducted to provide informal, yet documented, comments and reactions to the licensees and owners. As an alternative approach, the NRC could visit the site near the beginning and end of site characterization to observe efforts underway, review planned actions and preliminary results, and identify any obvious data gaps or limitations of the methods used by the licensee or responsible party.

The implementation of this approach will reduce the expenditure of NRC staff resources. However, in some cases, this approach may delay decommissioning, and increase resource expenditure by the licensee or responsible party. For example, if significant gaps in characterization data are identified during the review of the decommissioning plan, additional characterization would be required. Remobilizing the personnel and equipment necessary to conduct the additional characterization may take more time and resources than if the data had been collected during the initial characterization effort.

It is the responsibility of the licensee or responsible party to ensure that adequate expertise and resources are devoted to characterization planning and performance. The NRC staff will work closely with licensees or responsible parties during characterization planning to ensure that they are aware of existing guidance, and to provide timely informal comments to identify significant data gaps.

2.2.4 Confirmatory Surveys

For complex decommissioning actions, such as the SDMP sites, the NRC has routinely conducted a confirmatory survey. The purpose of a confirmatory survey is to validate, on an audit basis, the data in the licensee's termination survey report. The survey is normally conducted after the NRC staff completes the review of the licensee's termination survey report. In some cases, the NRC staff performs the survey; in other cases, the ORISE performs the survey under contract to the NRC.

In each case, the NRC compares the results of the confirmatory survey to the survey results submitted by the licensee or responsible party. If the results compare favorably, the NRC determines that decommissioning is complete and the site is ready for release in accordance with NRC requirements. If the comparison reveals significant differences between the survey results, additional investigation is required to determine the causes and the need for additional sampling, scans, or remediation.

The licensee reimburses the NRC for the cost of the confirmatory survey, which is proportional to the scope of the survey and typically ranges from $20,000 to $200,000. The most expensive confirmatory survey to date was conducted at the Shoreham Nuclear Power Station in Long Island, New York, at a cost of $800,000.

The NRC's confirmatory surveys are discretionary; that is, existing NRC regulations do not require the performance of confirmatory surveys. However, in recent years, such confirmatory surveys have become routine in NRC's review and release of the more complex contaminated sites.

To some extent, the NRC staff has come to rely on the confirmatory survey to compensate for less comprehensive quality assurance in the licensee's termination survey, and less scrutiny of the licensee's performance while the survey is in progress. Also, the public relies on the NRC's survey because of the perception that the licensee's survey is inherently biased in favor of the licensee and cannot be trusted as a final basis for releasing a site.

Similar to the initiative described to reduce characterization plan review, the NRC staff will reduce the scope of confirmatory surveys, placing greater emphasis on the licensee's or responsible party's termination radiological survey for most sites. Confirmatory surveys will continue to be performed, either by NRC staff

or an NRC contractor, but with reduced frequency and scope. The extent of the confirmatory survey will be based on the following factors:

- past performance assessed using the conditions listed in Section 2.2.3
- results of NRC inspections while the licensee's survey is in process
- results of the licensee's quality assurance/quality control (QA/QC) efforts as reported in the termination survey report and as observed during inspections

This initiative places greater emphasis on the licensee's QA/QC program and in-process NRC inspections during the licensee's termination survey. This is a more prudent, effective, and efficient approach for evaluating the adequacy of remediation. The NRC would increase the effort applied to reviewing the termination survey plan, which is already part of the decommissioning plans submitted by licensees and responsible parties, to ensure that it includes an appropriate QA/QC program. This would consist of the following provisions, among others:

- sample analysis by accredited laboratories that perform routine cross-comparison programs conducted by EPA and others
- submission of QC samples (blanks, spikes, standards)
- adherence to training and sampling procedures
- qualification of field and laboratory technicians

A number of these provisions are being incorporated in the Multi-Agency Radiological Site Survey Investigation Manual (MARSSIM) being developed by the EPA, NRC, Department of Energy (DOE), and Department of Defense (DOD). To complement the MARSSIM guidance, the NRC staff may need to develop limited guidance on appropriate QC measures for termination surveys. The agencies are also initiating development of complementary procedures in the Multi-Agency Radiological Laboratory Procedures Manual (MARLAP). In addition, during performance of the licensee's termination survey, the NRC will collect split samples or measurements with the licensee to verify the reliability of the data, as necessary.

These approaches are more consistent with the EPA's new approaches for overseeing remediation at Superfund sites or in hazardous waste facility assessments and corrective action programs. In some cases, an independent third-party may be involved to confirm the results submitted in the licensee's termination survey. Unless a licensee voluntarily commits to independent third-party sampling, the NRC may need to resort to orders to require such surveys when justified on the basis of health and safety considerations.

For SDMP sites, and other complex decommissioning cases, the NRC staff will conduct a routine closeout inspection before terminating the license. For less complex cases a closeout inspection may not be needed. When required, the inspection would typically include general area scans using appropriate survey equipment (such as handheld or large-area floor survey probes), limited fixed measurements, and random samples collected from areas suspected of having elevated contamination levels.

Implementation of this approach incurs some increased risk that sites could be released with elevated levels of residual radioactivity in isolated "hot spots." Past confirmatory surveys have identified hot spots at a number of sites. These spots have been limited, and in most cases did not pose significant health and safety concerns. Nonetheless, release of sites with hot spots could increase the likelihood that future land owners, or other interested parties, may deem it necessary to reevaluate the site.

The staff believes, however, that the potential is low that such reevaluation would identify a significant risk to the environment or public health and safety. This position is supported by recent staff efforts to develop risk-based methods for evaluating hot spots. Preliminary results indicate that, for many cases, current NRC guidance on the acceptable levels of radioactivity in a given hot-spot is conservative, and may be increased without exceeding current decommissioning dose criteria. If the hot spot guidance is revised to allow higher levels of radioactivity, the probability of a site being subject to future inquiries should decrease, and the risks of reducing the scope of confirmatory surveys should be mitigated.

Reducing the scope of confirmatory surveys would also decrease the availability of independent documentation demonstrating that a site meets NRC criteria. This documentation has, in the past, been shown to be reassuring to the public.

The NRC will manage these risks by increasing emphasis on the review of licensee documentation of termination survey plans and reports, including QA/QC records necessary to confirm that the program remained effective throughout the survey. The NRC will place the greatest emphasis on licensees or responsible parties that exhibit poor performance based on past experience, including the results of NRC inspection during the licensee's termination survey. The NRC will also consider increasing the scope of confirmatory surveys for licensees or responsible parties where past experience indicates a potential for submittal of inadequate or incomplete termination survey data.

Independent measurements collected by the NRC during the licensee's survey and any additional measurements collected during the closeout inspection could indicate elevated contamination at the sites. If discrepancies cannot be readily resolved between survey measurements, the NRC may require (by order) or request that a licensee or responsible party conduct additional independent surveys to confirm the radiological status of the site, or the NRC may itself conduct a more comprehensive confirmatory survey. Timing of such a survey will be determined by the availability of funding and other program priorities. Such a survey could result in substantial delays and economic impacts on licensees or responsible parties before release of the sites.

2.2.5 Business Process Redesign

Application of the Business Process Redesign (BPR) approach to the current licensing process results in a fundamentally new licensing process for regulating routine uses of licensed materials. This new licensing process, summarized in SECY-95-114, "Implementation of a Redesigned Materials Licensing Process," dated May 5, 1995, is composed of three major concepts:

(1) a Regulatory Product Design Center where technical members of the materials licensing and inspection community can interact, in both virtual and actual space, to design and prepare regulatory products necessary to support, maintain, and enhance the new licensing process

(2) improved processing of licenses through reviewer-performed and computer-assisted licensing, using a graded approach commensurate with the safety hazards posed by the application

(3) a new way of working in Agency-wide teams

The NRC staff has used many of these concepts to oversee the remediation of most SDMP sites. As new concepts and methods are developed to facilitate the goals of the BPR project, the staff will evaluate their applicability to the SDMP program.

The staff currently plans to explore two specific areas where the BPR project may have near-term applicability to the SDMP program. First, the staff has begun exploring the possibility of using a contractor

to facilitate a functional review of the SDMP program to identify handoffs, track turnarounds, and assess the progress of the program. Second, the staff plans to explore the idea of forming SDMP decommissioning management teams. As currently envisioned, these teams would consist of staff members from NMSS, other Headquarters Offices, and the Regions, with decommissioning experience and regulatory/licensing responsibility for the SDMP site. These teams will function in the same manner as the BPR Agency-wide teams, managing by exception, reaching collaborative team-based decisions, and employing parallel concurrence to expedite the evaluation and approval of decommissioning plans and reports.

The SDMP and BPR program staffs have been discussing, and will continue to discuss, the applicability of the BPR concepts to the SDMP program, while moving forward with the staff's current initiatives. The staff also plans to conduct an initial assessment concerning application of the BPR concepts to SDMP, in conjunction with its review of licensing and inspection programs under Phase II of the National Performance Review. Results of this assessment will be available in March 1996.

The staff anticipates that, as the BPR and SDMP programs continue to mature, there will be several opportunities to incorporate into the SDMP the methods or concepts developed under BPR. In order to keep the Commission informed of the staff's efforts, the staff will discuss the application of the BPR concepts and methods in future SDMP program updates.

2.2.6 Interactive Resolution Process

In March 1995, the NRC staff met with the Nuclear Energy Institute (NEI) and Fuel Cycle Facilities Forum (FCFF) to discuss implementation of an interactive issue resolution process. The objectives of the process are to share information about generic or specific precedents that may be of general interest, and to exchange information about ongoing implementation of the decommissioning program outside of specific rulemaking and licensing actions.

The industry is currently developing a list of specific implementation issues for NRC consideration. The NEI and FCFF transmitted the first set of issue worksheets on June 6, 1995. An open meeting between the NEI, FCFF, and NRC was held on June 13, 1995, to discuss these issues, as well as planned guidance documents and policy positions. These discussions were the prelude for a more interactive process for developing regulatory guidance on issues associated with decommissioning, such as methods for determining background radiation levels, modeling potential exposures, conducting survey measurements, and implementing the timeliness rule.

On May 4, 1995, the NEI proposed to the Commission that the NRC use a similar interactive process to develop regulatory guidance documents that implement the final rule on radiological criteria for decommissioning. The NRC successfully used such an approach in developing the regulatory guides that implemented the 1991 revisions to 10 CFR Part 20. This interactive process should conserve staff resources by ensuring fulfillment of the following objectives:

(1) Licensees and responsible parties are aware of NRC staff positions on various issues before preparing and submitting decommissioning and survey plans.

(2) The staff applies a consistent, streamlined set of procedures and policies in reviewing proposed decommissioning actions.

(3) Staff efforts to develop guidance are responsive to program needs, and provide constructive approaches for resolving issues associated with decommissioning.

2.2.7 Preliminary Hazards Analysis

The NRC will develop a more detailed method for assessing risk at sites identified through the ORNL and NRC staff review of terminated licenses (Section 4.1.4) that are confirmed to have residual contamination from formerly licensed operations. The purpose of the risk assessment is to determine if residual contamination contained in a relatively small area poses a significant risk to the environment or public health and safety, and whether it warrants additional action by the responsible party and the NRC.

Any site identified through the terminated license review project would require remediation if the average contamination level exceeds the guideline value at the 95% confidence level. However, for ongoing decommissioning projects, additional remediation may also be recommended if localized contamination exceeds the averaging criteria described in NUREG/CR-5849, "Manual for Conducting License Termination in Support of License Termination."

The averaging guidance in NUREG/CR-5849 was designed for sites that have widespread contamination. This guidance is used to help plan the site remediation and design the survey to demonstrate compliance with decommissioning criteria (termination survey). This guidance may not be appropriate for sites where a license was previously terminated. In such cases, localized areas with elevated contamination levels may be acceptable, on a risk basis, depending on the total inventory present, the size of the localized contaminated area, the radionuclide of concern, and other factors. The staff is performing a more detailed evaluation of the risk associated with localized contamination as a part of the development of the MARSSIM discussed in Section 2.2.4.

Before requesting that the licensee or responsible party perform additional site characterization, and possibly remediation, it is important that the NRC conduct a more detailed risk assessment of localized contamination for three reasons:

(1) Detailed risk assessment is consistent with the Commission's direction in the 1992 SDMP Action Plan to ensure finality in decommissioning unless a significant impact on public health and safety is identified.

(2) Performing additional characterization and remediation for a very low-risk site may require an unnecessary expenditure of resources and cause undue public concern.

(3) Detailed risk assessment would set a desirable precedent as to how the NRC will respond to future discoveries of low levels of contamination at sites.

The staff will consider formerly terminated licensed sites in a two-step process. First, after determining that a site contains elevated levels of residual contamination, the staff will conduct a preliminary assessment based on available information to determine whether additional characterization and remediation are necessary. Some sites may have such minimal levels of contamination that they do not pose a significant risk and do not warrant additional action. The NRC will document these findings in a letter to the current property owner and the former licensee.

Second, for sites that warrant additional characterization, and possibly remediation, the staff will perform additional hazards analysis to identify those that should receive prompt attention and higher NRC priority. The hazards analysis would be conducted based on available information (including scoping surveys) by comparing site conditions against the following priority criteria:

(1) The site currently causes doses to members of the general public in excess of 50 millirem/year (total effective dose equivalent), or 50% of the NRC's public dose limit in 10 CFR 20.1301.

(2) The site currently exhibits measurable migration of radiological contamination to groundwater, surface water, soil, sediment, or other environmental media.

(3) The responsible party lacks the financial and technical capability or management commitment to ensure security and control of the contaminated material.

Compared to other contaminated sites that are added to the SDMP or considered to be more typical decommissioning cases, sites that meet *any* of the above criteria would receive higher priority consideration by the NRC for reviews of proposed decommissioning plans, site characterization data, and radiological surveys. Contaminated sites that do not satisfy any of these criteria would be backlogged for reviews, and addressed by the staff as the higher priority sites are resolved and as resources become available. This approach will allow the NRC staff to focus on contaminated sites having greater risk, while containing the size of the SDMP and decommissioning program to within existing staff budgets.

2.2.8 SDMP Database

Over the past several years, the NRC has manually tracked completion of licensing actions and other decommissioning milestones in the SDMP program. During this period, the staff has received frequent requests (from the Commission, Congress, and outside parties) for status information. Such requests have required considerable effort in reviewing the licensing dockets and project files to compile the requested information.

In 1994, the staff initiated development of a comprehensive database management system containing information on SDMP sites. The prototype database has been developed, using the Microsoft ACCESS computer program, as a cooperative effort between the NRC Office of Information Resources Management (IRM) and NMSS. Status information and other site characterization data will be loaded into the database and routinely maintained by licensing assistants in LLDP.

The database will be used to produce periodic reports to NRC management on SDMP accomplishments and status, as well as the annual reports to the Commission on the SDMP. As such, the database reports will substitute for the more labor-intensive descriptions of the individual SDMP sites that have been included in previous reports on the SDMP. In addition, the database will be used to respond to internal and external requests for information concerning the status and characteristics of the SDMP sites. (The most recent request was from Senator Glenn in a letter dated May 8, 1995, with the response from the Commission dated June 22, 1995.)

Maintenance of the database is expected to require about 0.2 FTE annually. Use of the database in place of the individual site descriptions and manual searches of the files should save about 0.5 FTE per year.

2.2.9 Deferrals to EPA and Other Programs

In SECY 95-056, the NRC staff recommended that the Commission defer oversight of decommissioning actions at two sites that are already being addressed under EPA's Superfund program under the Comprehensive Environmental Response, Compensation, and Liability Act. The two sites were the DuPont Corporation site in Newport, Delaware, which was not listed in the SDMP, and the West Lake Landfill near Bridgeton, Missouri, which was listed in the SDMP. The staff based its recommendation on recognition of the following factors:

- NRC regulation of the remediation of radioactive contamination at the two sites would overlap with and duplicate the EPA's actions under Superfund.

- The EPA's actions would be sufficient to protect the public and the environment from radiological hazards present.

The Commission approved the staff's recommendation in an SRM dated April 28, 1995. The NRC has since notified the EPA that it plans no further action on either site, and will remove the West Lake Landfill from the SDMP list. This decision sets a precedent for other deferrals to EPA regulation of remedial activities, as well as other similar actions by States and DOE, where such actions are expected to provide sufficient protection to the public and the environment.

Several other sites listed in the SDMP or addressed in other decommissioning projects may be candidates for such deferrals. For example, the Pesses site in Pulaski, Pennsylvania, is being remediated by EPA under Superfund. In such cases, the NRC staff will assess the adequacy of existing or proposed remediation of these sites, and will determine whether deferral is appropriate. In addition, the NRC staff will coordinate proposed deferral actions with the other agency(ies) that regulate the remediation, and will inform the Commission before formally initiating any deferral.

3. SDMP SITE STATUS OVERVIEW

Since May 1993, the staff has removed the following sites from the SDMP list, and submitted the indicated papers to inform the Commission:

- AMAX, Inc. (Washington Bottom, West Virginia)
  Memorandum from James M. Taylor, "Removal of the AMAX Site from the Site Decommissioning Management Plan," dated April 25, 1994.

- Chevron Corporation (Pawling, New York)
  SECY-94-162, "Pawling Site Release and Removal from the Site Decommissioning Management Plan."

- Old Vic, Inc. (Cleveland, Ohio)
  SECY-93-062, "Old Vic, Inc., License Termination and Removal from the Site Decommissioning Management Plan."

In addition, decommissioning has been essentially completed at the following sites:

- UNC Recovery Systems (Wood River Junction, Rhode Island)
- United Technologies/Pratt & Whitney (Middletown, Connecticut)
- Babcock & Wilcox (Apollo, Pennsylvania)
- Aluminum Company of America (ALCOA) (Cleveland, Ohio)

Limited surveys or other administrative activities need to be completed before these sites can be removed from the SDMP list. For example, at the UNC site, issues related to nitrate contamination of the groundwater have delayed removal of the site from the list. These issues have been resolved through a consent agreement between the State of Rhode Island and UNC. Similarly, at the B&W Apollo site, a 1-year period of groundwater monitoring was required after decommissioning activities were completed. This 1-year period ends in November 1995. All four of these sites should be removed from the SDMP list in 1995.

Seven additional sites have approved decommissioning plans, and remediation is ongoing at these sites. Portions of two other sites have been decommissioned and released for unrestricted use. These sites, Cabot (Reading, Pennsylvania) and Northeast Ohio Regional Sewer District (Cleveland, Ohio), will remain on the SDMP list until the entire site is decommissioned.

Figure 2 presents a map depicting the location of each of the 51 sites listed in the SDMP. For each of these sites, Appendix A updates the decommissioning progress since May 1993 (the end of the period covered by NUREG-1444). Detailed background information is not repeated for sites that were listed in NUREG-1444. However, for sites that have been added to the SDMP since May 1993, Appendix A presents detailed descriptions including site operations, radioactive wastes, radiological hazards, financial assurance and responsible organization, status of decommissioning activities, NRC/licensee actions and schedule, and problems/issues.

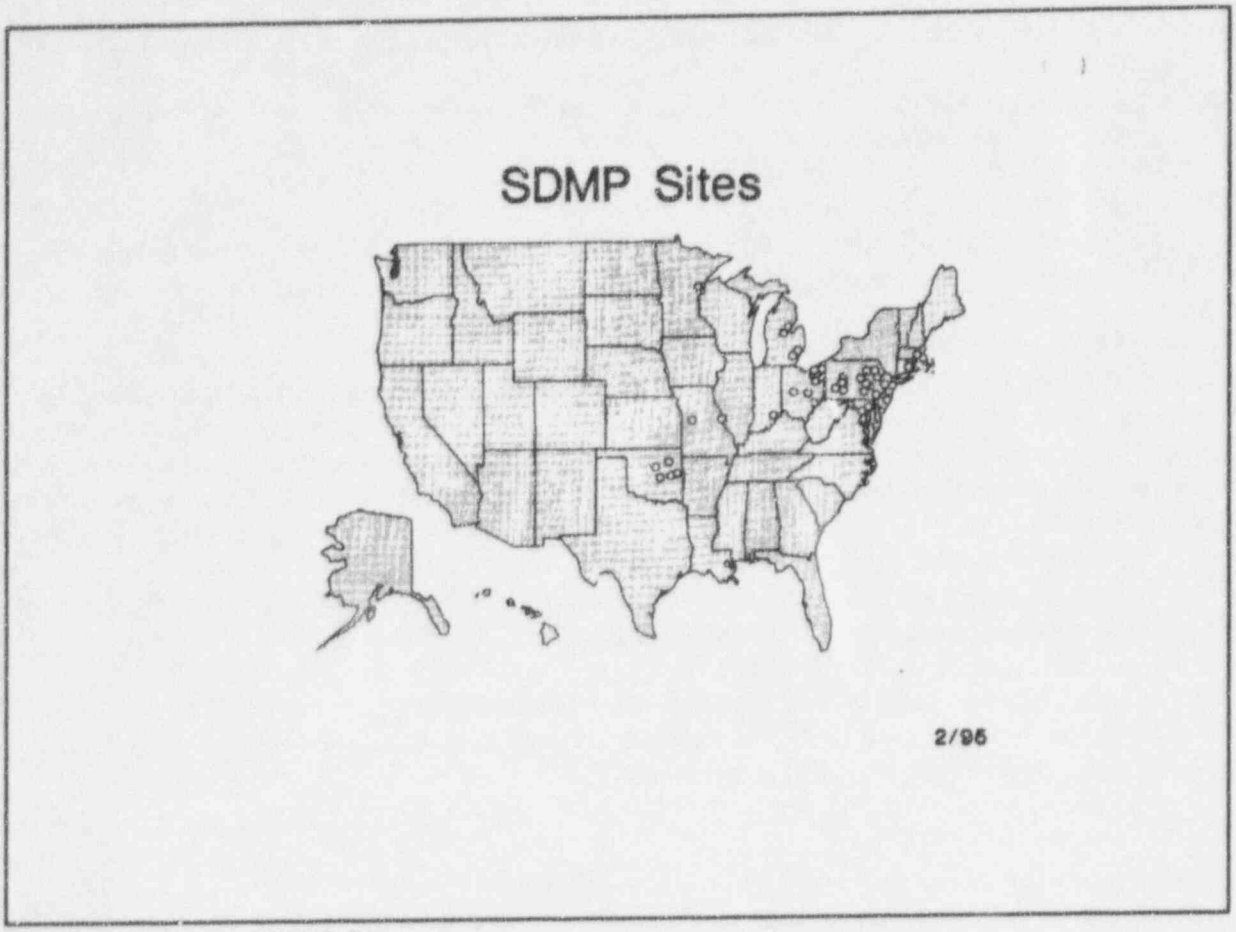

Figure 2: Location of SDMP Sites

Of the 51 sites currently listed in the SDMP, licensed operations are ongoing at 5 sites, and the licensees do not anticipate ceasing operations in the near future. In general, the objective at these 5 sites is not to decommission the entire site in the near future. Instead, the objective is to prepare for decommissioning, or to evaluate various site-specific problems that would likely lead to a complex decommissioning action, extended over a protracted period of time, if operations were to cease. Progress at these 5 sites is evaluated on a case-by-case basis. See Appendix A for descriptions of activities at these sites since May 1, 1993.

The 46 remaining sites listed in the SDMP require decommissioning of the entire site, or an inactive contaminated portion of the site. Licensed operations have ceased at these 46 sites or inactive areas. The status of each of these sites can be reasonably gauged by tracking the following 8 decommissioning activities, or milestones:

(1) Site characterization, including preparing the characterization plan, performing the characterization, and preparing the characterization report

(2) NRC review and approval of the site characterization plan and report

(3) Development and submittal of the decommissioning plan

(4) NRC review and approval of the decommissioning plan

(5) Performance of the decommissioning actions described in the plan

(6) Performance of the termination survey, and preparation and submittal of the termination survey report

(7) NRC performance and documentation of the confirmatory survey

(8) NRC termination of the license

Submittal and review of site characterization plans and reports are included as milestones in the progress summaries, as is conduct of the confirmatory surveys. However, as discussed in the management plan (Section 2 of this update), the resources committed to these areas will be decreased. The review of characterization data will continue, but, in most cases, will be conducted along with the decommissioning plan review. Separate reviews of characterization plans and reports, before submittal of the decommissioning plan, will be reduced. For confirmatory surveys, some level of effort will be required at each site listed in the summary figures and tables; however, the extent of the confirmatory survey will be reduced, in some cases significantly.

Figure 3 summarizes the overall decommissioning progress at the SDMP sites as of May 1, 1995, by displaying the total number of sites that have completed a given decommissioning milestone. Figure 3 includes milestones that apply to the entire site, as well as those that apply when portions of the site have been characterized, remediated, or surveyed, which in many cases represents significant progress. However, the "Release Site" category includes only the five sites that have completed the decommissioning of the entire site, and have been removed from the SDMP.

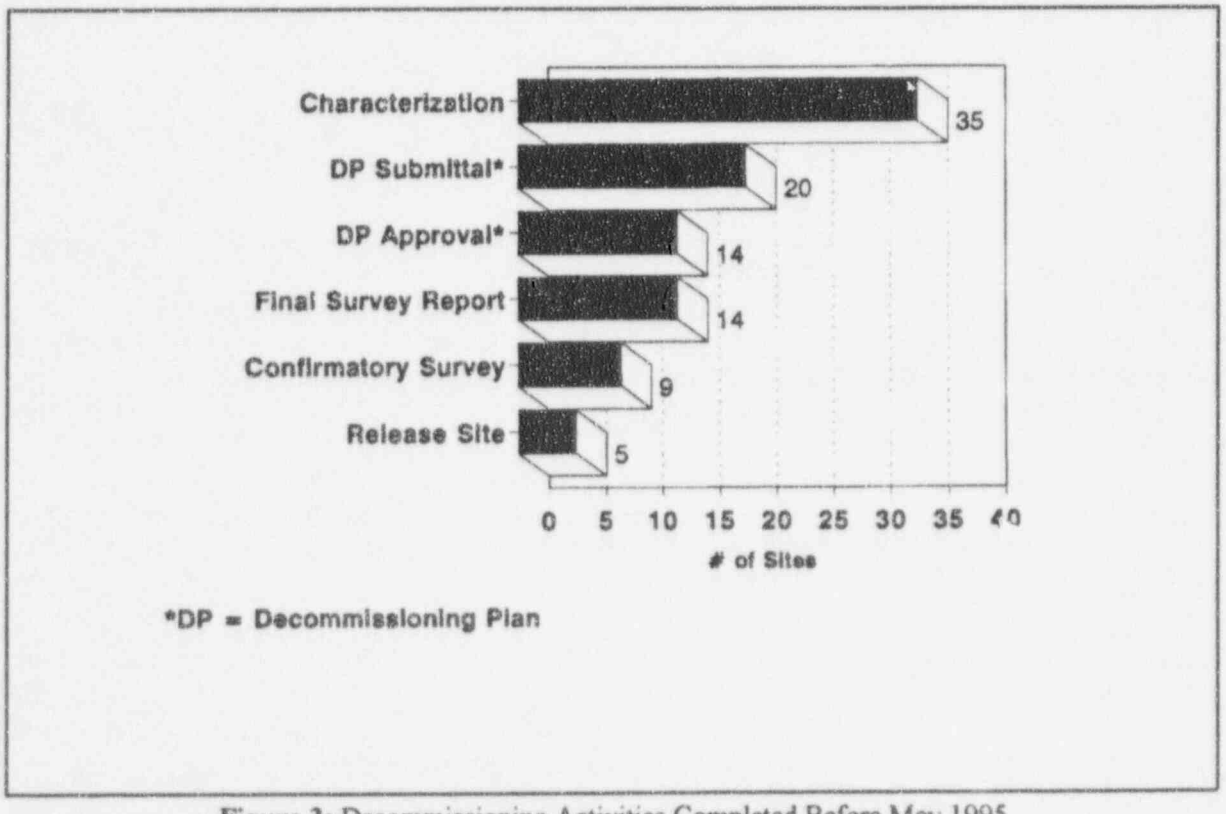

Figure 3: Decommissioning Activities Completed Before May 1995

It is apparent from Figure 3 that a substantial portion of the decommissioning effort to date has been applied to site characterization. Of the 51 sites, 35 have completed all or part of the site characterization. In many cases this included staff review and approval of characterization plans. Following characterization, 19 sites have submitted decommissioning plans for all or part of the site, and 14 plans have been approved by NRC.

Approval of the decommissioning plan is the most significant milestone, since it initiates the reduction or long-term stabilization of contamination at a site and the corresponding reduction in risk to public health and safety. In addition, the review and approval of the decommissioning plan generally poses the greatest technical and policy challenges.

After approval of the decommissioning plan, the activities become more routine, although problems can be encountered that can cause delays or require revisions to the approved decommissioning plan. This is apparent from Figure 3, which shows that 14 sites have approved decommissioning plans, but only 5 sites have completed decommissioning and been removed from the SDMP list. The approved schedule for decommissioning may be protracted as a result of legitimate technical or cost considerations.

While Figure 3 summarizes decommissioning progress since the beginning of the SDMP program in 1990, Table 1 provides a site-specific breakdown of the decommissioning activities completed since May 1993, the end of the period covered by NUREG-1444. Table 1 shows the effort expended over the last 2 years in planning and performing site characterizations for all or part of 13 sites. After completing the characterizations over the last 2 years, 2 sites submitted, and received NRC approval of, decommissioning plans for the entire site. These sites, Anne Arundel County/Curtis Bay and ALCOA, have nearly completed decommissioning, and should be removed from the SDMP list in 1996. Eight additional decommissioning plans were submitted over the last 2 years, and four were approved.

Table 1 - Decommissioning Activities Completed Between May 1, 1993 and May 1, 1995

Decommissioning Activity Scheduled	Site
SITE CHARACTERIZATION PLAN	
Submittal	AAR Manufacturing, Inc. Cabot Corporation (Reading, PA) Frome Investment Company Hartley and Hartley Landfill (SCA) Whittaker Corporation Safety Light Corporation Sequoyah Fuels Corporation
Approval	AAR Manufacturing, Inc. Babcock and Wilcox (Parks Township, PA) Magnesium Elektron Molycorp, Inc. (Washington, PA)
Submittal and Approval	Clevite Corporation Engelhard Corporation Lake City Ammunition Plant (U.S. Army) Molycorp, Inc. (York, PA) Northeast Ohio Regional Sewer District/Southerly Plant Westinghouse Electric Corporation (Waltz Mill Site)
SITE CHARACTERIZATION REPORT	
Submittal	Babcock and Wilcox (Parks Township, PA) Cabot Corporation (Revere, PA) Engelhard Corporation Lake City Ammunition Plant Magnesium Elektron Molycorp, Inc. (Washington, PA) Northeast Ohio Regional Sewer District/Southerly Plant Nuclear Metals, Inc. Permagrain Products, Inc. RMI Titanium Company Texas Instruments, Inc. Westinghouse Electric Corporation (Waltz Mill Site)
DECOMMISSIONING PLAN	
Approval of Partial Plan	Engelhard Corporation Northeast Ohio Regional Sewer District/Southerly Plant
Submittal of Partial Plan	Dow Chemical Company

Table 1 - Decommissioning Activities Completed Between May 1, 1993 and May 1, 1995 (Continued)

Decommissioning Activity Scheduled	Site
DECOMMISSIONING PLAN (cont.)	
Submittal and Approval of Partial Plan	Cabot Corporation (Reading, PA)
Submittal of Final Plan	Hartley and Hartley Landfill Kerr-McGee Cushing Kerr-McGee Cimarron Chemetron Corporation (Harvard Ave.) Chemetron Corporation (Bert Ave.) RMI Titanium Company
Submittal and Approval of Final Plan	Anne Arundel County/Curtis Bay Aluminum Company of America
Approval of Final Plan	Chevron Corporation Elkem Metals, Inc. Watertown Arsenal/Mall Watertown GSA
TERMINATION SURVEY REPORT	
Submittal of Report for Partial Site	Cabot, Inc. (Reading, PA) Northeast Ohio Regional Sewer District/Southerly Plant BP Chemicals America, Inc. Jefferson Proving Ground
Submittal of Final Report	Aluminum Company of America Babcock & Wilcox (Apollo, PA) Chevron Corporation Elkem Metals, Inc. Old Vic, Inc.

Table 1 - Decommissioning Activities Completed Between May 1, 1993 and May 1, 1995 (Continued)

Decommissioning Activity Scheduled	Site
NRC CONFIRMATORY SURVEY	
Confirmatory Survey of Partial Site	Northeast Ohio Regional Sewer District/Southerly Plant Aluminum Company of America BP Chemicals America, Inc. Cabot Corporation (Reading, PA)
Final Confirmatory Survey	Babcock & Wilcox (Apollo) Chevron Corporation Old Vic, Inc.
RELEASE FOR UNRESTRICTED USE	
Release Partial Site	Aluminum Company of America BP Chemicals America, Inc. Northeast Ohio Regional Sewer District/Southerly District Cabot Corporation (Reading, PA) United Technologies - Pratt & Whitney
Release Entire Site	Old Vic, Inc. Chevron Corporation
REMOVE SITE FROM SDMP LIST	
	Old Vic, Inc. Chevron Corporation AMAX

Figure 4 shows the number of decommissioning activities scheduled for completion by May 1, 1997. Including those completed by May 1995, a total of 41 sites are scheduled to complete the characterization of part or all of the site by May 1997. In addition, 25 decommissioning plans should be approved, with a total of 14 sites completing all of the actions required for removal from the SDMP list (including those completed by May 1995).

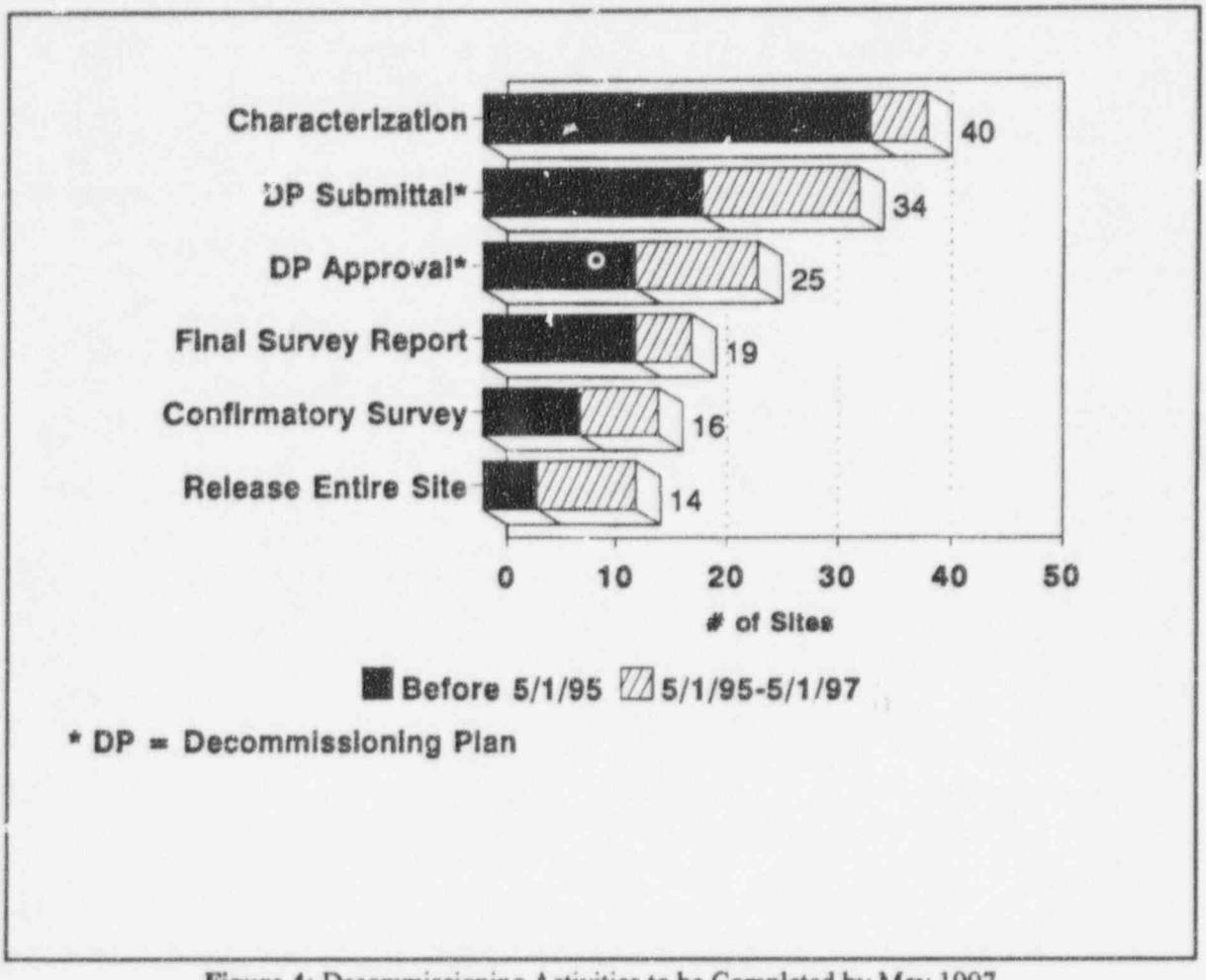

Figure 4: Decommissioning Activities to be Completed by May 1997

Table 2 provides the site-specific decommissioning milestones projected for completion between May 1995 and May 1997. Notably, the number of projected characterizations has decreased compared to previous years. Specifically, 12 characterization reports where submitted between May 1993 and May 1995, but only 6 are scheduled for submittal from May 1995 to May 1997. However, 11 decommissioning plans are scheduled for approval over the next 2 years, compared with 9 approved over the last 2 years. In addition, the decommissioning plans to be approved over the next 2 years are generally more complex than those previously approved. Together with the initiative discussed in Section 2.2.3 aimed at reducing NRC staff resources devoted to the review of characterization plans and reports before submittal of the decommissioning plans, the decrease in scheduled site characterizations is a positive indication that staff resources over the next 2 years should be adequate to complete the scheduled decommissioning plan reviews. Finally, Table 2 indicates that 9 additional sites are scheduled for removal from the SDMP by May 1997.

Table 2 - Decommissioning Activities Scheduled for Completion During the Period May 1, 1995 to May 1, 1997

Decommissioning Activity Scheduled	Site
SITE CHARACTERIZATION REPORT	
Submittal	Aberdeen Proving Ground (Risk Assessment) Clevite Corporation Safety Light Corporation Sequoyah Fuels Corporation Shieldalloy Metallurgical Corporation (Cambridge, Ohio)
DECOMMISSIONING PLAN	
Submittal of Partial Plan	Lake City Army Ammunition Plant (U.S. Army) Sequoyah Fuels Corporation Whittaker Corporation
Approval of Partial Plan	Lake City Army Ammuniton Plant (U.S. Army) Whittaker Corporation
Submittal of Final Plan	Clevite Corporation Hartley and Hartley Landfill (MDNR) Hartley and Hartley Landfill (SCA) Molycorp, Inc. (Washington, PA) Molycorp, Inc. (York, PA) Nuclear Metals, Inc. Shieldalloy (Cambridge, OH)
Submittal and Approval of Final Plan	Dow Chemical Company Northeast Ohio Regional Sewer District/Southerly Plant Permagrain Products, Inc. Westinghouse Electric Corporation, Waltz Mill
Approval of Final Plan	BP Chemicals America, Inc. Chemetron (Bert Ave.) Chemetron (Harvard Ave.) RMI Titanium Company Kerr-McGee Cimarron

Decommissioning Activity Scheduled	Site
TERMINATION SURVEY REPORT	
Submittal of Report for Partial Site	
Submittal of Final Report	Anne Arundel County/Curtis Bay Texas Instruments, Inc. Watertown Arsenal/Mall Watertown GSA
NRC CONFIRMATORY SURVEY	
Confirmatory Survey of Partial Site	Jefferson Proving Ground
Final Confirmatory Survey	Aluminum Company of America Anne Arundel County/Curtis Bay Elkem Metals, Inc. RTI, Inc. Texas Instruments, Inc. Watertown Arsenal/Mall Watertown GSA West Lake Landfill United Technologies - Pratt & Whitney
RELEASE FOR UNRESTRICTED USE	
Release Partial Site	RTI, Inc.
Release Entire Site	Aluminum Company of America Anne Arundel County/Curtis Bay Babcock and Wilcox (Apollo, PA) Texas Instruments, Inc. UNC Recovery Systems United Technologies - Pratt & Whitney

Decommissioning Activity Scheduled	Site
REMOVE SITE FROM SDMP LIST	Aluminum Company of America Anne Arundel County/Curtis Bay Babcock and Wilcox (Apollo, PA) Magnesium Elektron RTI, Inc. Texas Instruments, Inc. UNC Recovery Systems United Technologies - Pratt & [illegible]ey West Lake Landfill

Since May 1993, the following six sites were added to the SDMP:

(1) AAR Manufacturing Inc. (Brooks and Perkins Corporation)
Livonia, Michigan

(2) Clevite Corporation (Neighborhood Progress, Inc.)
Cleveland, Ohio

(3) Fromme Investment Company (Brooks and Perkins Corporation)
Detroit, Michigan

(4) Horizons, Inc. (Lamotite)
Cleveland, Ohio

(5) Jefferson Proving Ground
Madison, Indiana

(6) Kaiser Aluminum Specialty Products
Tulsa, Oklahoma

With the exception of Jefferson Proving Ground, these sites were identified through the ongoing review of terminated materials licenses. The sites were added to the SDMP after NRC inspectors conducted a scoping survey at the sites and identified contamination exceeding the NRC's current criteria for unrestricted use. Section 4.1.4 presents additional information on the review of terminated licenses. Appendix A provides detailed descriptions of the six new SDMP sites listed above.

4. DECOMMISSIONING POLICY ISSUES

As the NRC focused on remediation of the SDMP sites, several issues emerged as impediments to their timely cleanup. A primary objective of the SDMP is to identify these issues and ensure that the NRC staff resources are devoted to their resolution in order for decommissioning of the SDMP sites to proceed in a timely manner.

Several policy issues have generic implications for the NRC's overall decommissioning program, or involve other matters that must ultimately be decided by the Commission. Resolution of the policy issues discussed below will provide a regulatory framework for more efficient and consistent licensing actions for future site remediation and decommissioning.

4.1 Open Issues

This section discusses the following open issues with generic implications for the NRC's overall decommissioning program:

- enhanced participatory rulemaking on radiological criteria for decommissioning
- rulemaking on timeliness in decommissioning of materials facilities
- rulemaking on decommissioning, recordkeeping, and license termination
- review of licensed sites terminated after 1965
- guidance on the conduct of termination surveys
- previous waste disposal under 10 CFR 20.302 and 20.2002
- review of non-power reactor license terminations
- development of procedures to ensure that future license terminations meet NRC requirements
- review and modification of license termination procedures
- consideration of a "reopener" rulemaking

NUREG-1444 contained comprehensive background information on each of these open issues. Instead of repeating the background information, this supplement discusses the progress made since May 1993, which was the end of the period covered by NUREG-1444.

4.1.1 Enhanced Participatory Rulemaking on Radiological Criteria for Decommissioning

This section discusses the following issues concerning enhanced participatory rulemaking on radiological criteria for decommissioning:

- rulemaking
- development of technical bases for decommissioning lands and structures
- regulatory guide

4.1.1.1 Rulemaking

Since May 1993, the NRC conducted an enhanced participatory rulemaking to establish radiological criteria for decommissioning. The proposed rule was published in the *Federal Register* (59 FR 43200) on August 22, 1994, as proposed amendments to 10 CFR Part 20.

Comments received on the proposed rule raised a variety of concerns, including the reasonableness of selecting 15 millirem per year as the dose limit for unrestricted use, and whether costs associated with remediation of contaminated soil and groundwater had been appropriately estimated. In order to address the substantial comments received on the proposed rule, the NRC staff will not submit the rulemaking package

for Commission review until December 1995. In the meanwhile, the staff plans to conduct a public workshop in the Washington, DC area in September 1995. This workshop will provide an opportunity to discuss practical implementation issues raised by the comments, describe current staff evaluations based on real-world data, and explore alternative approaches that could be used to implement the final criteria.

The NRC staff is also coordinating with the EPA in that agency's development of residual radioactivity standards. The EPA circulated a preproposal draft of its standards in May 1994. Many of the same issues raised in the public comments on the NRC's proposed rule were also raised about the EPA's draft standards. The objective of the agency discussions is to allow the EPA to find that the NRC's requirements provide sufficient protection of the public and the environment. Based on such a finding, the EPA would exclude the NRC and Agreement State licensees from the scope of its standards.

Until the NRC promulgates radiological criteria for decommissioning in 10 CFR Part 20, the staff will continue to use the criteria identified in the Action Plan to Compel Cleanup of Site Decommissioning Management Plan Sites, which was published in the *Federal Register* (57 FR 13389) on April 16, 1992.

The NRC actions needed to complete rulemaking and the estimated dates for completion are as follows:

- Conduct workshop to discuss implementation issues raised by the public comments (lead: RES; support: DWM, OGC) — September 1995
- Submit final rule to the Commission (lead: RES; support: DWM, OGC) — December 1995

4.1.1.2 Development of Technical Bases for Decommissioning Lands and Structures

The NRC Office of Nuclear Regulatory Research (RES) is developing NUREG/CR-5512, "Residual Radioactive Contamination from Decommissioning," to provide the technical bases for use in preparing regulations containing radiological criteria for decommissioning. NUREG/CR-5512 is expected to be published, for interim use and comment, in three volumes and one supplement. Volume 1, containing mathematical formulations with parameter values and references, was published in October 1992. Volume 2, containing the computer code and related user manual and example applications, is expected to be published in March 1996. The publication date for Volume 3, containing sensitivity analyses and comparisons, has not yet been determined. A NUREG will be developed to provide a hierarchy of increasingly sophisticated ground water models in connection with the NUREG/CR-5512 methodology.

The NRC actions needed to develop technical bases for decommissioning land and structures, and the estimated dates for completion, are as follows:

- Complete NUREG/CR-5512, Volume 2 (lead: RES, support: DWM, NRR) — March 1996
- Complete NUREG/CR-5512, Volume 3 (lead: RES; Support DWM, NRR) — TBD
- Complete Supplement 1 to NUREG/CR-5512 (lead: RES; Support: DWM) — TBD

4.1.1.3 Regulatory Guide

The NRC staff will prepare a regulatory guide containing radiological criteria for decommissioning. In addition, this regulatory guide will provide detailed guidance on an acceptable approach for demonstrating compliance with the decommissioning criteria in the final rule and license termination.

The NRC actions needed to develop the regulatory guide and estimated dates for completion are as follows:

- Issue draft Regulatory Guide for comment
  (lead: RES; support: NRR, DWM, OGC) December 1995

- Issue final Regulatory Guide
  (lead: RES; support: NRR, DWM, IMNS, OGC) December 1997

4.1.2 Rulemaking on Timeliness in Decommissioning of Materials Facilities

The final rule on "Timeliness in Decommissioning of Materials Facilities" was published in the *Federal Register* (59 FR 36026) on July 15, 1994, with an effective date of August 15, 1994. The rule established specific time periods for decommissioning unused portions of operating nuclear materials facilities and for decommissioning the entire site upon termination of operations. The rule is intended to reduce the potential risk to the environment or public health and safety from radioactive material remaining for long periods of time at such facilities after licensed operations have ceased.

The final timeliness rule was announced and summarized in the September/October 1994 NMSS Newsletter (NUREG/BR-0117, No. 94-3). In addition, NMSS is developing guidance for its staff to use in implementing the timeliness rule. When the guidance is finalized, its availability will be announced, possibly in a future NMSS Newsletter or an Information Notice.

This issue is closed, and no further action is required.

4.1.3 Rulemaking on Decommissioning, Recordkeeping, and License Termination

The final rule on "Decommissioning, Recordkeeping, and License Termination: Documentation Additions" was published in the *Federal Register* (58 FR 39628) on July 26, 1993, with an effective date of October 25, 1993. The rule applies to holders of a specific license for possession of certain byproduct materials, source materials, special nuclear materials, or for independent storage of spent nuclear fuel and high-level waste. The rule requires such licensees to prepare and maintain additional documentation identifying the following areas:

- all restricted areas where licensed materials and equipment were stored or used

- all areas outside of restricted areas where documentation is required under current decommissioning regulations for unusual occurrences or spills

- all areas outside of restricted areas where waste has been buried

- all areas outside of restricted areas containing material such that if the license were terminated, the licensee would be required to decontaminate the area or seek special approval for disposal.

The final rule also requires licensees to submit specific information at the time of final decommissioning. Such information must identify decontaminated equipment that had been involved in the licensed activity that will remain onsite at the time of license termination. The information required by this rule will provide

greater assurance that decontamination and decommissioning of licensee facilities have been carried out in accordance with the Commission's regulations.

This issue is closed, and no further action is required.

4.1.4 Review of Licensed Sites Terminated After 1965

In 1990, the NRC initiated a review of terminated materials licenses following commitments made to Congress by Chairman Carr. The first stage of the review has been performed for the NRC by ORNL, under a technical assistance agreement. ORNL developed an expert system computer program to process information from docket files and make a relative evaluation of the likelihood and magnitude of site contamination. This evaluation is an estimate based on the information in the files, which is often incomplete. ORNL completed development and testing of the computer code in 1991, and began to enter information from the files for evaluation.

The first phase of the project involved the evaluation of approximately 17,000 licenses retired between 1965 and 1985. The evaluation yielded a list of 322 licenses with inadequate documentation to preclude the potential for residual contamination.

Beginning in 1992, NRC Regional Offices further investigated the licenses to determine whether there was indeed residual contamination at the sites. The regional investigations included reviews of the files; contacts with former licensee personnel, current site owners, and State authorities; and, if warranted, site visits. The regional investigations identified a number of contaminated sites.

Licenses retired before 1965 had previously been reviewed between 1977 and 1981, and were therefore not included in the initial scope of work. However, the success of the evaluation of licenses terminated between 1965 and 1985 caused the staff to reevaluate its decision not to include licenses terminated earlier.

The current review revealed contamination at a number of sites that had been cleared in the earlier review, and permitted a greater assurance of accuracy in the review. Entering the previously terminated licenses into the common database also yields a more complete database, facilitating comparison of sites on a uniform basis.

The contractor has completed the review of the pre-1965 terminations and has identified 300 additional licenses without adequate documentation to preclude the potential for site contamination, bringing the total to 622. The regional investigations of these 622 licenses resulted in the discovery of 26 contaminated sites, 6 of which have been placed on the SDMP list. The Regions have cleared 241 licenses, leaving 365 to be resolved.

4.1.5 Guidance on the Conduct of Termination Surveys

In early 1994, the staff reviewed comments received concerning Draft NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination," and considered finalizing the NUREG. However, at that time, the RES had projects underway to develop technical support documents that could be used to demonstrate compliance with the proposed rule on Radiological Criteria for Decommissioning. In addition, in cooperation with the NRC, DOE, and DOD, the EPA initiated an effort to develop a multi-agency manual to provide guidance on investigating radiologically contaminated sites.

The staff decided to postpone finalizing NUREG/CR-5849, pending the conclusion of rulemaking on radiological criteria and completion of the multi-agency manual. The staff envisions that the multi-agency manual will incorporate the germane aspects of the final technical support documents, as well as providing

additional direction that can be used to supersede Draft NUREG/CR-5849 as the NRC guidance on conducting termination surveys.

Supporting technical documents will be issued by the staff in August 1995, and discussed at the workshop on radiological criteria in September 1995. The draft multi-agency manual should be issued for public comment in November 1995.

The NRC actions needed to develop the guidance on the conduct of termination surveys, and estimated dates for completion, are as follows:

- Issue draft multi-agency radiological site investigation manual (lead: RES; support: DWM, IMNS, OGC, FCSS, Regions) — November 1995

4.1.6 Previous Disposals of Wastes Under 10 CFR 20.302 and 20.2002

The staff originally planned to issue an Information Notice on recordkeeping and decommissioning for disposals under 10 CFR 20.302 and 20.2002. However, the staff determined that the Final Rule on "Timeliness in Decommissioning of Materials Facilities" (59 FR 36026, effective August 15, 1994) applied to previous burials if the former disposal site met the definition of an inactive outdoor area.

The NRC Office of the General Counsel (OGC) confirmed the staff's position that inactive 10 CFR 20.302, 20.304, and 20.2002 disposal sites at facilities licensed under 10 CFR 30, 40, 70, and 72 are subject to the requirements of the Timeliness rule. Because this interpretation was considered a new NRC staff position, the document will be changed from an Information Notice to a Generic Letter. The staff is currently making the required changes to the document, and plans to issue the Generic Letter in September 1995.

In addition, the original staff plans called for a Temporary Instruction to the NRC Regional Offices to identify sites with onsite disposal areas. However, such an instruction is no longer necessary. Because the Timeliness Rule now requires that licensees provide a decommissioning plan for the disposals, or propose an alternative decommissioning schedule, within a specified time frame, the NRC will be able to identify the former onsite disposals. The need to identify former burials will be incorporated into the decommissioning inspection procedures discussed in Section 4.1.8.

The NRC actions needed to develop guidance for recordkeeping and decommissioning for waste disposal areas, and estimated dates for completion, are as follows:

- Issue final generic letter (lead: DWM; support: IMNS, FCSS, Regions, OGC) — September 1995

4.1.7 Review of Non-Power Reactor License Terminations

Based on a review of 59 docket files of terminated licenses for test and research reactors by the ORISE, the NRC staff reached the following conclusions:

- Of the 59 sites, 13 satisfy the present guidelines for unrestricted use.
- Of the 59 sites, 16 sites may have contained residual radioactive contamination. These sites are currently licensed for other activities, and will be decommissioned as part of the termination process of the subsuming licenses.

- For the remaining 30 sites insufficient information exists in the docket files to determine whether the current status of these sites would meet the criteria for unrestricted release.

In conjunction with the NRR Non-Power Reactors and Decommissioning Project Directorate (ONDD), the LLDP developed a strategy to address the remaining 30 sites. The staff's findings follow:

- Of the 30 sites, 12 had a very low probability of containing residual radioactivity in excess of current criteria for unrestricted use. The staff based its determination on the type of the reactors (either AGN or L-77) employed at these sites, as well as favorable confirmatory inspection results at the time of license termination. The staff concludes that the licenses for these sites were acceptably terminated.

- Eight sites are currently under another license. These sites will be decommissioned as part of the termination process of the subsuming licenses. The staff concludes that the licenses for these sites were acceptably terminated.

- For one site, the State of California Department of Health Services oversaw the decommissioning process. Based on the results of the State's calculations and surveys, the staff concludes that the license for this site was acceptably terminated.

- Three sites required that the NRC perform limited confirmatory surveys. Based on the results of these surveys, the staff concludes that the licenses for these sites were acceptably terminated.

- For two sites, sufficient information was available for the staff to determine that the licenses for these sites were acceptably terminated.

- For three sites, the staff concluded that additional surveys are required before a determination can be made concerning the acceptability of the license terminations.

- For one site, the staff is still gathering and evaluating available information before deciding if additional site surveys are necessary.

The NRC actions needed to address the remaining four sites and the estimated date for completion are as follows:

- Perform follow up surveys and collect additional information (lead: DWM; support: ONDD) December 1995

4.1.8 Development of Procedures To Ensure That Future License Terminations Meet NRC Requirements

A draft Manual Chapter entitled "Decommissioning Inspection Program For Fuel Cycle Facilities and Materials Licensees" was circulated for comment within the NRC. The Manual Chapter has since been finalized, and is being issued through the NRR inspection manual coordinator. The Manual Chapter serves the following purposes:

- Provide the general policy for the inspection program for fuel cycle and materials licensees undergoing decommissioning.

- Provide guidance for planning and conducting inspections of fuel cycle and materials licensees undergoing decommissioning.

- Promote consistent inspection of facilities undergoing decommissioning.

In addition, separate decommissioning inspection procedures will be developed for fuel cycle facilities and materials facilities by June 1996.

The NRC actions needed to develop procedures to ensure that future license terminations meet NRC requirements, and the estimated dates for completion are as follows:

- Issue Final Manual Chapter
  (lead: DWM; support: IMNS, FCSS, NRR, Regions) — August 1995

- Issue draft inspection procedures for fuel cycle and materials facilities (lead: DWM; support: IMNS, FCSS, Regions) — June 1996

4.1.9 Review and Modification, If Needed, of License Termination Procedures

The decommissioning rulemaking completed in June 1988 (53 FR 24018) modified the license termination procedures used by licensees and the NRC staff. The staff had planned to develop a Regulatory Guide to reflect the 1988 decommissioning rule, and RES had the lead for this project. However, this task was not initiated because of competing priorities, primarily the RES effort to develop a rule concerning radiological criteria for decommissioning.

As described in Section 2.2.1, the NMSS recently initiated the development of a Manual Chapter on decommissioning that will clarify the staff procedures for license termination. This Manual Chapter will include procedures for the NRC staff to use in assessing compliance with the Timeliness rule (Section 4.3.2), the Recordkeeping rule (Section 4.3.3), and the 1988 Decommissioning rule. Although this guidance is intended for use by the NRC staff, it will also be made available to licensees. In addition, a draft Regulatory Guide will be issued concurrently with the final rule on radiological criteria for decommissioning. These documents supersede the proposed Regulatory Guide on the 1988 Decommissioning rule.

This issue is considered closed, and no further action is required.

4.1.10 Consideration of a "Reopener" Rulemaking To Require Additional Decontamination

With the submittal of SECY-89-369 on December 8, 1989, the staff informed the Commission of its intention to develop procedures to notify licensees that terminated licenses may be recalled if final NRC or EPA residual contamination standards indicate the need for further remediation. In an SRM dated January 31, 1990, the Commission requested that the NRC staff expedite the residual contamination rulemaking. As part of that rulemaking, the Commission requested that the NRC staff provide a general notice to licensees that additional remediation may be necessary to comply with future EPA standards. In addition, the Commission directed the staff not to develop specific procedures providing such notice to licensees. As a result, no rulemaking is contemplated to reopen terminated licenses as a result of more stringent EPA standards.

In a related SRM issued on February 28, 1992, the Commission stated its position regarding the need to recall terminated licenses if future NRC standards are more restrictive than criteria currently used by the NRC. Specifically, the Commission stated that if a licensee or responsible entity remediates a site under an NRC-approved decommissioning plan that meets the criteria at the time the plan is approved, the NRC will not reopen the case as a result of any changes in NRC criteria or standards. This position on finality of decommissioning is reflected in the SDMP Action Plan and the proposed rule on radiological criteria for

decommissioning. In addition, the staff is working cooperatively with the EPA to ensure consistency with EPA standards.

This issue is closed, and no further action is required.

4.2 Potential Issues

The NRC staff is currently evaluating the following policy issues for which resolution could enhance the NRC's performance and progress in regulating the decommissioning of nuclear materials facilities:

- allowing for concentration averaging
- delaying certain decommissioning actions
- using more realistic exposure scenarios and assumptions
- coordinating regulatory review and public information with other agencies
- drawing generic conclusions from site-specific EISs
- establishing convenient institutional control arrangements for sites that will be released with land use restrictions.

This section describes these issues and the related staff evaluations presently underway.

4.2.1 Concentration Averaging

The NRC staff is assessing the technical and policy implications of allowing various types of concentration averaging associated with reviews of proposed decommissioning actions. Averaging could be implemented at decommissioning sites in at least three different ways:

(1) Average measured concentrations of radioactive materials in soil over a finite area to develop an "average" concentration for use in dose or risk assessments.

(2) Allow credit for unavoidable dilution that occurs during excavation and placement of both contaminated and uncontaminated soils during remediation, or results from the treatment of the waste.

(3) Intentionally blend contaminated and uncontaminated soils to reduce the average concentration of radioactive material, as well as potential individual doses associated with exposure to the diluted soil.

Current NRC requirements do not specifically address or prohibit averaging of soil concentrations in evaluating the adequacy of decommissioning actions. Other NRC requirements implicitly allow dilution or averaging of radionuclide concentrations. For example, liquid effluent limits in 10 CFR Part 20 consider the effect of dilution in evaluating the associated projected doses. In addition, the waste concentration limits in 10 CFR Part 61 allow dilution in calculations that relate concentrations to potential doses to inadvertent intruders. The EPA has taken a similar approach in promulgating waste and effluent limitations for both radiological and non-radiological contaminants.

The staff allows credit for averaging soil concentrations where the staff determines that a proposed approach results in residual radioactivity levels that are as low as reasonably achievable (ALARA) and controls are in

place to prevent higher concentrations of radioactive material. The staff has determined that this approach is consistent with the Action Plan to Ensure Timely Decommissioning of SDMP Sites. This approach is particularly attractive for long-lived contamination (e.g., thorium and uranium), recognizing the uncertainties associated with the long-term performance of engineered barriers intended to contain the waste, and the value of diluting the soil concentrations to ensure that individual doses remain suitably low.

Nonetheless, staff practice and policy have generally disallowed credit for averaging soil concentrations in evaluating potential exposures to humans from residual radioactive material associated with decommissioning or waste disposal. For example, in the now defunct policy statement on "Below Regulatory Concern," the NRC committed that it would not allow licensees to intentionally dilute waste concentrations solely to meet exemption criteria.

This approach results in increased costs and delays in decommissioning. Without taking credit for some averaging, soil concentrations at existing SDMP sites exceed established NRC criteria for unrestricted release, especially for uranium and thorium. In these situations, licensees are required either to excavate and dispose of the contaminated material at existing offsite disposal facilities, or to seek an exemption or explicit authorization from the NRC to dispose of the contaminated soil onsite. Because of the relatively large volumes of contaminated soil and disposal costs ranging from \$10 to \$300/ft^3 or more, SDMP site owners would have to spend millions of dollars to excavate, transport, and dispose of contaminated soils offsite. Requests for exemptions or authorization for onsite disposal are also costly and time consuming. The NRC has typically considered such requests through the development of an EIS, and has coordinated their review with other Federal, State, and local authorities. A typical EIS may cost on the order of \$1 million in NRC fees alone, and may require 2 years to complete.

The LLDP staff is preparing a preliminary analysis of the policy and technical implications of adopting an approach that would allow more credit for averaging soil concentrations. The staff examined a variety of subissues associated with averaging, such as potential individual and population doses, cost-effectiveness of the various alternatives, risk-risk trade-offs between averaging and offsite disposal, legal and regulatory precedents for averaging, and long-term uncertainties of human exposure. The preliminary analysis will also supplement the technical bases for adopting more realistic exposure scenarios and assumptions (see section 4.2.3), as well as the rulemaking on radiological criteria for decommissioning. Following internal management review of the preliminary analysis, the staff will evaluate a specific site as a case-study of the implications of an averaging policy for decommissioning.

4.2.2 Decommissioning Timeliness

In July 1994, the NRC completed a rulemaking that established scheduling requirements for notification, initiation, and completion of decommissioning actions at materials facilities (the Timeliness rule). These requirements became effective on August 15, 1994.

Immediately before the requirements were promulgated, the Barnwell low-level waste (LLW) disposal facility in Barnwell, South Carolina, closed to waste generators outside the Southeast Compact. However, although legislative and regulatory actions are in a state of flux, the Barnwell LLW disposal facility began accepting LLW from throughout the United States (except North Carolina) on July 1, 1995.

The staff will continue to monitor the status of the Barnwell site, and other LLW disposal sites (Hanford and Envirocare), as well as the effect of disposal site access on decommissioning timeliness. If site access is again severely limited, licensees and other responsible parties may not have a suitable disposal facility to send decommissioning waste. In some cases, decommissioning may have a minimal benefit if the wastes generated will have to be stored for an indefinite period pending disposal site access. In other cases, substantial delay of decommissioning may result in increased public exposure, environmental contamination, loss of control of radioactive materials, liabilities for remediation costs, and public burden for decommissioning. The staff will

consider such factors when reviewing requests for alternative decommissioning schedules under the Timeliness rule.

4.2.3 Realistic Exposure Assessment

Licensees and other interested parties have often pointed out that the level of protection accomplished in the decommissioning program is a function of the criteria, as well as the dose modeling and survey protocols used to implement the criteria. The NRC spent more than a decade developing the screening method for converting surface contamination levels and soil concentrations into projected doses. The method was documented in NUREG/CR-5512 and circulated widely in support of the proposed rulemaking on radiological criteria for decommissioning. The NRC staff has since implemented a standard set of exposure scenarios for residual radioactivity in Policy and Guidance Directive 8-08, dated May 1994.

At the NRC workshop on site characterization for decommissioning, and in comments on the proposed rule, numerous commentors raised concerns about the unrealistic nature of the assumptions used in estimating doses from residual radioactivity. Specifically, commentors indicated that modeling tends to overestimate potential doses by making assumptions that can increase doses by an order of magnitude or more.

Similar concerns surfaced in comparing NRC and EPA approaches to risk assessment as part of the interagency project on risk harmonization. (See the draft *White Paper on Risk Harmonization*, dated January 1995.) For example, the NRC typically assumes that an individual is continuously exposed to residual radioactivity throughout a 70-year lifetime. In contrast, the EPA typically assumes 30 years of exposure in assessing potential human risks to onsite residents in the Superfund program. In addition, the NRC routinely assumes that engineered barriers, such as earthen covers, will not be effective in limiting or preventing human exposure over long periods (e.g., greater than 500 years). Consequently, the NRC staff estimates potential human doses by assuming that an onsite resident farmer will intrude into the waste and be exposed to residual radioactivity through a wide variety of exposure pathways. In contrast, in the hazardous waste program under the Resource Conservation and Recovery Act (RCRA), the EPA typically assumes that institutional controls (e.g., deed restrictions) will remain effective in indefinitely preventing human exposure to hazards wastes. Further, industry representatives have requested that the staff consider the probability of human intrusion and failure of institutional controls and engineered barriers in evaluating potential exposure to humans.

The staff has initiated a review of the potential conservatisms that have been included in the NRC's standard exposure scenarios and dose modeling used to implement radiological criteria for decommissioning. This review supports the evaluation of public comments concerning the proposed rulemaking on radiological criteria for decommissioning, dose modeling at individual sites, and risk harmonization with EPA and other agencies. The review will include consideration of the likelihood and significance of standard exposure assumptions that comprise the resident farmer scenario.

Preliminary results of the review should be completed by the end of June 1995. To promote a consistent and coherent approach to radiological risk assessment, significant conclusions based on the review will be coordinated with other Federal agencies through the Interagency Steering Committee on Radiation Standards.

4.2.4 Coordination with States and Other Agencies

Decommissioning projects at NRC-licensed sites often fall under the jurisdiction of several Federal, State, and local entities. For example, the presence of hazardous or solid waste onsite could subject the decommissioning action to regulation by the NRC, the EPA, and a State environmental agency. In some cases, decommissioning is already progressing at the sites under separate environmental programs, apart from the requirements of the Atomic Energy Act. In other cases, decommissioning requirements are

complementary. Coordination of the regulatory reviews promotes adoption of consistent solutions and reduces the regulatory burden.

In SECY 95-056, the Commission approved deferral to regulatory oversight of two such overlapping remedial actions conducted by the EPA under the Comprehensive Environmental Response Compensation and Liability Act. Specifically, the two projects were remediation of the DuPont site in Newport, Delaware, and the West Lake Landfill near Bridgeton, Missouri. In both cases, the staff proposed to defer to the existing remedial programs conducted by the EPA based on the staff's finding that those programs will adequately protect the public from radioactive wastes at the sites. Other cases, such as the Pesses site in Pulaski, Pennsylvania, will also be considered for deferral.

The NRC has begun negotiating a memorandum of understanding (MOU) with the Pennsylvania Department of Environmental Resources. The objective of the MOU is to promote a coordinated and consistent governmental response and oversight of proposed remedial actions at the site and other sites in the Commonwealth of Pennsylvania. The staff's development of the MOU is described in SECY 95-108. Based on the Commission's review of the proposed MOU, the staff plans to develop similar MOUs and agreements with other State and Federal agencies to foster a coordinated governmental response. For example, a similar agreement may be necessary for coordination of decommissioning actions at sites in Ohio.

These coordination activities include efforts to inform and involve the public in the decommissioning process. The objective of these efforts is to provide early and meaningful opportunities for public involvement in the decommissioning process. This approach has been promoted generically in the proposed rulemaking on radiological criteria for decommissioning. In addition, the staff has initiated public information meetings at the Parks Township SLDA and the Sequoyah Fuels Corporation facility. Stakeholder representatives are routinely invited to participate in roundtable discussions and information exchanges on the status and issues associated with the decommissioning project. These initiatives are consistent with the staff's draft public responsiveness plan defined in NUREG/BR-199. Other public information meetings and involvement efforts will be implemented on a site-specific basis, within available resources, to address specific needs that exist in affected communities.

4.2.5 Generic Conclusions on Disposal of Uranium and Thorium Waste

In the proposed rulemaking on radiological criteria for decommissioning, the Commission identified tens of sites that will not be able to satisfy the proposed criteria. These sites are similar to near-surface disposal facilities for radioactive waste. The staff has begun developing site-specific EISs to consider onsite disposal of uranium and thorium wastes at five such sites:

(1) Shieldalloy-Cambridge
(2) Shieldalloy-Newfield
(3) Parks Township SLDA
(4) Jefferson Proving Ground
(5) Sequoyah Fuels

Several additional SDMP sites are candidates for other EISs. These include Molycorp-Washington, Whittaker, 3M, Wyman-Gordon, Lake City Army Arsennal, and Fansteel. However, the staff has not begun developing EISs for these sites because of resource limitations or the current status of decommissioning actions at the sites.

The EISs specifically evaluate whether onsite disposal of existing radioactive wastes at the sites is feasible and preferred, with some appropriate land use restrictions to prevent or inhibit human intrusion into the waste. Although the site and waste characteristics vary for each site, the alternatives under consideration are

substantially similar among the EISs (i.e., onsite disposal, offsite disposal, combination of onsite/offsite disposal, and no action).

After completing its review and evaluation of comments on the draft EISs for three of the five sites, the NRC plans to assess in mid-1996 whether any generic conclusions can be drawn based on the site-specific EISs and supporting generic calculations. If generic conclusions can be supported, the staff will consider developing a generic EIS regarding onsite waste disposal, in lieu of the more costly and time-consuming preparation of tens of site-specific EISs. The generic EIS could support either site-specific licensing actions authorizing onsite disposal or some other alternatives, or a rulemaking on disposal of residual radioactivity using onsite disposal.

4.2.6 Institutional Controls

The proposed rulemaking on radiological criteria for decommissioning allows for restricted termination of NRC licenses in accordance with specified criteria. In addition, as discussed in Section 4.2.5, institutional controls may be needed for some decommissioning projects that involve the stabilization of large volumes of low-activity, bulk radioactive waste onsite. However, the form and mechanisms for implementing the institutional controls have not yet been established. In the absence of general approaches, licensees would have to develop and defend specific proposals for applying such institutional controls to ensure protection of the public and environment.

However, under section 151(b) of the Nuclear Waste Policy Act, the DOE has already been authorized to take possession of waste disposal sites provided that the following criteria are met:

- The NRC certifies that the disposal action satisfies applicable requirements
- The licensee sets aside sufficient funds to ensure that long-term custody would be at no cost to the Federal government
- The NRC determines that such controls are necessary or desirable to protect the public.

A similar provision in section 151(c) was used as the vehicle to transfer custody of the AMAX site near Parkersburg, West Virginia, from AMAX to DOE.

If DOE is supportive and has available resources, and if the legislative history supports the use of 151(b) in this manner, the section 151(b) option would constitute a ready-made mechanism to provide for long-term institutional control of the waste disposal sites. Use of this option would eliminate the need for licensees and responsible parties to develop and negotiate specific institutional controls for disposal sites. This approach could reduce the regulatory burden and simplify the demonstration that would otherwise be required to show that the proposed control mechanism will be durable and effective in protecting the public.

In August 1995, the NRC staff intends to initiate discussions with the DOE to inquire whether, and under what terms, the DOE would be amenable to using the provision in section 151(b) to transfer custody of disposal sites and accomplish long-term control and surveillance of the sites. If the DOE is amenable, the NRC could develop a standard procedure for transferring the sites. In addition, the NRC could then provide guidance to licensees and responsible parties about the use of the mechanism, and implement the provision in conjunction with the final rulemaking on radiological criteria for decommissioning. If one or more barriers to the use of this provision exist, the NRC could draft and submit similar legislation for Congressional consideration. In this latter case, the negotiations with DOE would prove instructive regarding the types of issues that are likely to arise during legislative consideration of the proposal.

APPENDIX A

SDMP SITE DESCRIPTIONS

CONTENTS

AAR MANUFACTURING, INC. (BROOKS & PERKINS CORPORATION)

Site Identification

Advanced Structures Division
AAR Manufacturing, Inc.
12633 Inkster Road
Livonia, MI 48150

License No.:	D-547 (Terminated) STB-0362 (Terminated)
Docket No.:	040-00235 (Terminated)
License Status:	Terminated by the AEC May 17, 1971
Project Manager:	T. Johnson, DWM

Site and Operations

AEC License No. D-547 was issued on January 17, 1957, to Brooks & Perkins Corporation, and then superseded by license No. STB-0362 on August 10, 1961. This license authorized the use and possession of up to 15,000 pounds of thorium as contained in 40-percent thorium master alloy and thorium magnesium alloy containing not more than 3-percent thorium. The license authorized two locations of use:

- 1950 West Fort Street, Detroit, Michigan
- 12633 Inkster Road, Livonia, Michigan

This site description covers only activities at the Livonia facility. Activities at the Detroit facility, now separately owned, are covered by the site description for Frome Investment.

Licensed activities included rolling, melting, casting, forming, cutting, sanding, and welding manufactured products containing licensed source material. The licensee requested termination of the license in a letter dated February 5, 1971, and provided a radiation survey of the Livonia and Detroit facilities conducted by their consultant. The AEC terminated the license in May 1971, based upon the consultant's report.

AAR Corporation purchased the former Brooks & Perkins Corporation in 1981. Currently, AAR uses the Livonia site to manufacture specialty items for the aircraft industry.

Radioactive Wastes

Oak Ridge National Laboratories (ORNL), an NRC contractor, reviewed the terminated license file. During the review, ORNL noted that, because of the type and quantity of licensed materials, a building at the site may have been left with contamination, and the former licensee may have buried its waste materials.

On February 23, 1994, NRC Region III conducted radiation surveys in and around the former manufacturing, processing, and storage areas in the building. The inspector's survey of the building and adjacent property identified three areas where radiation levels were above natural background. An open area located next to the parking lot (a former drainage ditch) showed elevated radiation levels of 112 nC/(kg•hr) (450 μR/hr) on contact, and a floor drain inside the

building showed 17–50 nC/(kg•hr) (70–200 μR/hr). One area on the floor, inside the newer portion of the building, showed 30 nC/(kg•hr) (120 μR/hr) on contact with the concrete floor, and 10–12.5 nC/(kg•hr) (40–50 μR/hr) at 3 feet above the ground surface. In this last area, it also appeared that material contaminated with thorium may have been covered with concrete during construction of the newer portion of the building.

The inspector collected samples of contaminated material from the floor drain and drainage ditch for further analysis in the Region III laboratory. Analysis of the drain sample identified the radioactive material as thorium, with a concentration of 20.8 Bq/g (580 pCi/g), which exceeds the NRC release criterion of 0.37 Bq/g (10 pCi/g). The drainage ditch soil sample showed 11.3 Bq/gm (316 pCi/gm). The inspector also took several random smear tests for removable activity within the building; these tests did not show removable contamination above the detection limit.

Description of Radiological Hazard

The principal hazards associated with thorium contamination in the soil and floor drains involve direct exposure, inhalation, ingestion, and intrusion into the outside drainage ditch and floor drain. Access to the site is controlled, and the contamination poses no immediate threat to the public health and safety. The outside contaminated area (drainage ditch) is fenced off.

Financial Assurance/Viable Responsible Organization

There is no financial assurance in place to cover the costs of decontamination and decommissioning. No financial assurance is required by regulation since the license for this site has been terminated. AAR Manufacturing, Inc. has assumed responsibility for the decontamination costs.

Status of Decommissioning Activities

AAR Manufacturing, Inc. has retained a consultant who submitted a characterization plan in July 1994. The NRC returned comments on that plan to AAR in January 1995. The NRC has received and is currently reviewing responses to the NRC comments.

NRC/Licensee Actions and Timing

NRC approves site characterization plan	August 1995

Problems/Issues

The State of Michigan is not a member of a Low-Level Waste Compact, and currently lacks access to waste disposal facilities other than Envirocare. Therefore, options for the final disposition of the radiological wastes generated during the remediation of the Livonia site is uncertain at present.

ADVANCED MEDICAL SYSTEMS, INC.

Site Identification

Advanced Medical Systems, Inc. (AMS)
Cleveland, OH

License No.:	34-19089-01
Docket No.:	030-16055
License Status:	Active
Project Manager:	J. Madera/M.Weber, Region III
DWM Monitor:	L. Bykoski

Status of Decommissioning Activities

AMS plans to continue certain limited operations, and has no current plans to decommission the entire facility. The site will remain on the SDMP list until an acceptable decommissioning funding plan (DFP) is submitted and approved. In an attempt to lower the required amount of financial assurance, AMS is in the process of reducing its facility source term by transferring sources to authorized recipients.

In late 1994, the Northeast Ohio Regional Sewer District (NEORSD) inserted a plug into the combined stormwater and sanitary lateral sewer line that connected the AMS facility with the NEORSD interceptor sewer line. The plug isolated the AMS facility from the NEORSD sewerage treatment system, and rendered the facility's underdrain system non-functional. Since that time, the facility has experienced water flooding problems. The NRC issued a license amendment, authorizing AMS to treat contaminated water in the facility basement and sewer lines, and to remediate the sewer system. Nearly 100,000 gallons of water from the sewer manhole and facility basement were treated until the basement was clear of water in late June 1995.

The NRC is working with AMS during its license renewal to ensure that the licensee submits an acceptable DFP and financial instrument. Final action on the AMS license renewal request will not take place until DFP issues are resolved. The license renewal application will also include issues concerning the waste holdup tank room, which is currently sealed because of radiation levels that are estimated to exceed 7.5 Sv/hour (750 rem/hour) near one of the room's two holdup tanks. An AMS license renewal (Subpart L) hearing has been granted to the NEORSD and the City of Cleveland.

NRC/Licensee Actions and Schedule

- AMS submits revised Decommissioning Cost Estimate and Financial Instrument — September 1996
- NRC completes license renewal — September 1996
- AMS reduces inventory and decontaminates facility — TBD

Problems/Issues

A lawsuit brought by the NEORSD may affect the ability of AMS to fund decommissioning. NEORSD contends that AMS is responsible for the Co-60 contamination at its Easterly and Southerly waste water treatment plants.

ALUMINUM COMPANY OF AMERICA

Site Identification

Aluminum Company of America (ALCOA)
Cleveland, OH

License No.:	AEC License No. C-5023
Docket No.:	040-00501
License Status:	Expired February 28, 1961
Project Manager:	T. Johnson, DWM

Status of Decommissioning Activities

ALCOA submitted a final survey report for Building 65 in July 1993. Following a confirmatory survey by ORISE, Building 65 was released for unrestricted use in December 1993. In March 1994, 32 boxes of low specific activity (LSA) waste, generated during remediation, were shipped from the site to Envirocare of Utah. The NRC is deferring release of the outdoor areas around the permanent mold area, pending completion of a confirmatory survey to be performed by the NRC in August 1995.

A second issue at the site, which has since been resolved, involved the question of whether thorium had been disposed in the landfill at the Cleveland Works facility. The NRC staff considered previous ALCOA analyses insufficient to support the conclusion that thorium-contaminated wastes are not present in the landfill. The NRC therefore requested an affidavit from an ALCOA corporate officer certifying that ALCOA has no records that indicate any prior placement of radioactive materials in the onsite landfill. The NRC received this affidavit in March 1994. Furthermore, data collected onsite by ORISE in November 1991, and additional onsite groundwater data collection and analysis during August 1994, showed no evidence of radioactivity reaching the environment.

In consideration of the affidavit by ALCOA, and in the absence of detectable radioactivity, the NRC concluded that there is no evidence that licensable material was disposed of in the landfill. By letter to ALCOA on February 15, 1995, the NRC released the landfill for unrestricted use, unless contamination is subsequently found that indicates a significant threat to public health and safety.

NRC/Licensee Actions and Timing

- NRC performs confirmatory survey around permanent mold area — August 1995
- Depending on outcome of the confirmatory survey, NRC releases the site from the SDMP — Fall 1995

Problems/Issues

Although the NRC has released the landfill for unrestricted use on the basis of evidence considered sufficient, the NRC has proposed to collect additional confirmatory data when an expected opportunity becomes available during 1996. ALCOA plans closure of the landfill by

the Spring of 1996, followed by re-grading, construction of 10 passive gas relief wells, and capping. Construction of the gas relief wells will provide the opportunity to sample soil at multiple locations and multiple depths throughout the landfill.

The Ohio Environmental Protection Agency (OEPA) is currently reviewing closure plans, and closure will begin upon receipt of OEPA's approval. Results of radiological sampling at that time are expected to confirm the absence in the landfill of thorium above background levels.

AMAX

Site Identification

AMAX, Inc.
Washington Bottom Wood County, WV

License No.:	SNM-1418
Docket No.:	040-08820
License Status:	Active
Project Manager:	L. Bykoski, DWM

Status of Decommissioning Activities

Contaminated soil, generated as a by-product of zirconium ore processing, has been stabilized in an engineered disposal cell since December 1982. AMAX conducted most of the work that produced the contamination.

On April 14, 1994, AMAX transferred this site to the DOE, pursuant to the provisions of Title I, Subtitle D, Section 151 (c), of the Nuclear Waste Policy Act of 1982. On April 25, 1994, the NRC staff informed the Commission of its decision to terminate the AMAX license. On June 7, 1994, the NRC terminated the AMAX license, and removed the site from the SDMP.

NRC/Licensee Actions and Timing

No additional action is required; the NRC removed the AMAX site from the SDMP list on June 7, 1994.

Problem

None

ANNE ARUNDEL COUNTY/CURTIS BAY

Site Identification

Anne Arundel County/Curtis Bay
Baltimore, MD

License No.:	STC-133
Docket No.:	040-00341
License Status:	Terminated
Project Manager:	D. Orlando, DWM

Status of Decommissioning Activities

In October 1993, the Defense Logistics Agency (DLA) submitted a Remediation Plan for approval by the NRC and the Maryland Department of the Environment (MdDE). In May 1994, after several revisions of the plan, the NRC staff held a public meeting to discuss the plan and remediation project with interested individuals. In June 1994, the NRC staff approved DLA's proposed Remediation Plan, with conditions. The DLA began remediation activities in early July 1994.

In September 1994, the DLA submitted a draft Final Status Survey for one of the former warehouses at the site. The NRC staff's review raised numerous issues about the quality of data in the draft report. The report was revised several times before being approved by the NRC staff in January 1995.

In October 1994, the DLA submitted a groundwater assessment workplan for review and approval by the NRC and MdDE. In January 1995, after several discussions with the DLA and its contractor, and revisions to the workplan, the NRC staff approved the DLA's proposed groundwater assessment workplan, with conditions. Groundwater assessment activities began in January 1995.

Also in October 1994, at the request of Anne Arundel County, NRC and MdDE staff performed a survey of the former DLA property adjacent to the SDMP site to determine whether this portion of the former DLA facility was suitable for unrestricted use. In December 1994, NRC staff informed Anne Arundel County that the property adjacent to the SDMP site was suitable for unrestricted use.

NRC/Licensee Actions and Schedule

- DLA completes site remediation — August 1995
- NRC performs a confirmatory survey — September 1995
- NRC releases the site for unrestricted use — November 1995

Problems/Issues

Plans and reports submitted to the NRC staff have required extensive review and revision. In addition, problems coordinating and performing non-radiological demolition and remediation activities at the site have added to the delay in completing the decommissioning in accordance with the original schedule.

ARMY (DEPARTMENT OF THE), ABERDEEN PROVING GROUND

Site Identification

Department of the Army
Combat Systems Test Activity
Aberdeen Proving Ground, MD

License No.:	SUB-834
Docket No.:	040-07354
License Status:	Active
Project Manager:	A. Dimitriadis, Region I
DWM Monitor:	R. Abu-Eid

Status of Decommissioning Activities

Site remediation is not planned at this time. The NRC's objective continues to be to determine if the environmental impact of continued firing of depleted uranium (DU) at this location is acceptable. The licensee is conducting environmental monitoring and risk assessment to make this determination.

Implementation of an environmental monitoring plan is a requirement of the renewed license. On April 18, 1994, Region I completed its review of the environmental monitoring plan, and requested additional information concerning the plan and groundwater flow at the site.

The NRC received a partial response on June 20, 1994. On February 15, 1995, the NRC met with the Army to discuss the effects or DU on the environment at facilities throughout the United States, including Aberdeen Proving Ground. The Army's "Long-Term Fate Study of Depleted Uranium," including an environmental pathway analysis for Aberdeen Proving Ground, was to have been submitted to the NRC by December 1994. Because of unavoidable delays, the NRC expects to receive the study in July 1995.

NRC/Licensee Actions and Schedule

- Licensee submits Long-Term Fate Study of Depleted Uranium — July 1995
- NRC completes review of sampling and environmental data — September 19[illegible]
- Determine if termination of use and remediation are necessary — December 1995

Problems/Issues

None

ARMY (DEPARTMENT OF THE), JEFFERSON PROVING GROUND

Site Identification

Department of the Army
Jefferson Proving Ground
Madison, IN

License No.:	SUB-1435
Docket No.:	040-008838
License Status:	Active
Project Manager:	R. Abu-Eid

Site and Operations

The U.S. Army Jefferson Proving Ground (JPG) was a production testing facility from 1941 to 1994. JPG was used to perform production and post-production tests of conventional ammunition components and other ordnance items.

In addition, from 1983 through 1994, the Army used the site to test munitions containing depleted uranium (DU), in accordance with NRC License No. SUB-1435. The Army fired DU rounds in the same area where conventional ammunition testing was conducted. Therefore, the DU contamination is mixed with unexploded ordnance (UXO) at the firing range.

The Army ceased all DU and conventional ammunition test activities on September 30, 1994, and is currently transferring test activities to Yuma Proving Ground (YPG) near Yuma, Arizona. Moreover, the Army is currently closing JPG, in accordance with the Defense Authorization Amendments and Base Realignment and Closure Act of 1988 (Public Law 100-526). The Army is required to close JPG no later than September 30, 1995.

JPG is located in southeastern Indiana, approximately 8 miles north of the Indiana-Kentucky border. It comprises 55,264 acres located in Jefferson, Jennings, and Ripley Counties. The terrain at JPG is rolling, and has both wooded and grassy areas. The site contains historic locations and structures, game animals, and endangered plants and animals.

A portion of the JPG site (approximately 6 square miles) was used to test DU munitions, in accordance with the NRC license. The Army received, stored, and fired DU munitions at the site for more than 10 years. Approximately 100,000 kg (220,000 lb) of DU projectiles were fired from three gun positions designated J, 500 center, and K5. The majority of DU penetrators 89,000 kg (195,000 lb) were fired from the 500 center position. The Army was able to recover 30,000 kg (75,000 lb) of the fired DU penetrators. DU penetrators (unfired and recovered) were stored in buildings and facilities at the site located south of the JPG firing line.

JPG has been divided into two parts, separated by the firing line located approximately at the imaginary line connecting Gate 19 (west) with Gate 1A (east):

- The area located north of the firing line is the DU impact area (Delta Impact Area). It constitutes approximately 3,000 acres located in the south-central portion of JPG. It

represents the area where DU penetrators, or fragments, eventually stopped after being fired from one of the above three positions.

- The area located south of the JPG firing line contains three affected buildings that have been used to receive or store recovered (fired) DU penetrators before shipment for disposal or recycling. These affected buildings were contaminated by the fragmented recovered DU rounds. The area south of the JPG firing line also contains 14 unaffected buildings that were used to receive, store, and handle fresh (unfired) DU rounds before testing at the site. These buildings were generally kept uncontainminated. The Army did not manufacture or perform any modification (e.g., machining) of the DU rounds at the site.

The U.S. Army remediated the area south of JPG firing line, in accordance with NRC decommissioning criteria for unrestricted use. The NRC then performed a confirmatory survey of that area in June 1995, and is currently evaluating the results. For the area north of the firing line, the Army requested an exemption under 10 CFR 40.14 to release the area for restricted use as a wildlife refuge. The NRC is currently considering the Army's request by conducting an environmental impact study to assess the potential effects of restricted release of the DU impact area north of the JPG firing line.

Radioactive Wastes

An area approximately 4.5 km (2.8 miles) by 2.5 km (1.5 miles) located north of the JPG firing line is contaminated with approximately 70,000 kg (155,000 pounds) of fired DU penetrators. The distribution of DU is not uniform throughout the area. The scoping survey data indicates that the DU contamination may be concentrated in a narrow area along the 500 center firing line. DU contamination is predominant in the topsoil (1–3 feet), and may extend down to a depth of 10 feet. UXO concentrations in the DU impact area were classified by the Army as "high to very high," with the number of UXOs per acre ranging from 4 to 85. DU penetrators may also be found in trees or streams. Potential surface water and groundwater contamination is currently under analysis and investigation.

Description of Radiological Hazard

The JPG site is currently controlled by the U.S. Army and poses no immediate threat to public health and safety. Access to the site is controlled by guarded gates, a high fence, roving patrols, and additional internal controls on access to the DU impact area.

Environmental radiological monitoring of soil, sediments, and surface water is conducted semi-annually by the licensee. Groundwater sampling and analysis are also performed semi-annually for 11 monitoring wells located within and around the DU impact area.

The main hazard is associated with the presence of a relatively large volume of DU material (e.g., 70,000 kg (154,000 lb)) on the surface and in the soil. The direct exposure rate near the DU penetrator could reach 206 nc/kg (800 μR/hr). The DU penetrators and fragments also appear to be oxidized on the surface; this may enhance leaching of the DU material. The soil appears to be contaminated above NRC decommissioning criteria 1.3 Bq/g (e.g., 35 pCi/g). The NRC is currently evaluating radiological monitoring data for groundwater and surface water to assess any potential contamination or transport within the aquifer at the site or beyond the JPG boundary lines.

Financial Assurance /Viable Responsible Organization

The Army, a viable agency of the U.S. government, has committed to perform enhanced environmental monitoring and all reasonable actions to control environmental impact and contamination. In addition, the NRC will request that the Army submit a financial statement of intent to ensure availability of sufficient funds in advance to cover the costs of decommissioning activities and any possible long-term decommissioning actions.

Status of Decommissioning Activities

The Army ceased all DU testing at JPG on September 30, 1994, and will close JPG by September 30, 1995. The following activities have been completed in connection with JPG decommissioning:

In the area south of the firing line

- The Army conducted a radiological survey of all 17 affected and unaffected buildings.
- The Army conducted remediation of all three affected buildings.
- The U.S. Army submitted a final survey report addressing all 17 affected and unaffected buildings.

In the area north of the firing line

- The Army is conducting environmental monitoring of soil, surface water, and groundwater on a semi-annual basis.
- The Army conducted a scoping survey of the DU impact area.
- The Army has conducted a preliminary risk assessment of DU effects on humans and game animals, based on generic source term assumptions.
- The Army has prepared a draft EIS on the "Disposal and Reuse of the Jefferson Proving Ground." This draft EIS contains background information and limited qualitative data on the potential effects of all hazardous material at the site, including the DU.

The Army's future action plan includes the following activities:

- Complete site characterization north of JPG firing line
- Revise risk assessment
- Provide cost estimates of UXO remediation
- Complete the final EIS for JPG closure and reuse
- Submit information regarding quality of environmental monitoring data and the potential contamination of groundwater

- Submit final decommissioning plan
- Request license amendment, transfer, or termination

The NRC has completed the following decommissioning activities:

In the area south of the firing line

- Conducted site visits and preliminary survey of DU contamination
- Reviewed final survey report for affected and unaffected buildings
- Obtained supplementary radiological survey data for two unaffected buildings
- Conducted a confirmatory survey (in June 1995) for all affected and unaffected buildings (The NRC is currently preparing the confirmatory survey report.)

In the area north of the firing line

- Completed review of the Army's scoping survey plan
- Completed review of the JPG scoping survey data
- Completed review of the Army's environmental monitoring data, and requested verification of data pertaining to groundwater
- Completed review of the Army's draft EIS, and provided comments
- Announced in the *Federal Register* the intent to conduct an EIS scoping process, and hold a scoping meeting to prepare an EIS on the DU impact area north of JPG firing line (The NRC conducted the scoping meeting on April 26, 1995. The public comment period on the scoping ended on June 9, 1995.)

The NRC is currently reviewing any potential hazards or impacts by developing an EIS for the JPG area north of the firing line. The risks from DU are associated with the presence of UXOs. Therefore, the UXO risk will constitute a significant factor in reaching a decision on the remedial action for the site. The decision will also consider the chemical hazards of DU on the public, wildlife, and plants. The EIS will also address other hazards and impacts, such as cultural, historic, and environmental justice. The NRC intends to publish the draft EIS in May 1996.

Other Involved Parties

The NRC is currently coordinating decommissioning reviews with the State of Indiana (Indiana State Department of Health), the Environmental Protection Agency (EPA), the U.S. Fish and Wildlife Services (USFWS), and the U.S. Army. The State of Indiana and the EPA are considering the need for remediation of non-radiological contaminants at JPG under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). In addition, the Army is considering whether to request permission to transfer the JPG license to the USFWS for long-term safety control and environmental monitoring.

NRC/Licensee Actions and Schedule

• NRC issues an EIS scoping report	August 1995
• NRC releases the area south of the firing line for unrestricted use	September 1995
• NRC distributes the draft EIS to cooperating agencies	March 1996
• NRC conducts EIS information meeting	May 1996
• NRC announces the draft EIS in the FR for comments	May 1996
• Final EIS	December 1996

Problems/Issues

The U.S. Army may not be able to provide complete characterization data because of the presence of UXOs at the site. In addition, complete cleanup of the DU would be risky and rather costly because of the presence of UXOs. Long-term institutional control and environmental monitoring may also represent a problem; specifically, implementation of such controls and monitoring may be difficult after the restricted site is released as a wildlife refuge.

In addition, in order to account for decommissioning alternatives and ensure compatibility, the EPA and the State of Indiana need to coordinate with the NRC when considering JPG remediation. At present, the EPA's review of the area north of the firing line appears to be lagging behind the NRC's schedule by about 2 years.

BABCOCK & WILCOX (APOLLO, PA)

Site Identification

Babcock & Wilcox (B&W)
Pennsylvania Nuclear Service Operations
Apollo, PA

License No.:	SNM-145
Docket No.:	070-00135
License Status:	Timely renewal; decommissioning
Project Manager:	K. Hardin, FCSS
DWM Monitor:	H. Astwood

Status of Decommissioning Activities

Remediation of the Apollo Office Building and surrounding contaminated soil was completed in 1994. B&W conducted final surveys of the excavated areas, and submitted the survey reports to the NRC. After reviewing the survey reports, the NRC performed independent confirmatory surveys of all portions of the B&W Apollo grounds and the Apollo Office Building. The confirmatory surveys indicated that B&W reduced the average enriched uranium contamination levels to below 1.1 Bq/g (30 pCi/g).

Based upon the B&W and NRC surveys, the NRC permitted B&W to backfill excavations throughout the site. The licensee submitted the final walkover survey for the entire site, and the confirmatory walkover survey was completed in May 1995. The Apollo Office Building was released for unrestricted use, and was demolished.

Groundwater leaving the site will be monitored until November 1995. At the conclusion of the groundwater monitoring period, if the monitoring results indicate that groundwater contamination limits are met, the license will be terminated.

NRC/Licensee Actions and Schedule

- NRC prepares Commission Paper on license termination — March 1996
- NRC terminates License and removes site from SDMP list — June 1996

Problems/Issues

None

BABCOCK & WILCOX (PARKS TOWNSHIP, PA)

Site Identification

Babcock & Wilcox (B&W)
Shallow Land Disposal Area (SLDA)
Parks Township, PA

License No.:	SNM-414
Docket No.:	070-00364
License Status:	Active; timely renewal
Project Manager:	H. Astwood, DWM

Status of Decommissioning Activities

On April 14, 1989, B&W submitted a license renewal application to the NRC for continuation of nuclear service operations at the Parks Township Site (PTS). By letter dated June 23, 1993, B&W submitted Revision 5 of the renewal application, and requested that separate licenses be issued for the nuclear service operations and the 20.304 disposal site known as the Shallow Land Disposal Area (SLDA). The NRC issued an environmental assessment on the license renewal in September 1993, followed by a *Federal Register* notice in November 1993 (58 FR 58711).

In February 1993, B&W submitted a characterization plan for the SLDA. B&W then submitted the characterization report based on this plan in October 1993. The NRC reviewed the report and requested additional information in a letter dated March 24, 1994.

On September 30, 1994, B&W submitted to the NRC a remediation proposal outlining several alternatives for remediation of the SLDA. These alternatives included stabilizing the waste in place, stabilizing the waste in a vault system onsite, and disposing of the waste offsite. B&W's preferred alternative, stabilizing the waste in place, involves placing a soil and geomembrane cap over the waste, and stabilizing the waste with a series of engineered barriers.

Based on B&W's proposed alternative for remediation of the SLDA, the NRC published a *Federal Register* notice, dated December 29, 1994 (59 FR 67344), noting the staff's intent to develop an EIS for the disposal site. The NRC decided to prepare an EIS because the licensee's preferred remediation approach would require an exception to current decommissioning requirements. To initiate the EIS, the NRC conducted a public scoping meeting in Leechburg, Pennsylvania, on January 26, 1995. The NRC then released the scoping summary report on May 30, 1995. The staff is currently preparing the EIS.

On November 4, 1994, the NRC staff published a *Federal Register* notice (59 FR 55298) announcing the initiation of public information meetings to share with the representative stakeholder and the public information concerning the status of current actions at the SLDA. The NRC will hold these meetings approximately quarterly, or at key decommissioning milestones. To date, three information meetings have been held in November 1994, January 1995, and May 1995.

In December 1994, the NRC held an additional meeting regarding uranium contamination in a sludge ash lagoon of a nearby wastewater treatment plant operated by the Kiski Valley Water Pollution Control Authority (KVWPCA). The NRC also conducted additional characterization of the sludge ash lagoon, and confirmed concentrations of enriched uranium up to about 333Bq/g (900 pCi/g) in the lagoon.

On January 5, 1994, Citizens Action for a Safe Environment (CASE) and the Kiski Valley Coalition to Save Our Children (the Coalition) filed a joint request for a hearing on the renewal application. On April 22, 1994, the presiding officer in this 10 CFR Part 2, Subpart L, proceeding issued a memorandum and order granting the request for a hearing. The issue to be considered was "whether there has been, and under a license renewal whether there will be, offsite radiation from the Parks Township facility which threatens radiological contamination of nearby residential, agricultural, and business property."

On January 3, 1995, the presiding officer filed his initial decision authorizing the staff to proceed with issuing the renewal of B&W's material license, including the license for the SLDA. CASE and the Coalition filed a petition for review, on January 23, 1995, requesting that the Commission review the presiding officer's initial decision of January 3, 1995. Both the NRC staff and the licensee filed responses to the petition on February 7, 1995. In May 1995, the Commission denied the petition for review.

NRC/Licensee Actions and Schedule

- NRC issues renewal of material license for operating facility and possession-only license for SLDA — Summer 1995
- NRC issues draft EIS for public comment — January 1996

Problems/Issues

Determin if contaminated material should be exhumed from the disposal site and shipped to an NRC-licensed waste disposal site, or disposed of *in situ*.

BP CHEMICALS AMERICA, INC.

Site Identification

BP Chemicals America, Inc.
Lima, OH

License No.:	SUB-908
Docket No.:	040-07604
License Status:	Possession only
Project Manager:	M. (Sam) Nalluswami, DWM

Status of Decommissioning Activities

As part of their mixed-waste pond closure project, BP Chemicals remediated the V-1 pond, one of four contaminated ponds onsite. BP Chemicals then submitted a survey report on the radiological status of the V-1 pond site on January 21, 1994, and the NRC staff provided comments on February 16, 1994. BP Chemicals responded to the comments on March 1, 1994, and April 7, 1994. Together, these comments were sufficient to finalize the survey report.

ORISE performed a confirmatory survey, and completed the report in April 1994. The confirmatory survey data supported the conclusion asserted by BP Chemicals that both the uranium concentrations in the soil and the associated exposure rates are less than the NRC's guidelines for release to unrestricted use.

In a letter dated April 26, 1994, the NRC notified BP Chemicals that these areas may be released for unrestricted use; the NRC also sent a copy of ORISE's confirmatory survey report as an attachment to the letter. A mixed-waste disposal cell will be constructed over the V-1 pond area that was released for unrestricted use.

On February 12, 1994, BP Chemicals submitted a revised application for license amendment to authorize onsite disposal of mixed wastes; additional information was submitted on May 25, 1994, to supplement this application. The staff reviewed these documents, and provided comments to BP Chemicals on November 8, 1994, including a request for additional information. BP Chemicals responded to these comments, and provided additional information on March 13, 1995; the NRC is currently reviewing that response.

During 1990 and 1991, BP Chemicals completed remediation of the Acrylo I Scrap Metal, Acrylo II reactors A and B, and the central warehouse/outdoor soil areas. BP Chemicals subsequently submitted their final survey reports. ORISE conducted confirmatory surveys in 1991 and 1992, and obtained supplemental data from BP Chemicals to finalize the confirmatory survey report for these areas. The NRC and ORISE found gaps in the supplemental data and requested additional information. BP Chemicals is in the process of gathering this additional information.

In June 1993, the NRC sent a letter to BP Chemicals requesting modifications to the financial assurance mechanism. BP Chemicals reviewed the NRC's letter. In a letter dated December 9, 1994, BP Chemicals suggested a different strategy for submitting the revised decommissioning cost estimate before submitting modifications to the other decommissioning funding plan

documents. The staff agreed with this strategy in a letter to BP Chemicals dated December 30, 1994. BP Chemicals submitted its revised decommissioning funding plan cost estimate on March 3, 1995. The staff is currently reviewing the revised decommissioning cost estimate in conjunction with the review of the onsite disposal request.

On June 29, 1994, the NRC staff requested additional information including the chemical form(s) and solubility of the depleted uranium (DU) (including catalyst 21) at the BP Chemicals site. BP Chemicals responded on July 12, 1994, with supplemental information including the chemical form(s) and DU solubility. The review of the DU solubility information by the staff did not fully support the assumption made by BP Chemicals that the DU material at the site is insoluble. The staff transmitted this conclusion to BP Chemicals on September 23, 1994, with a request to conduct solubility tests on the pond samples.

On September 19, 1994, BP Chemicals requested a license amendment to allow the direct transfer of water collected in several ponds to the facility's underground injection system. After reviewing the supporting data, the requested license amendment was approved on December 3, 1994.

In addition, on March 8, 1995, BP Chemicals submitted a workplan for an RCRA facility investigation (characterization study) of certain solid waste management units (SWMUs) to be conducted for the EPA. This workplan includes procedures for characterizing the extent of the radioactive contamination at SWMUs 98 and 102. The staff is currently reviewing these documents.

NRC/Licensee Actions and Schedule

- NRC approves radiological pathway analysis for onsite disposal — July 1995
- NRC approves pond closure plan — August 1995
- NRC finalizes confirmatory survey reports on Acrylo I Scrap Metal, Acrylo II Reactors A and B, and central warehouse/outdoor soil areas — July 1995

Problems/Issues

None

CABOT CORPORATION (BOYERTOWN, PA)

Site Identification

Cabot Corporation
Boyertown, PA

License No.:	SMB-920
Docket No.:	040-06940
License Status:	Active; timely renewal
Project Manager:	M. Klasky, FCSS
DWM Monitor:	R. Hogg

Status of Decommissioning Activities

In December 1993, the NRC split the license covering the three Cabot sites, in order to streamline renewal review efforts. License SMB-920 now covers the Boyertown facility, which is still operating; the Reading and Revere sites, which are being decommissioned, are now covered by License No. SMC-1562, Docket No. 40-9027.

In March 1994, Cabot submitted a revised renewal application in response to the license split. The revised application for the Boyertown facility described a digestion process that can recycle process sludge to recover metals and acids. This process will gradually deplete the currently stored sludge inventory over a 5-year period, and will eliminate the need for any interim remediation. Residues from the recovery process will include licensed materials, which may be disposed of as low-level radioactive waste or sold for uranium content. The NRC is currently evaluating the revised process as part of the license renewal review.

As a result of an inspection of the Boyertown facility conducted in February, 1995, the NRC identified several violations of Cabot's radiation protection requirements. Cabot is now conducting corrective actions associated with the enforcement action regarding these violations. Further delay in the decommissioning process may result from shifting licensee resources to address compliance of the operating facility.

In its revised application, Cabot also submitted a decommissioning funding plan (DFP). The NRC staff requested additional information regarding the DFP because the financial assurance mechanism lacks a standby trust agreement to accompany the letter of credit, and because the associated documentation needs to detail and support the cost estimate calculations. In addition, Cabot claims credit for the value of the uranium in the sludge, and the NRC is reviewing this claim for consistency with NRC's conventional assumptions for decommissioning cost estimates.

NRC/Licensee Actions and Schedule

- Cabot submits revised DFP — October 1995
- NRC renews the license — June 1996

Problems/Issues

Because of Cabot's initial claim that the sludge was not waste, the NRC has not approved the licensee's DFP. This delayed the staff's schedule for reviewing the license renewal application. However, Cabot recently stated that, in October 1995, it will submit a decommissioning cost estimate that includes the cost of disposing the residue from the processed sludge.

CABOT CORPORATION (READING, PA)

Site Identification

Cabot Corporation
Reading, PA

License No.:	SMC-1562
Docket No.:	040-09027
License Status:	Inactive; timely renewal
Project Manager:	R. Hogg

Status of Decommissioning Activities

In December 1993, the NRC split the license covering the three Cabot sites, in order to streamline renewal review efforts. License SMB-920 now covers the Boyertown facility, which is still operating; the Reading and Revere sites, which are being decommissioned, are now covered by License No. SMC-1562, Docket No. 40-9027.

In November 1994, the NRC staff conducted a routine site visit, and observed contractors preparing for demolition of the contaminated building at the Reading facility. The licensee was unaware that the building owner had been ordered to demolish the building because of the deteriorated condition of the structure. Per a confirmatory action letter issued by NRC Region I in November 1994, the licensee expedited remediation in accordance with the SDMP Action Plan.

Cabot submitted a site decommissioning plan in December 1994, the NRC reviewed and approved the plan in December 1994, and the area was successfully remediated from December 1994 through January 1995. After completing the remediation, Cabot conducted a final survey, and the NRC and ORISE conducted confirmatory surveys. The building and surrounding areas were included in this expedited remediation. The slag disposal area was not included in the scope of the effort and remains under license.

The NRC is currently awaiting the licensee's final status survey report formalizing information provided before the confirmatory survey to support the licensee's conclusion that the site was adequately remediated. After receiving and approving the licensees's final survey, the NRC will remove the building and surrounding areas from the license, leaving on the SDMP only the slag disposal area at this facility.

In April 1995, Cabot submitted a plan to characterize the slag disposal area on the site. The NRC reviewed this slag disposal area characterization plan, and issued comments to the licensee. Among other comments, the NRC noted that the plan failed to identify either a specific schedule or decommissioning alternative(s). In June 1995, the NRC issued a Severity Level IV Notice of Violation to the licensee for failing to submit the plan in accordance with the license.

NRC/Licensee Actions and Schedule

- Cabot submits decommissioning plan for slag disposal area — August 15, 1995
- Cabot submits final survey report for buildings and adjacent areas — June 1995
- NRC removes the buildings and adjacent areas from the license — August 1995

Problems/Issues

The licensee continues to be late in submitting documents. For instance, the licensee was required to provide a characterization plan for the slag disposal area by March 30, 1995, but did not submit the plan until April 1995, as described above. The staff has informed the licensee that Cabot is required to provide a site decommissioning plan for the slag pile by August 15, 1995.

CABOT CORPORATION (REVERE, PA)

Site Identification

Cabot Corporation
Revere, PA

License No.:	SMC-1562
Docket No.:	040-09027
License Status:	Inactive; timely renewal
Project Manager:	R. Hogg

Status of Decommissioning Activities

In December 1993, the NRC split the license covering the three Cabot sites, in order to streamline renewal review efforts. License SMB-920 now covers the Boyertown facility, which is still operating; the Reading and Revere sites, which are being decommissioned, are now covered by License No. SMC-1562, Docket No. 40-9027.

In June 1994, the licensee submitted for NRC review a characterization report prepared by a contractor describing the extent of the surface contamination remaining at the Revere facility. The characterization report did not describe the extent of the residual subsurface contamination at the site. As a result, Cabot retained a second contractor to characterize the subsurface. On December 30, 1994, Cabot then provided the subsurface characterization report prepared by the new contractor. The NRC reviewed the characterization reports and provided comments to the licensee in March 1995. The NRC is currently awaiting the licensee's decommissioning plan (DP) for remediation of the Revere facility.

NRC/Licensee Actions and Schedule

- Cabot submits DP — August 1995
- NRC reviews DP — October 1995

Problems/Issues

The licensee continues to delay in completing site decommissioning activities. The submission of the Revere site DP is currently delayed, as the licensee focuses resources on the Reading and Boyertown sites. The NRC has notified the licensee that Cabot is required to submit a decommissioning plan to the NRC by August 15, 1995, in accordance with the timeliness rule for decommissioning.

CHEMETRON CORPORATION (BERT AVENUE)

Site Identification

Chemetron Corporation
Newburgh Heights, OH

License No.:	SUB-1357
Docket No.:	040-08724
License Status:	Timely renewal
Project Manager:	T.C. Johnson, DWM

Status of Decommissioning Activities

Chemetron provided a Site Remediation Plan (SRP) for the Bert Avenue site, Harvard Avenue site, and McGean-Rohco complex on October 1, 1993; November 1, 1993; and November 11, 1993. The SRP proposed the construction of onsite disposal cells at the Bert Avenue and Harvard Avenue sites, under Option 2 of the 1981 Branch Technical Position on "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations." The NRC transmitted comments on the SRP to Chemetron on December 23, 1993; January 12, 1994; and September 30, 1994. Chemetron responded to these comments on February 7, 1994; March 2, 1994; March 9, 1994; and December 19, 1994. On February 28, 1995, Chemetron submitted Revision 1 to the SRP.

On May 11, 1994, the NRC staff issued a Notice of Violation (NOV) and Proposed Civil Penalty of $10,000. This violation was for Chemetron's incomplete submittal of the SRP by the October 1, 1993, the date specified in the license. On October 19, 1994, the NRC approved Chemetron's proposed corrective actions to ensure that future deadline commitments would be met.

On March 24, 1994, Chemetron requested that its license be amended to authorize the remediation in accordance with the submitted SRP. By submitting an amendment request as an Ohio agency, Chemetron asserted that it would not trigger the requirements of Ohio Senate Bill 130, for State review of releases of materials having radiologic concentrations that are "below regulatory concern."

On April 11, 1994, the NRC published a *Federal Register* notice announcing consideration of the amendment request, and offering an opportunity for a hearing. In response to this notice, the Earth Day Coalition, an Ohio environmental group, petitioned for a hearing. On July 7, 1994, the licensing board indicated that the petitioner did not provide sufficient information for a standing determination to be made, or for a determination that the concerns are germane to the proceeding. The board gave the petitioner three additional weeks to supplement its petition; however, the petitioner did not provide additional information. Consequently, on September 1, 1994, the licensing board granted Chemetron's motion of August 15, 1994, to dismiss the hearing.

The principal issues addressed in reviewing the Bert Avenue SRP are uranium solubility, segregation of materials exceeding the Option 2 limit, final survey plans, and post-closure restrictions:

- Uranium Solubility: The Option 2 limits for depleted uranium are stated in terms of the solubility of uranium in body fluids. On January 6, 1994, the NRC staff transmitted to Chemetron guidance on testing the solubility of the wastes. Chemetron expects to submit the test results in June 1995.

- Segregation of Wastes: One critical political issue for the Bert Avenue site is the segregation of wastes having concentrations that exceed the Option 2 limit. In the site characterization report, Chemetron identified two discrete areas that have uranium concentrations exceeding 3.7 Bq/g (100 pCi/gm) and one area with concentrations exceeding 37 Bq/g (1000 pCi/gm). In their revised SRP, Chemetron proposed to excavate the areas exceeding the Option 2 limits, and to dispose of the contaminated material in a licensed low-level radioactive waste disposal site.

- Final Survey Plans: Chemetron proposed modifications to the recommended final survey protocols given in NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination." The NRC staff is reviewing the proposed modification to the standard survey procedure recommendations, and will resolve outstanding issues with Chemetron.

- Post-Closure Restrictions: In accordance with the SDMP Action Plan, NRC staff would terminate Chemetron's license after decommissioning is performed under the Option 2 limits. The Ohio Department of Health (ODH), however, transmitted comments to the NRC staff on March 28, 1994, urging the NRC not to terminate the license. Instead, the ODH urged the NRC to add a series of post-closure restrictions that would require site monitoring, deed notification, and post-closure controls.

  At the Chemetron Regulators' Meeting on April 6, 1994, the ODH representative discussed this issue in more detail. The NRC staff explained that under the SDMP Action Plan, the NRC would terminate the license, assuming that the decommissioning was performed in accordance with an approved decommissioning plan. The NRC staff also stated that the dose assessments to be performed in the remediation plan review included scenarios that would bound the unrestricted use activities. The Chemetron representative agreed to discuss this issue with Chemetron and McGean-Rohco management, and meet with ODH and NRC staff to negotiate a suitable solution.

  At the Chemetron Regulators' Meeting on July 20, 1994, Chemetron proposed to modify the Bert Avenue site deed to restrict future uses of the site to only those prescribed by the Village of Newburgh Heights. The Mayor of Newburgh Heights indicated that no digging or construction would be allowed. In a meeting with Chemetron on November 9, 1994, both the Ohio Environmental Protection Agency (OEPA) and the ODH restated their concerns that post-closure monitoring of uranium should be performed.

In settling a class action suit brought by local residents, Chemetron agreed to pay $5 million, to be divided among the plaintiffs. The NRC Office of the General Counsel (OGC) reviewed the settlement language, and determined that provisions that may limit the manner in which safety information could be brought to the attention of the NRC are unenforceable. The NRC staff requested that Chemetron notify the litigants of the OGC's opinion. On September 1, 1994, Chemetron indicated that they would not object if individuals, who are parties to the Settlement Agreement, bring to the attention of the NRC issues related to any Chemetron failure to implement requirements of the approved SRP for the Harvard Avenue and Bert

Avenue sites. On October 21, 1994, the NRC staff accepted Chemetron's statement as satisfying NRC concerns.

On February 23, 1994, the OEPA staff proposed that a site closure process, under Rule 3745.27-11, be used for the Bert Avenue site. Under this process, the Bert Avenue site would be closed by capping the entire site. This would enable all solid wastes at the site to be addressed, rather than only those solid wastes associated with radiological contamination. Post-closure restrictions, under OEPA regulations, would be include post-closure financial assurance, monitoring, and remedial care.

At the Chemetron Regulators' Meeting on April 6, 1994, the Chemetron representative indicated that Chemetron would pursue the 27-11 site closure process, as identified by the OEPA. On September 15, 1994, Chemetron met with the OEPA to discuss the planned application submittal. Chemetron then submitted a post-closure application to the OEPA on December 12, 1994. On March 20, 1995, the OEPA provided comments to Chemetron concerning their submittal, and Chemetron responded to the OEPA comments on April 28, 1995. On June 20, 1995, the OEPA transmitted to Chemetron a second set of comments.

During the remediation of a building on the Aluminum Company of America (ALCOA) property, immediately west of the Harvard Avenue site, the ALCOA staff found depleted uranium (DU) contamination. Because ALCOA did not possess DU, it is believed that this contamination resulted from airborne emissions from the Chemetron site when it was in operation.

On May 3, 1993, the NRC staff requested that Chemetron provide a survey plan for the Harvard Avenue site vicinity. Chemetron submitted its vicinity survey plan on July 29, 1993, followed on October 31, 1994, by its report of the survey results. According to those results, Chemetron found additional contamination on the railroad bed on the south side of the Chemetron property. The NRC staff also found some additional contamination on the ALCOA property. Plans are now being prepared to remediate this area.

In the Fall of 1993, contamination exceeding the NRC's unrestricted release limits was found on property, adjacent to the Bert Avenue site, owned by the Fryers. Efforts to remediate this small area were delayed because the class action litigation restricted Chemetron's contacts with the litigants. The settlement of the class action suit removed these restrictions, and Chemetron began remediation of the contamination on May 12, 1994. However, additional deeper contamination was discovered in the area of a demolished house that had subsequently been backfilled.

On September 30, 1994, Chemetron submitted its plan for additional sampling on the Fryer property, and the NRC staff transmitted comments concerning the plan on October 19, 1994. On November 9, 1994, Chemetron completed the Fryer property sampling, and confirmed that additional contamination exists. Chemetron undertook remediation of this area in mid-November 1994. The area directly above the foundation of the demolished house was remediated to acceptable levels. However, additional contamination was discovered on the north side of the excavation. Chemetron plans to remediate this contamination during the remediation of the Bert Avenue site.

On April 4, 1994, Chemetron proposed to expedite the remediation of the McGean-Rohco complex ahead of the schedules proposed in the SRP. On August 9, 1994, the NRC issued a

Chemetron license amendment authorizing the remediation of the McGean-Rohco buildings. An environmental assessment and safety evaluation report were also issued.

To date, Buildings 11 and 20 have been remediated, and final surveys and NRC confirmatory surveys are underway. The NRC Regional staff is cooperating with Chemetron and McGean-Rohco, so that these buildings can be properly remediated and released to meet the McGean-Rohco building renovation schedules.

On May 18, 1995, Chemetron proposed to separate the reviews of the Harvard Avenue and Bert Avenue sites. Chemetron indicated that it wished to begin remediation of the Harvard Avenue site during Summer 1995, and did not wish to delay remediation until the NRC and OEPA complete reviews of the Bert Avenue site. On June 1, 1995, the NRC staff agreed to accelerate the Harvard Avenue site review ahead of the Bert Avenue review schedule.

NRC/Licensee Actions and Schedule

• NRC reviews and approves SRP for Bert Avenue site, and incorporates remediation schedule into the license	September 1995
• Chemetron receives approval from OEPA	December 1995
• Chemetron begins Bert Avenue remediation	January 1996
• Chemetron completes Bert Avenue remediation	July 1997
• NRC conducts confirmatory surveys	August 1997
• NRC releases Bert Avenue site for unrestricted use, and removes it from the license	November 1997

Problems/Issues

Technical issues to be resolved include uranium solubility testing (needed for determinations concerning the allowable limits for onsite disposal), resolution of final survey plan protocols, and post-closure restrictions.

CHEMETRON CORPORATION (HARVARD AVENUE)

Site Identification

Chemetron Corporation
Cuyahoga Heights, Ohio

License No.:	SUB-1357
Docket No.:	040-08724
License Status:	Timely renewal
Project Manager:	T.C. Johnson, DWM

Status of Decommissioning Activities

Chemetron provided a Site Remediation Plan (SRP) for the Bert Avenue site, Harvard Avenue site, and McGean-Rohco complex on October 1, 1993; November 1, 1993; and November 11, 1993. The SRP proposed the construction of onsite disposal cells at the Bert Avenue and Harvard Avenue sites, under Option 2 of the 1981 Branch Technical Position on "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations." The NRC transmitted comments on the SRP to Chemetron on December 23, 1993; January 12, 1994; and September 30, 1994. Chemetron responded to these comments on February 7, 1994; March 2, 1994; March 9, 1994; and December 19, 1994. On February 28, 1995, Chemetron submitted Revision 1 to the SRP.

On May 11, 1994, the NRC staff issued a Notice of Violation (NOV) and Proposed Civil Penalty of $10,000. This violation was for Chemetron's incomplete submittal of the SRP by the October 1, 1993, the date specified in the license. On October 19, 1994, the NRC approved Chemetron's proposed corrective actions to ensure that future deadline commitments would be met.

On March 24, 1994, Chemetron requested that its license be amended to authorize the remediation in accordance with the submitted SRP. By submitting an amendment request as an Ohio agency, Chemetron asserted that it would not trigger the requirements of Ohio Senate Bill 130, for State review of releases of materials having radiologic concentrations that are "below regulatory concern."

On April 11, 1994, the NRC published a *Federal Register* notice announcing consideration of the amendment request, and offering an opportunity for a hearing. In response to this notice, the Earth Day Coalition, an Ohio environmental group, petitioned for a hearing. On July 7, 1994, the licensing board indicated that the petitioner did not provide sufficient information for a standing determination to be made, or for a determination that the concerns are germane to the proceeding. The board gave the petitioner three additional weeks to supplement its petition; however, the petitioner did not provide additional information. Consequently, on September 1, 1994, the licensing board granted Chemetron's motion of August 15, 1994, to dismiss the hearing.

The principal issues addressed in reviewing the Bert Avenue SRP are uranium solubility and the proposed Harvard Avenue final survey plans:

- Uranium Solubility: The Option 2 limits for depleted uranium are stated in terms of the solubility of uranium in body fluids. On January 6, 1994, the NRC staff transmitted to Chemetron guidance on testing the solubility of the wastes. Chemetron expects to submit the test results in June 1995.

- Final Survey Plans: Chemetron proposed modifications to the recommended final survey protocols given in NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination." The NRC staff is reviewing the proposed modification to the standard survey procedure recommendations, and will resolve outstanding issues with Chemetron.

In settling a class action suit brought by local residents, Chemetron agreed to pay $5 million, to be divided among the plaintiffs. The NRC Office of the General Counsel (OGC) reviewed the settlement language, and determined that provisions that may limit the manner in which safety information could be brought to the attention of the NRC are unenforceable. The NRC staff requested that Chemetron notify the litigants of the OGC's opinion. On September 1, 1994, Chemetron indicated that they would not object if individuals, who are parties to the Settlement Agreement, bring to the attention of the NRC issues related to any Chemetron failure to implement requirements of the approved SRP for the Harvard Avenue and Bert Avenue sites. On October 21, 1994, the NRC staff accepted Chemetron's statement as satisfying NRC concerns.

During the remediation of a building on the Aluminum Company of America (ALCOA) property, immediately west of the Harvard Avenue site, the ALCOA staff found depleted uranium (DU) contamination. Because ALCOA did not possess DU, it is believed that this contamination resulted from airborne emissions from the Chemetron site when it was in operation.

On May 3, 1993, the NRC staff requested that Chemetron provide a survey plan for the Harvard Avenue site vicinity. Chemetron submitted its vicinity survey plan on July 29, 1993, followed on October 31, 1994, by its report of the survey results. According to those results, Chemetron found additional contamination on the railroad bed on the south side of the Chemetron property. The NRC staff also found some additional contamination on the ALCOA property. Plans are now being prepared to remediate this area.

On April 4, 1994, Chemetron proposed to expedite the remediation of the McGean-Rohco complex ahead of the schedules proposed in the SRP. On August 9, 1994, the NRC issued a Chemetron license amendment authorizing the remediation of the McGean-Rohco buildings. An environmental assessment and safety evaluation report were also issued. To date, Buildings 11 and 20 have been remediated, and final surveys and NRC confirmatory surveys are underway. The NRC Regional staff is cooperating with Chemetron and McGean-Rohco, so that these buildings can be properly remediated and released to meet the McGean-Rohco building renovation schedules.

On May 18, 1995, Chemetron proposed to separate the reviews of the Harvard Avenue and Bert Avenue sites. Chemetron indicated that it wished to begin remediation of the Harvard Avenue site during Summer 1995, and did not wish to delay remediation until the NRC and OEPA complete reviews of the Bert Avenue site. On June 1, 1995, the NRC staff agreed to accelerate the Harvard Avenue site review ahead of the Bert Avenue review schedule.

NRC/Licensee Actions and Schedule

- NRC reviews and approves SRP for Harvard Avenue site, and incorporates remediation schedule into the license — August 1995
- Chemetron begins Harvard Avenue remediation — August 1995
- Chemetron completes Harvard Avenue remediation — March 1996
- NRC conducts confirmatory surveys — April 1996
- NRC releases Harvard Avenue site for unrestricted use, and removes it from the license — June 1996

Problems/Issues

Technical issues to be resolved include uranium solubility testing (needed for determinations concerning the allowable limits for onsite disposal) and resolution of final survey plan protocols.

CLEVITE CORPORATION (NEIGHBORHOOD PROGRESS, INC.)

Site Identification

Clevite Research Center
Division of Clevite Corporation
540 E. 105th Street
Cleveland, OH

License No.:	SNM-183 C-3790 C-3692 34-00653-01/02
Docket No.:	040-00133
License Status:	Terminated by the AEC in September 1962
Project Manager:	T. Johnson, DWM

Site and Operations

On March 10, 1958, the Atomic Energy Commission (AEC) issued License No. SNM-183 to the Clevite Research Center, a Division of Clevite Corporation, for possession and use of enriched uranium (EU) in the U-235 isotope at their East 105th Street facility. The license authorized chemical and physical processing of uranium for the production and fabrication of fuel elements for nuclear reactors. The license initially authorized possession of 9,010 grams of uranium enriched to 90-percent U-235. Subsequent amendments authorized 55,800 grams (123 lb) of EU.

Apparently, the licensee confined the fabrication of fuel elements to a special area on the first floor, near the rear of the building. During the period when the licensee used special nuclear material, the licensee maintained approximately 20 operational criticality areas.

In 1962, the licensee opted not to renew the license, and prepared for decontamination and decommissioning of the facility. In a letter dated August 14, 1962, Clevite Corporation submitted its final radiation survey results. This survey indicated that the maximum radiation level over the surface of the work area, measured at 1 cm (0.39 in) from the surface, was 36 nC/kg•hr (140 μR/hr). The average radiation level was 7.7 nC/kg•hr (30 μR/hr) measured at the same distance. The AEC conducted a confirmatory survey on August 30, 1962; based on the results of smear tests for removable contamination taken at this time, the AEC terminated Clevite's license in September 1962.

Clevite held four other AEC licenses at this location. Byproduct Material License No. 34-00653-01 authorized megabecquerel (millicurie) quantities of phosphorous-32, sodium-24, potassium-42, and chlorine-36 for use in irradiation and research on crystalline compounds. Byproduct Material License No. 34-00653-02 authorized sealed sources of cobalt-60 for use in irradiation and radiography. Source Material Licenses No. C-3790 and No. C-3692 authorized 90 kg (198 lb) of natural uranium and 5 g (.01 lb) of thorium sulfide for research purposes. Apparently, the licensee conducted the activities associated with the byproduct material licenses on the second floor of the building.

During a review of terminated license files by Oak Ridge National Laboratory (ORNL), an NRC contractor, reviewers noted that the licensee disposed on contaminated waste materials in an onsite incinerator. Reviewers also concluded that contamination, both onsite and offsite, may exist because of the manner in which the licensee used radioactive materials. During an onsite inspection, conducted on May 27, 1993, NRC Region III identified low levels of fixed uranium contamination on the floor of the former manufacturing building, which exceed current NRC release criteria.

Radioactive Wastes

The site is approximately 16,300 m^2 (180,000 ft^2), and the building occupies approximately 15,000 m^2 (160,000 ft^2). The former fabrication and manufacturing areas where contamination was found are approximately 650 m^2 (7,000 ft^2).

NRC inspectors have identified six locations where beta-gamma activity levels averaged over one square meter exceed the release limit of 5,000 dpm/100 cm^2. NRC inspectors have also identified four locations where the activity levels exceed 15,000 dpm/100 cm^2. The contaminated areas are occupied by Grid Seal Corporation.

Description of Radiological Hazard

Access to the site is controlled, and the site poses no immediate threat to the public health and safety. The only identified contaminant is fixed uranium within one room of the building, and the area with the highest amount of contamination was sealed with a sheet of metal. NRC surveys found no offsite radiation levels above natural background.

Financial Assurance/Viable Responsible Organization

Neighborhood Progress, Inc., which currently owns the site, has held discussions with Clevite's legal counsel to resolve financial responsibility for site characterization and remediation of the contamination. Before 1969, the building owner was Cleveland Graphite Bronze/Clevite. Clevite became a sole subsidiary until 1969, when Clevite merged with Gould, Inc. In September 1981, Imperial Clevite, Inc. purchased the building. In 1986, the building reverted back to Clevite, Inc. In 1987, the Pullman Company purchased some of Clevite's assets, including this building. Neighborhood Progress, Inc. purchased the building from Pullman in December 1991.

Since Clevite is not a licensee, no financial assurance mechanism is required to be in place to cover the costs of decontamination and decommissioning.

Status of Decommissioning Activities

In February 1994, after issuing an NRC inspection report in December 1993, the NRC officially notified Clevite that the site had been added to the SDMP.

Clevite first submitted a characterization plan for its site in November 1993. The NRC staff reviewed the characterization plan, and sent comments to Clevite in April 1994. Clevite responded to these comments in June 1994, but additional comments were then required. After several additional rounds of comments and responses, the NRC approved Clevite's

characterization plan on June 1, 1995. In discussions with the NRC, Clevite expressed a desire to characterize and remediate expeditiously.

NRC/Licensee Actions and Timing

- Clevite submits decommissioning plan — December 1995
- NRC reviews decommissioning plan — March 1995

Problems/Issues

Neighborhood Progress, Inc., the current owner of the site, reported to the NRC by telephone that it plans to perform construction and renovation at the site beginning in the Spring of 1995; however, they also stated that they will limit renovation activities to uncontaminated portions of the building until remediation has been successfully completed.

DOW CHEMICAL COMPANY

Site Identification

Dow Chemical Company
Midland & Bay City, MI

License No.:	STB-527
Docket No.:	040-00017
License Status:	Timely renewal
Project Manager:	J. Parrott, DWM

Status of Decommissioning Activities

In November 1992, Dow requested an exemption from the decommissioning regulations to allow disposal of thorium, in concentrations exceeding unrestricted use limits, at a hazardous waste disposal facility regulated under the Resource Conservation and Recovery Act (RCRA). Seeking Commission guidance concerning Dow's exemption request, the NRC staff submitted a paper hat, among other things, examined Dow's request. The Commission approved the staff's plan to pursue Dow's request on April 28, 1995.

NRC/Licensee Actions and Schedule

- NRC staff reviews Dow's exemption request and decommissioning plan and requests additional information — August 1995
- NRC staff approves Dow's exemption request and decommissioning plan — November 1995
- Dow completes decommissioning — November 1998
- NRC terminates license — December 1998

Problems/Issues

To dispose of contaminated material at a location other than a licensed low-level waste facility, Dow will require an exemption from the unrestricted use criteria. Dow has requested the exemption, and the Commission has approved the staff's plan to pursue Dow's request. The specifics of the request are being reviewed by the NRC staff.

ELKEM METALS, INC.

Site Identification

Elkem Metals, Inc.
Marietta, OH

License No.:	Not Licensed
Docket No.:	N/A
License Status:	Terminated by the NRC in 1985
Project Manager:	C.L. Pittiglio, Jr., DWM

Status of Decommissioning Activities

The NRC approved the decommissioning plan for the Elkem site in May 1993. Union Carbide Corporation (UCC), the former operator of the tantalum/niobium processing facility, completed remediation in June 1994 using a contractor, International Technology (IT) Corporation.

During the course of remediation, UCC and IT personnel discovered several previously unidentified areas of soil contamination east of Building 78, surface contamination on the roof of Building 78 over the milling process equipment and near the west baghouse exhaust vent, and surface contamination on concrete pads. The additional soil contamination involves an area of approximately 54.5 m^3 (70 yd^3).

IT completed remediation of the site in June 1994, and then completed its final survey in December 1994, and submitted its Final Survey Report to the NRC in March 1995. The low-level waste generated during decommissioning remains onsite. After the waste is removed, Elkem will survey the waste storage area and submit the survey report to the NRC.

NRC/Licensee Actions and Schedule

- NRC completes review of the Final Survey Report — July 1995
- UCC/IT complete waste removal — September 1995
- NRC conducts confirmatory survey — October 1995
- NRC releases site for unrestricted use, and removes site from SDMP — December 1995

Problems/Issues

None

ENGELHARD CORPORATION

Site Identification

Engelhard Corporation
Plainville, MA

License No.:	Not Licensed
Docket No.:	070-00139 (old)
License Status:	Terminated by the AEC in 1962
Project Manager:	R. Turtil, DWM

Status of Decommissioning Activities

Originally, the only known radioactive material contamination at this site was uranium contamination of the building and septic system. Outdoor contamination was subsequently discovered when the site became subject to characterization for the presence of hazardous wastes under RCRA. The additional EPA RCRA requirements imposed on the site characterization by the discovery of potential mixed-waste contamination has slowed progress on site remediation. Therefore, activities are divided into building decommissioning and outdoor area decommissioning.

Engelhard is independently focusing on the specifics of the NRC and EPA site characterization programs, but is coordinating the field work to eliminate duplication of effort.

The NRC conditionally approved both the building decommissioning plan and the outdoor area characterization plan in December 1993, pending approval of Engelhard's proposed health and safety plan.

NRC/Licensee Actions and Schedule

- NRC completes review of Engelhard responses to NRC questions concerning health and safety plan — July 1995
- Engelhard begins building decommissioning — Spring 1996[1]

Problems/Issues

RCRA waste materials are present at the site.

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[1]Engelhard continues to characterize the outdoor areas for RCRA chemical characterization in cooperation with the EPA. EPA-related characterization activities are expected to continue through 1997. It is anticipated that outdoor area decommissioning activities will be performed in conjunction with EPA remediation activities, beginning in 1997. In addition, Engelhard is currently investigating potential cost savings associated with simultaneously performing building and outdoor area decommissioning activities. Engelhard is also investigating whether decommissioning activities may be covered under FUSRAP. Engelhard's findings may affect building remediation start-up dates.

FANSTEEL, INC.

Site Identification

Fansteel, Inc.
Muskogee Plant
Muskogee, OK

License No.:	SMB-911
Docket No.:	040-07580
License Status:	Active; timely renewal
Project Manager:	Amar Datta, FCSS

Status of Decommissioning Activities

Through mid-1994, Fansteel continued to delay decommissioning by investigating various options for recovering resources from the residue of past operations stored in several ponds at the site, including exporting the residue to Thailand. Fansteel decided on a plan involving onsite processing of the residue.

Accordingly, Fansteel made a timely request for renewal of its License No. SMB-911 on June 20, 1994. The staff is presently reviewing the application. In the course of this review, the NRC evaluated the decommissioning plan and decommissioning funding plan submitted with the renewal application, and found that both are deficient. By letter dated April 13, 1995, the NRC conveyed to Fansteel its finding that the plans were unacceptable. Fansteel requested until October 1, 1995, to submit revised plans.

Meanwhile, by letter dated January 25, 1995, Fansteel submitted an application requesting amendment of its license to permit processing of the residue. The staff is currently reviewing this request.

In July 1993, Fansteel submitted a remedial assessment for the northwest portion of the site (Northwest Property) along with a request that NRC release this portion of the property for unrestricted use. After several rounds of staff comments and Fansteel appeals, the NRC, by its letter dated March 21, 1995, denied the request because of inadequate survey data. The staff is awaiting Fansteel's decision as to whether it would pursue the request any further.

In December 1993, Fansteel requested permission to close four deep wells reaching into a deep subsurface aquifer, claiming that the deep aquifer was uncontaminated. The staff responded by stating that the deep wells appear necessary to continue sampling of the deep. Fansteel then submitted additional sampling data in October 1994. After reviewing the additional data, the staff was satisfied that there was adequate basis for closure of the wells; by letter dated February 23, 1995, the NRC granted Fansteel's request.

NRC/Licensee Actions and Schedule

- Fansteel submits revised Decommissioning Plan and Decommissioning Funding Plan — October 1, 1995
- NRC completes review of license amendment request — December 1995

- NRC completes review of license renewal request — June 1996

Problems/Issues

Fansteel failed to submit a decommissioning plan for the entire facility, and its proposal for onsite disposal of contaminated waste was unacceptable to the staff. Furthermore, Fansteel's proposal for self-guaranteeing the availability of funding for decommissioning activities did not meet NRC guidelines.

Fansteel based its request for release of its Northwest Property on an inadequate 1993 remedial assessment survey. In addition to being inadequate, the limited remedial assessment survey indicated potential contamination of parts of the Northwest Property.

FROME INVESTMENT COMPANY (BROOKS & PERKINS CORPORATION)

Site Identification

Frome Investment Company
Detroit, MI

License No.:	D-547 STB-0362
Docket No.:	040-00235
License Status:	Terminated by the AEC on May 17, 1971
Project Manager:	T. Johnson, DWM

Site and Operations

AEC License No. D-547 was issued on January 17, 1957, to Brooks & Perkins Corporation, and then superseded by license No. STB-0362 on August 10, 1961. This license authorized the use and possession of up to 15,000 pounds of thorium as contained in 40-percent thorium master alloy and thorium magnesium alloy containing not more than 3-percent thorium. The license authorized two locations of use:

- 1950 West Fort Street, Detroit, Michigan
- 12633 Inkster Road, Livonia, Michigan

This site description covers only activities at the Detroit facility. Activities at the Livonia facility, now separately owned, are covered by the site description for AAR Manufacturing, Inc. (Brooks & Perkins Corporation).

Licensed activities included rolling, melting, casting, forming, cutting, sanding, and welding manufactured products containing licensed source material. The licensee requested termination of the license in a letter dated February 5, 1971, and provided a radiation survey of the Livonia and Detroit facilities conducted by their consultant. The AEC terminated the license in May 1971, based upon the consultant's report.

Frome Investment Company purchased the building sometime between late 1960 and early 1970 (exact date not available) from the Brooks & Perkins Corporation. The building is currently leased to the Eaton Company, and is used as a warehouse.

Radioactive Wastes

Oak Ridge National Laboratories (ORNL), an NRC contractor, reviewed the terminated license file. During the review, ORNL noted that, because of the type and quantity of licensed materials, a building at the site may have been left with contamination, and the former licensee may have buried its waste materials.

On February 1, 1994, NRC Region III conducted radiation surveys in and around the former manufacturing, processing, and storage areas in the building. The inspector's survey of the building and adjacent property identified an open area located outside the main building behind a garage facing West Fort Street, which showed elevated radiation levels. Specifically,

the inspector measured 120 μR/hr (30.8 nC/kg•hr) on contact and 15 μR/hr (3.9 nC/kg•hr) at 1 meter (3.3 ft) above the ground surface. No alpha activity was identified when measured on contact with the ground. Further investigation indicated that radioactive material may have been buried in this area.

The inspector collected a sample of the contaminated material for further analysis in the Region III laboratory. Analysis of the sample identified the radioactive material as thorium, with the concentration of the slag material being 18.3 Bq/g (500 pCi/g), which exceeds the NRC release criterion of 0.37 Bq/g (10 pCi/g). The inspector also took several random smear tests for removable activity within the building; these tests did not show removable contamination above the detection limit.

Description of Radiological Hazard

The principal hazards associated with thorium contamination in the soil involve direct exposure, inhalation, ingestion, and intrusion into the burial area. Access to the site is controlled, and the contamination poses no immediate threat to the public health and safety. The contaminated area is roped off and posted.

Financial Assurance/Viable Responsible Organization

There is no financial assurance in place to cover the costs of decontamination and decommissioning. No financial assurance is required by regulation since the license for this site has been terminated. Frome Investment Company has assumed responsibility for the decontamination costs.

Status of Decommissioning Activities

Frome Investment Company retained a consultant who submitted a characterization plan for NRC review in June 1994. The NRC returned comments on that plan to Frome in January 1995, with a response due by April 1, 1995. Frome has not replied, and has instructed the consultant to temporarily suspend work. Frome has also retained legal counsel, taking the position that it is not responsible for the contamination, and that characterization and remediation would cost more than the building is worth.

NRC/Licensee Actions and Timing

NRC Review and Approval of Site Characterization Plan	TBD
Initiation of Site Remediation	TBD

Problems/Issues

Frome Investment company is presently unwilling, and may be unable, to undertake remediation. By retaining counsel, Frome may be expected to undertake action intended to recover remediation costs from successors to Brooks & Perkins.

HARTLEY & HARTLEY LANDFILL

Site Identification

Hartley & Hartley Landfill
Bay County, MI

License No.:	Pending
Docket No.:	040-09022 (SCA)
	040-09015 (MDNR)
License Status:	Licenses applied for
Project Manager:	J. Parrott, DWM

Status of Decommissioning Activities

SCA Site

On June 14, 1995, the NRC issued a license to SCA for possession and decommissioning activities. Issuance was delayed because additional documentation related to financial assurance was required. SCA will now begin site characterization activities.

MDNR Site

The NRC will issue a license for possession and decommissioning activities at the MDNR site. The license will require, by license condition, that MDNR submit a decommissioning plan by a specified date. Issuance of the license is contingent upon submittal of a decommissioning funding plan from MDNR.

NRC/Licensee Actions and Schedule

SCA Site

- SCA submits decommissioning plan — January 1997

MDNR Site

- MDNR submits decommissioning funding plan — September 1995
- NRC issues license — January 1996
- MDNR submits decommissioning plan — January 1997

Problems/Issues

Thorium wastes are mixed with hazardous wastes.

HERITAGE MINERALS

Site Identification

Heritage Minerals
Lakehurst, NJ

License No.:	SMB-1541
Docket No.:	040-08980
License Status:	Active; possession only/decommissioning; Expires on December 31, 1995
Project Manager:	M. Miller, Region I
DWM Monitor:	H. Astwood

Status of Decommissioning Activities

The licensee has completed remediation of the process buildings, and License No. SMB-1541 will expire on December 31, 1995. Representatives from Region I visited the site on June 25, 1993, and found that little progress has been made regarding disposal, although the licensee had constructed a stockade fence around the monazite-rich pile. The licensee requested a meeting, which was held in Region I on August 22, 1994. Based on agreements reached during the meeting, the licensee submitted a decommissioning cost estimate for the site on August 30, 1994, followed by a summary of actions to develop remediation options for the site on October 7, 1994. In addition, the licensee withdrew their request to allow mixing of the monazite pile as a disposal method.

Region I sent a deficiency letter dated November 21, 1994, requesting a financial assurance instrument based upon a revised cost estimate for license termination. By letters dated March 21 and 22, 1995, the licensee submitted a letter of credit, and responded to NRC questions regarding the decommissioning cost estimate.

NRC/License Actions and Schedule

- NRC performs confirmatory survey of remediated area — August 1997
- NRC terminates license — December 1997

Problems/Issues

The State of New Jersey objects to the NRC's regulatory position that the combined tailings piles, which exceed current NRC release criteria for unrestricted use, are not subject to NRC regulation. The State bases its objection on the fact that the piles are not currently licensed, and contain less than 0.05 percent uranium and thorium by weight. The State has proposed waste storage, generation, and disposal regulations that may complicate site decommissioning.

HORIZONS, INC. (LAMOTITE)

Site Identification

Horizons, Inc.
Cleveland, OH

License No.:	C-2348 C-3496
Docket No.:	040-000861
License Status:	Terminated by the AEC in May 1959
Project Manager:	T. Johnson, DWM

Site and Operations

In the late 1940s, Horizons, Inc. had an active research program in the field of high-temperature, fused-salt electrochemistry. Most of the research pertained to non-radioactive titanium and zirconium. Horizons then submitted a contract proposal to the Atomic Energy Commission (AEC) for a research project to study possible production methods for thorium recovery. The AEC awarded Horizons its first contract in April 1952, and continued this contract with various amendments through June 30, 1956. During this period, Horizons processed more than 4.5 metric tons (5 tons) of thorium nitrate tetrahydrate under AEC License No. C-2348.

Review of historical documents indicates that final payment for the contract work included reimbursement for decommissioning. However, Horizons submitted a license renewal application dated February 20, 1956, for continued possession, use, and processing of thorium and uranium beyond the date that the contract would be discontinued.

The AEC completed action on this renewal request, and issued Horizons License No. C-3496 on April 30, 1957, for use and possession of 62.5 kg (100 lbs) of uranium and 6,250 kg (10,000 lbs) of thorium at their facility located at 2891–2905 East 79th Street, Cleveland, Ohio. Authorized uses included refining source material for anyone licensed by the AEC, and recovering uranium and thorium by an electrolytic process. This license was terminated on May 31, 1959.

Horizons also held two other AEC licenses. Byproduct Material License No. 27229, which became effective in 1955 and terminated February 1, 1957, authorized the possession and use of 740 MBq (20 mCi) of silver-110 (Ag-110). Byproduct Material License 34-1947-01, which superseded License No. 27229, was issued on February 1, 1957, and terminated on December 9, 1958. Horizons used the Ag-110 under several government contracts to determine coefficients of surface diffusion for various metals.

In a letter dated November 4, 1958, Horizons stated that they had shipped all materials on hand back to Oak Ridge National Laboratories (ORNL), an NRC contractor, on October 31, 1958.

During a review of terminated licenses, ORNL noted the lack of decontamination and decommissioning documentation in the terminated license file. Because of this deficiency,

ORNL concluded that the possibility existed that the former licensee may have inappropriately disposed of their contaminated wastes, or simply abandoned the material.

Further investigation by the NRC staff revealed that the Department of Energy (DOE) had been considering this site as a candidate for their Formerly Utilized Sites Remedial Action Program (FUSRAP) in the mid-1970s. The DOE conducted a site characterization/assessment during February and March 1977, and concluded in a report dated February 1979, that the facility did not meet the NRC release criteria. In 1985, the DOE then concluded that they do not have the authority under the Atomic Energy Act of 1954, as amended, to perform remedial action at the site, even though residual radioactive material is present because of AEC-sponsored operations. This decision was transmitted to the U.S. Environmental Protection Agency (EPA) and the State of Ohio.

In November 1994, Horizons, Inc. petitioned the DOE to re-open the issue of DOE funding for the needed remediation at the site. In April 1995, the DOE informed the NRC that the government is contractually liable for remediation costs, and will request that Horizons, Inc. prepare a cost proposal for meeting the requirements of the SDMP.

Radioactive Wastes

During the 1940s and 1950s, the two buildings (Buildings B and C) at the Horizons facility used for the production of granular thorium and metallic uranium became extensively contaminated. Lamotite, the current owner of the site, currently uses Building B to store surplus (nonradioactive) process equipment.

A DOE report dated February 1979 indicated that concentrations of thorium-232 up to 181 Bq/g (4,890 pCi/g) were found in soil and other materials taken from the floor drains and surfaces inside Buildings B and C. The report further stated that soil contamination under Building C runs to a depth of up to 6 feet. Results of direct alpha measurements suggest that most of the roof surfaces of the two buildings contain alpha contamination in excess of 100 dpm/100 cm^2.

On June 25, 1993, NRC Region III inspected the Horizons facility, and identified direct radiation levels in excess of 500 nC/kg•hr (2 mR/hr) on contact, as well as total alpha contamination in excess of 30,000 cpm in several floor areas. In addition, a sludge sample from a floor drain contained 418 Bq/g (11,300 pCi/g) of Th-232. Building surface contamination was extensive, but no contamination in excess of background was identified outside of the building.

The entire site covers approximately 13,600 m^2 (146,000 ft^2). Of this, Building B occupies 481 m^2 (5,185 ft^2), and Building C (including offices) occupies 2,276 m^2 (24,500 ft^2). The surrounding neighborhood is a mixture of commercial buildings and single/multiple-family residences. Based upon the DOE contractor's survey data, approximately 230 m^3 (300 yd^3) of soil and 380 m^3 (500 yd^3) of building material may require disposal.

Description of Radiological Hazard

Access to the site is controlled, and the site poses no immediate threat to the public health and safety. Thorium contamination currently exists only in onsite soils and buildings. Building C is currently posted "Caution, Radioactive Materials," and the current property owner has

restricted access to the building. The floor drains in Building C have been plugged for approximately 10 years.

Financial Assurance/Viable Responsible Organization

Lamotite currently owns the property. At the time of the NRC Region III inspection on June 25, 1993, the NRC staff found that Horizons, Inc. sold the buildings to a company called Clecon somewhere in the 1966–1967 time frame. Clecon then sold all of the company's assets to Tilling of England in 1981. Tilling, in turn, sold all of the company's assets to an unknown individual in 1982. This unknown individual sold all of the business to three of the company's managers in 1983. Finally, these three individuals sold the business and all of its assets to Lamotite in 1986.

Since neither Horizons nor Lamotite are licensees, no financial assurance documents are required to be in place to cover the costs of decontamination and decommissioning. Further, the DOE indicated that it will be responsible for the remediation costs.

Status of Decommissioning Activities

In August 1993, the NRC issued an inspection report concerning the Horizons site. This led to both Lamotite and Horizons being separately notified on March 3, 1994, that the site had been added to the SDMP. Lamotite had a radiological health assessment of the site prepared by Fluor-Daniel for the purpose of identifying specific locations that might pose radiological hazards to their employees; this report was submitted to the NRC on February 9, 1994. Representatives of Horizons are working with the DOE to recover remediation costs from the old AEC contract, and submitted a formal claim to the DOE in November 1994. As noted above, this claim has now been approved.

On June 6, 1994, Lamotite and Horizons jointly submitted to the NRC a schedule for undertaking site characterization and remediation activities. The NRC staff is currently reviewing this schedule, but is deferring action on its approval, pending the Horizons' response to the DOE's request for submittal of a cost proposal.

Other Involved Parties

The State of Ohio and the U.S. EPA were provided information regarding the radiological status of this site in December 1985. However, no specific actions to ensure prompt decommissioning were taken.

NRC/Licensee Actions and Timing

NRC completes review of proposed remediation schedule TBD

Problems/Issues

Lamotite has requested that the NRC issue an order to Horizons, Inc. to remediate the site. The NRC has deferred action on this request, pending a final decision by DOE concerning the Horizons' claim, as well as the outcome of a request for a similar, possibly precedent-setting, order by the NRC affecting Advanced Medical Systems (AMS) and the Northeast Ohio Regional Sanitary District (NEORSD). Although this request is still pending, it may be considered moot in consequence of the decision by DOE to fund remediation efforts.

KAISER ALUMINUM SPECIALTY PRODUCTS

Site Identification

Kaiser Aluminum Specialty Products
Tulsa, Oklahoma

License No.:	STB-472
Docket No.:	040-02377 (old)
License Status:	Terminated in 1971
Project Manager:	R. Turtil

Site and Operations

On March 7, 1958, the AEC issued Source Material License C-012 to the Standard Magnesium Corporation, a Division of the Kaiser Chemical Company, for possession of magnesium-thorium alloy. Standard Magnesium purchased magnesium-thorium scrap material for reclaiming purposes. The product of the manufacturing process was magnesium anodes, which were used for cathodic protection on items such as tanks and pipelines.

On November 22, 1961, the AEC issued License STB-472 to Standard Magnesium; this license superseded License C-4012. On June 5, 1968, the AEC amended License STB-472 to include uranium. Standard Magnesium planned to process a magnesium slag containing uranium from the National Lead Company of Ohio. On February 12, 1971, Kaiser Magnesium, formerly called Standard Magnesium, requested that the AEC cancel the source material license. The licensee stated that they had not processed any source material in the past year, and had decided to discontinue purchasing this material. In March 1971, the AEC terminated Source Material License STB-472 at the licensee's request.

According to NRC records, the waste material from the licensee's smelting process was disposed of by burial in an area immediately behind the plant. The AEC conducted an inspection on November 15, 1965. The resulting inspection report quoted the Metal Procurement Director for Standard Magnesium as saying that approximately 50 tons of magnesium-thorium slag material was disposed of by burial.

Radioactive Wastes

Little data exists on the extent of radioactive wastes at this site. All information indicates that materials at the site consist of contaminated soil containing thorium-232 and its daughter thorium-228. The soil has also been found to contain thorium-230, one of 14 daughters in the uranium-238 decay chain. However, an ORISE analysis did not identify any uranium-238, the parent nuclide for thorium-230, or radium-226, the daughter of the thorium-230 nuclide. This finding suggests that Kaiser may have received a slag material that was processed before shipment to Kaiser. The slag material may have been stripped of its uranium, or the thorium-230 may have been concentrated in the material before shipment to Kaiser.

Soil samples taken in June 1994 revealed concentrations of thorium-232 in the range between 0.8 Bq (22 pCi)/g and 2.7 Bq (72 pCi)/g. The analysis also identified thorium-230 in concentrations between 2.2 Bq (60 pCi)/g and 7.2 Bq (195 pCi)/g. One soil sample was analyzed by alpha spectrometry to confirm the identification of thorium-230 by gamma

spectrometry analysis. The alpha spectrometry analysis identified thorium-228 at 2.7 Bq (73.6 pCi)/g, thorium-230 at 8.1 Bq (220 pCi)/g, and thorium-232 at 2.7 Bq (72.2 pCi)/g. Indications are that from 36,800 m^3 (1.3 million ft^3) to 85,000 m^3 (3 million ft^3) of contaminated soil are located onsite.

Description of Radiological Hazard

No immediate health hazard exists at the Kaiser Aluminum facility. Kaiser controls access to the area with fencing that surrounds the contaminated sludge and retention pond areas.

Financial Assurance/Viable Responsible Organization

There is no financial assurance for this site. Financial assurance requirements in the decommissioning rule do not apply because the AEC license was terminated. However, Kaiser is a large company considered capable of providing the required financial assurance.

Status of Decommissioning Activities

NRC inspectors visited the Kaiser site in November 1993, June 1994, and November 1994, to assess residual radioactive contamination at the Tulsa site. The Kaiser site was added to the SDMP list in August 1994. Meetings between NRC and Kaiser staff were held in March 1994 and July 1994, to discuss the nature of contamination at the site and conceptual aspects of site characterization.

Kaiser arranged for Advanced Recovery Systems, Inc. (ARS) to perform the site characterization work. ARS completed the characterization survey at the facility in October 1994. The characterization report should be complete, and copies made available, in May 1995. It is anticipated that a decommissioning project schedule will accompany the characterization report.

Other Involved Parties

The Oklahoma Department of Environmental Quality, Radiation Management, sent a representative to the site visits in November 1993 and November 1994, and is being kept apprised of significant developments. The department has also expressed interest in reviewing and commenting on issues that may affect the State of Oklahoma. The U.S. EPA, Region VI, Hazardous Waste Management Division, is also being kept apprised of developments at the site.

NRC/Licensee Actions and Schedule

- Kaiser submits site characterization report and decommissioning project schedule — May 1995

Problems/Issues

Large volume of thorium-contaminated soil and slag are present at the site.

KERR-MCGEE (CIMARRON)

Site Identification

Kerr-McGee Cimarron Plant
Crescent, OK

License No.:	SNM-928
Docket No.:	070-925
License Status:	Active; possession only/decommissioning
Project Manager:	D. Fauver, DWM

Status of Decommissioning Activities

Kerr-McGee submitted a license amendment request, in accordance with 10 CFR 20.2002 (formerly 10 CFR 20.302), to dispose of 14,000 m^3 (500,000 ft^3) of soil contaminated with low concentrations of enriched uranium (EU) by onsite burial. The concentration of EU in the soil to be buried will be limited to the Option 2 concentration limits in the Branch Technical Position (BTP) on "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations" (46 FR 52601).

During the NRC's review of the onsite disposal request, a question arose concerning the solubility of the EU. Option 2 of the BTP provides criteria for both soluble and insoluble EU [i.e., 3.7 Bq/g (100 pCi/g) and 9.3 Bq/g (250 pCi/g), respectively]. To help answer the general question regarding solubility, the NRC contracted with Pacific Northwest Laboratories (PNL) to evaluate available procedures. PNL submitted its findings on December 7, 1993. Based on the PNL report and subsequent NRC review, the NRC provided Kerr-McGee with two acceptable methods for determining solubility, as well as a procedure for determining the soil contamination limit based on the results of the procedures.

In lieu of determining the solubility using the procedures approved by the NRC, Kerr-McGee proposed on January 19, 1994, to apply the most conservative BTP limit, that is, the 3.7 Bq/g (100 pCi/g) limit for soluble EU, to the soil proposed for onsite burial. However, Kerr-McGee requested that the NRC approve the disposal with a provision to allow Kerr-McGee to determine the solubility, and adjust the limit accordingly, at some time in the future if deemed necessary.

On March 15, 1994, the NRC completed an environmental assessment of the amendment request for the onsite burial, with a finding of no significant impact (FONSI). A *Federal Register* notice announcing the FONSI and an opportunity for a hearing was published on March 22, 1994 (59 FR 13513).

On November 4, 1994, the NRC issued a license amendment authorizing the onsite disposal of 14,000 m^3 (500,000 ft^3) of soil containing average uranium concentrations of up to 100 pCi/g enriched uranium. The placement of contaminated soil into the disposal cell is ongoing.

In October 1994, Cimarron submitted a characterization report to support the decommissioning of the remainder of the site. The decommissioning plan was submitted in April 1995, and is currently under review.

Also in October 1994, Cimarron submitted a final survey plan for "unaffected" portions of the site, where licensed activities where not conducted and the potential for contamination is low. The NRC approved the survey plan on May 1, 1995, and the surveys of unaffected areas are currently underway.

NRC/Licensee Actions and Schedule

NRC provides comments on the Cimarron site characterization report and decommissioning plan	September 1995

Problems/Issues

None

Kerr-McGee Cushing Plant

Kerr-McGee Cushing Plant
Cushing, OK

License No.:	SNM-1999
Docket No.:	070-03073
License Status:	Active
Project Manager:	D. Fauver, DWM

Status of Decommissioning Activities

On May 12, 1993, Kerr-McGee notified the NRC that the radiation safety officer named in the license had terminated employment with Kerr-McGee. On January 5, 1994, Kerr-McGee submitted a license amendment request to extend the submittal date for the Cushing site decommissioning plan from February 1, 1994, to May 1, 1994. Because of the turnover in radiation safety officers at the site, the NRC approved the request and extended the required submittal date to May 1, 1994.

On April 27, 1994, Kerr-McGee submitted the decommissioning plan for the Cushing site. Kerr-McGee proposed to dispose of the uranium- and thorium-contaminated soil onsite, in accordance with 10 CFR 20.2002. Kerr-McGee also proposed that the concentration of EU in the soil to be buried will be limited to the Option 2 concentration limits in the Branch Technical Position (BTP) on "Disposal or Onsite Storage of Thorium or Uranium Wastes from Past Operations" (46 FR 52601).

In December 1994, Kerr-McGee requested a meeting with NRC to discuss the decommissioning plan. At the meeting, Kerr-McGee agreed to submit an ALARA analysis of the decommissioning alternatives for the site. Kerr-McGee submitted the "Cushing Facility ALARA Analysis" to the NRC in March 1995. In the report, Kerr-McGee contends that excavation and offsite shipment of the contaminated soil at the Cushing site is not cost-effective, and that the ALARA analysis supports the decommissioning alternative proposed in the decommissioning plan.

In June 1994, Kerr-McGee submitted a survey plan for the areas at the Cushing site where licensed activities were not known to have been conducted and where contamination potential is low. These "unaffected areas" contain acid sludge pits that are required to be remediated under a consent order with the State of Oklahoma. Kerr-McGee seeks to have these unaffected areas released for unrestricted use and removed from the license. In that event, the remediation of the acid sludge pits can be carried out without consideration of potential radiological contamination. The NRC provided comments on the plan in December 1994. In April 1995, Kerr-McGee submitted its "Final Radiation Survey of Unaffected Areas of the Cushing Refinery Site." This report contained the results of the survey and Kerr-McGee's responses to the NRC's comments.

NRC/Licensee Actions and Schedule

- NRC reviews final survey report for unaffected areas and provides comments — August 1995

- NRC reviews ALARA analysis and decommissioning plan and provides comments — August 1995

Problems/Issues

Soil is contaminated with thorium in excess of 0.37 Bq/g (10 pCi/g), the BTP Option 1 limit. Kerr-McGee has proposed onsite disposal of soil with concentrations between 0.37 Bq/g (10 pCi/g) and 1.8 Bq/g (50 pCi/g) thorium (BTP Option 2 limit). However, assuming the resident farmer scenario and taking no credit for cover or averaging, the projected dose is 1 mSv/yr (100 mrem/yr) for thorium concentrations in excess of 1.1 Bq/g (30 pCi/g).

LAKE CITY ARMY AMMUNITION PLANT
(Formerly Remington Arms Company)

Site Identification

Department of the Army
Lake City Army Ammunition Plant (LCAAP)
Independence, MO

License No.:	SUB-1380 (Issued to Department of the Army)
Docket No.:	040-08767
License Status:	Active
Project Manager:	S. Brown, DWM

Status of Decommissioning Activities

The licensee originally submitted its characterization plan along with a remediation plan and decommissioning schedule in April 1993. After the licensee revised the characterization plan to include sampling for non-radiological hazardous wastes, the NRC approved the plan in November 1993.

Most of the sampling was accomplished in December 1993; however, sample containers froze and burst. Resampling was conducted in March 1994, and the characterization report of the firing range was submitted in November 1994.

In a November 1994 letter, the licensee proposed to remediate two of the four areas found to be contaminated with depleted uranium. The two areas to be remediated are the 600-yard catcher area and the sandpile area. The licensee's schedule for remediation of these two areas will be based on availability of funds each fiscal year.

The licensee proposed not to remediate the two remaining contaminated areas, the 1750-yard impact area and the 2180-yard impact area. Instead, the licensee proposed to have these areas removed from the license with use restrictions. The licensee still needs to perform a characterization study of the remainder of the site, since other potentially contaminated areas have been identified. The licensee has not provided the NRC with a proposed schedule for this characterization study. These activities also need to be coordinated with the State of Missouri and U.S. EPA, since the site is being assessed and remediated under CERCLA. In June 1995, NRC expressed concern with the U.S. Army's piecemeal approach to assessing and decommissioning the LCAAP.

NRC/Licensee Actions and Schedule

NRC requests that LCAAP submit characterization and decommissioning schedules	August 1995

Problems/Issues

The decommissioning funding budgeting process will result in only a portion of the total site being decommissioned in any one fiscal year because of fiscal constraints.

MAGNESIUM ELEKTRON

Site Identification

Magnesium Elektron, Inc.
Flemington, NJ

License No.:	N/A
Docket No.:	040-08984
License Status:	Pending
Project Manager:	Charles Gaskin, FCSS
DWM Monitor:	N. Orlando

Status of Decommissioning Activities

The facility is currently operating, and the licensee has no plans to decommission at this time. The NRC continues to work with Magnesium Elektron, Inc. (MEI) to determine if the sludge generated during operations, and stored in onsite ponds, contains greater than 0.05 percent uranium and thorium, by weight, thereby requiring an NRC license. In July 1993, in response to an NRC request, MEI submitted a revised sludge characterization plan. The NRC approved the plan, and MEI submitted a characterization report in January 1994. The NRC has reviewed the report.

MEI has withdrawn its license application pending NRC review of the sludge characterization report. MEI has provided a method to modify its process to keep uranium and thorium below 0.05 percent by weight in process residues, thereby avoiding the requirement to apply for an NRC license. In addition, the NRC has advised MEI that the sludge in the storage ponds may be disposed of through normal industrial waste methods, and are not of licensing interest to the NRC.

NRC/Licensee Actions and Schedule

- NRC completed review of sludge characterization report
- NRC prepared a draft Commission paper to remove MEI from the SDMP list. The Commission paper is in the concurrence stage.

Problems/Issues

None

MINNESOTA MINING AND MANUFACTURING CO. (3M)

Site Identification

3M Kerrick Site
Pine County, MN

License No.:	SNM-764
	SMB-239
Docket No.:	070-00832
	040-01020
License Status:	Expired on October 31, 1967
Project Manager:	J. Lentz, DWM

Status of Decommissioning Activities

In a letter dated February 3, 1993, the licensee submitted data obtained from the 1992 environmental sampling program, along with other data available for the site. The NRC used this information in a draft radiological dose assessment of the Kerrick site. This assessment was reviewed by cognizant personnel from the NRC, 3M, Minnesota Department of Health (MDH) and Minnesota Pollution Control Agency (MPCA). The NRC assessment suggested that the ground-level radiation and inhalation pathways for thorium, and the groundwater pathway for natural and enriched uranium, may become problems at some time in the future. The NRC received formal comments from 3M; MDH and MPCA are taking an interest, but chose not to comment formally.

In conjunction with submittal of their technological comments, 3M expressed an interest in decommissioning the site for restricted, rather than unrestricted, use. The NRC will use the dose assessment and 3M comments to assist in determining whether

- remedial action is necessary
- additional site-specific information is needed for the radiological dose assessment
- the wastes should be exhumed
- the site should be released for restricted use only

The NRC staff is also reviewing alternatives to its policies concerning onsite thorium disposal. At another site with thorium contaminants, the NRC staff is withholding action pending analysis of generic issues involving thorium contamination. These issues are being addressed in a draft environmental impact statement (EIS). It is probable that the results of this draft EIS may also have implications for the 3M Kerrick site.

NRC/Licensee Actions and Schedule

- NRC determines if further action is required — TBD

Problems/Issues

Lack of specific data for each of the four disposal areas at the 3M Kerrick site makes it difficult to estimate prospective doses. The current NRC dose assessment uses conservative source terms and geohydrological parameters, thereby producing dose estimates for the ground-level radiation, inhalation, and groundwater pathways that would require exhumation. The NRC believes it could refine the dose assessment for the Kerrick site, given the availability of better knowledge of the chemical state of disposed materials and their hydrogeochemical environment, including dispersion coefficients.

Final action at the Kerrick site is being withheld to allow 3M the opportunity to present data showing that the site meets criteria for either unrestricted or restricted release. The delay will also allow the NRC to review its policies on thorium contamination, as a consequence of the generic, draft EIS currently in process.

MOLYCORP, INC. (WASHINGTON, PA)

Site Identification

Molycorp, Inc.
Washington, PA

License No.:	SMB-1393
Docket No.:	040-08778
License Status:	Renewed October 27, 1992 Expires September 1, 1997
Project Manager:	L. Person, DWM

Status of Decommissioning Activities

In November 1992, Molycorp submitted an initial site characterization plan (SCP), which was subsequently revised and submitted to the NRC in April 1993. In December 1993, the NRC approved Molycorp's SCP with several comments.

In February 1994, Molycorp requested a 120-day extension for submittal of the site characterization report (SCR) because of delays caused by heavy winter snows, spring rains, and a high water table at the site. The NRC granted Molycorp's request, and changed the date for submittal of Molycorp's SCR from August 1994 to December 1994. On December 8, 1994, Molycorp requested a second extension to January 20, 1995. The NRC granted this request based on the sudden illness of Molycorp's primary consultant on radiological matters. After obtaining the services of Foster Wheeler and Associates, Molycorp submitted the SCR on January 19, 1995. The NRC reviewed the SCR, and submitted a request for additional information on April 3, 1995.

NRC/Licensee Actions and Schedule

The following decommissioning milestone has been incorporated into Molycorp's license:

- Molycorp submits decommissioning plan to NRC — August 1995

Problems/Issues

Molycorp has indicated a preference for onsite disposal of radioactive waste at the Washington site. Onsite disposal would require an exemption to current requirements.

MOLYCORP, INC. (YORK, PA)

Site Identification

Molycorp, Inc.
York, PA

License No.:	SMB-1408
Docket No.:	040-08794
License Status:	Active; timely renewal
Project Manager:	L. Person, DWM

Status of Decommissioning Activities

Molycorp was originally scheduled to submit a site characterization plan (SCP) in July 1993; however, Molycorp is no longer submitting a separate SCP for the site. Instead, Molycorp's SCP included a site radiological survey and a groundwater hydrology assessment. Molycorp submitted these reports to the NRC in August 1993 and February 1994, respectively. In March 1994, the NRC approved Molycorp's SCP with several comments. Molycorp was scheduled to submit the site decommissioning plan by May 30, 1995.

On April 21, 1995, Molycorp reported to the NRC that it had discovered onsite a ferro-tungsten waste material containing elevated levels of radium-226 and uranium. This material is apparently similar to process waste known to exist earlier at Molycorp's Washington facility. Molycorp sent the material offsite for analysis. Assuming that the analysis verifies the presence of this material onsite, Molycorp will need to return to the site characterization phase of the decommissioning process. This could possibly result in a 60-day delay in submitting the Molycorp site decommissioning plan (July 30, 1995). The licensee is in the process of submitting documentation concerning the presence of the ferro-tungsten waste, and requesting a 60-day extension for submission of the site decommissioning plan.

Licensee Actions and Schedule

- Molycorp submits site decommissioning plan — July 1995

Problems/Issues

Molycorp may need to perform characterization work to identify the extent and location of the ferro-tungsten material found at the York site. It may be difficult, if not impossible, to separate radioactive contamination associated with licensed activities from radioactive contamination caused at the York site before licensed operation.

NORTHEAST OHIO REGIONAL SEWER DISTRICT/SOUTHERLY PLANT

Site Identification

Northeast Ohio Regional Sewer District (NEORSD)
6000 Canal Road
Cleveland, OH

License No.:	34-17726-02
Docket No.:	030-18276
License Status:	Not a licensed facility for Co-60
Project Manager:	M. (Sam) Nalluswami, DWM

Status of Decommissioning Activities

During the second half of 1993, the Northeast Ohio Regional Sewer District (NEORSD) completed the remediation of the three cobalt-60 contaminated ash lagoons (A, B, and C). These lagoons were at full capacity, and needed to be emptied to allow continued operation of the sewage treatment plant.

To ensure that sewage treatment operations were not adversely affected, and to accommodate very tight lagoon remediation schedules, the NRC staff accelerated its review of NEORSD submittals for the remediation of the contaminated lagoons. After remediation, the NRC conditionally released Lagoons A, B, and C for use (in July 1993 for Lagoon C, and in December 1993 for Lagoons A and B) pending the results of lagoon closeout surveys.

The licensee transferred the ash from the lagoons to the south fill area adjacent to the lagoons. The ash was the capped with a 15-cm (6-in) clay cover to prevent windblown migration. The NRC staff and Oak Ridge Institute for Science and Education (ORISE) staff then conducted radiological surveys of the lagoons.

The NEORSD submitted the final lagoon status survey report in April 1994; the NRC staff reviewed this report and provided comments on December 28, 1994. The NEORSD responded to the NRC comments, and submitted Revision 1 to the report on February 16, 1995. Based on reviews and resolution of comments, the staff concluded that further remediation of the ash lagoons and adjacent areas is not required. This conclusion, including information that the lagoons and adjacent areas are suitable for unrestricted use, was communicated to the NEORSD in a letter dated April 4, 1995.

Cobalt-60 contamination has been identified in other parts of the Southerly Plant site. On April 23, 1993, the NEORSD submitted a plan to characterize this contamination. The NRC staff reviewed and commented on the plan, and the NEORSD provided satisfactory responses to the comments. The NEORSD then performed a characterization of the site to determine the extent and nature of the contamination, and submitted a report dated June 30, 1994. This characterization will be the basis for preparing a remediation plan. The staff reviewed the characterization report, and provided comments in a letter dated December 28, 1994. The NEORSD responded to these comments, and submitted Revision 1 of the final site characterization report on February 27, 1995. The staff is currently reviewing this revised report.

The NEORSD currently controls the contamination in both the North and South fill areas. These areas are fenced, and access is controlled. In addition, these areas are capped to prevent airborne migration and to minimize exposure levels to personnel. Current exposure levels in the fill areas are less than 3 to 6 times background, and are well within NRC requirements.

The staff anticipates a proposed remediation plan for the fill area that would rely on access controls and monitoring for two to three decades. After this period, any residual Co-60 contamination should be sufficiently decayed so that it will no longer pose a significant radiological hazard.

NRC/Licensee Actions and Schedule — Other Site Areas (Non-Lagoon)

- NRC approves site characterization report — August 1995
- NEORSD/SP submits remediation/decommissioning plan — October 1995
- NRC reviews remediation/decommissioning plan — March 1996

Problems/Issues

On April 1, 1993, the NEORSD filed a lawsuit against Advanced Medical Systems (AMS) for damages to their Southerly Plant from Co-60 contamination transmitted by liquid waste released by AMS to NEORSD sanitary sewers. In addition, on March 3, 1993, the NEORSD filed a petition pursuant to 10 CFR §2.206, requesting that the NRC modify the AMS license to include the following requirements:

(1) Assume all costs resulting from the offsite release of Co-60 deposited at the NEORSD Southerly Plant.

(2) Remediate the sewer connecting the AMS London Road facility with the public sewer at London Road, and continue remediation of the sewers downstream as far as necessary.

Site Identification

Nuclear Metals, Inc.
Concord, MA

License No.:	SMB-179
	SUB-1452
Docket No.:	040-00672
	040-08866
License Status:	Timely renewal
Project Manager:	M. Miller, Region I
DWM Monitor:	W. Lahs

Status of Decommissioning Activities

License Nos. SUB-179 and SUB-1452 expired on May 31, 1989, and March 31, 1990, respectively, and both licenses are currently in timely renewal. Region I reviewed both renewal applications, and sent the licensee a deficiency letter on October 18, 1993. On January 11, 1994, Nuclear Metals, Inc. (NMI) submitted an environmental report to support preparation of the environmental assessment (EA) necessary for renewal of the licenses. The NMSS has contracted with ORNL to prepare the EA by November 1995.

On July 1, 1993, NMI submitted a letter to the NRC indicating that they planned to remediate the holding basin by processing its contents to recover and recycle the copper and depleted uranium. The licensee also submitted an amendment request dated July 1, 1993, seeking authorization under 10 CFR 20.2002 for unrestricted disposition of copper containing small quantities of DU. This proposal covers only copper generated during normal operations; however, at the time, NMI believed it might also be used to recycle material removed from the holding basin. It now appears that material from the holding basin will not be recycled.

On January 11, 1994, Region I sent NMI a deficiency letter regarding this proposal. Region I also sent a technical assistance request (TAR) to NMSS on January 21, 1994. NMI originally requested until July 1994 to respond, but now indicates that its response will not be available until summer of 1995. NMSS responded to the TAR on April 29, 1994. Region I reviewed the response, and delayed further action until NMI's intentions become clear.

Recently, licensee representatives indicated that they met with the Army to seek funding and direction regarding disposition of the holding basin contents. NMI expects an answer from the Army in the summer of 1995.

On February 12, 1993, the licensee submitted a holding basin characterization report. In response, Region I sent the licensee a letter, dated July 23, 1993, requesting additional information to justify the report's conclusion that depleted uranium is limited to the immediate environs of the basin. The licensee responded on January 6, 1994. Based on additional groundwater monitoring results, the licensee's response indicated that depleted uranium is migrating away from the holding basin toward the Assebet River, but has not migrated beyond the site boundary.

On March 24, 1995, Region I sent a letter to NMI approving the holding basin characterization report, and requesting a schedule for submitting a formal remediation plan including a schedule for implementation of the plan. Region I also requested additional information concerning the ground water.

On July 1, 1993, the licensee submitted a decommissioning funding plan for the site. Region I reviewed this plan, and sent a deficiency letter to the licensee on March 2, 1994. Region I received partial responses on April 15, 1994, and May 15, 1994, and determined that the information submitted was not adequate. Region I then issued a demand for information on June 21, 1994, and the licensee responded on July 1, 1994. Based on the response, Region I conducted an enforcement conference on December 8, 1994. By letter dated April 5, 1995, Region I informed NMI that, in order to achieve compliance, it must provide either a financial instrument described in 10 CFR 40.36, or a formal request for a partial exemption from 10 CFR 40.36.

In October 1994, a local citizens group published offsite soil sampling results indicating that uranium levels were elevated, but not above the criteria for release to unrestricted use. On November 16–17, 1994, Region I conducted an inspection at NMI, including independent soil sampling of offsite areas. The NRC soil sample results did not indicate depleted uranium above background level in the environment. Additional offsite sampling is planned. The concern about offsite contamination has also been referred to the Agency for Toxic Substance and Disease Registry for evaluation.

NRC/Licensee Actions and Schedule

• NRC responds to NMI's groundwater report	October 1995
• NMI submits decommissioning plan and schedule	December 1995
• NRC responds to NMI's environmental report	December 1995
• NRC reviews NMI's decommissioning plan and schedule, and requests additional information	June 1996
• NRC approves NMI's decommissioning plan and schedule	December 1996

Problems/Issues

Uranium detected in onsite groundwater away from the holding basin may delay decommissioning activities or warrant additional action. The NRC has not yet approved a decommissioning financial assurance mechanism. NMI is currently seeking to have the U.S. Army assume financial responsibility for remediating the site.

OLD VIC, INC.

Site Identification

Old Vic, Inc.
Cleveland, OH

License No.:	31-26394-01
Docket No.:	030-19594
License Status:	Terminated
Project Manager:	K. Lambert, Region III
DWM Monitor:	D. Orlando

Status of Decommissioning Activities

The licensee completed initial characterization and remedial activities in January 1993, and submitted a final radiological survey report and request for license termination in February 1993.

The licensee's survey report indicated that building surfaces met NRC criteria for unrestricted use. Average total residual radioactive material activity values ranged from background to 48 Bq/100 cm^2 (2900 dpm/100 cm^2). Maximum residual radioactive material activity values ranged from background to 118 Bq/100 cm^2 (7088 dpm/100 cm^2). Removable radioactive material activity values ranged from background to 7 Bq/100 cm^2 (406 dpm/100 cm^2). Exposure rate values did not exceed 1.3 nC/kg•hr (5 μR/hr) above background.

The NRC contracted with Oak Ridge Institute for Science and Education (ORISE) to perform a confirmatory radiological survey of the facility. ORISE found 23 locations that exceeded the NRC's criteria for unrestricted use. However, the ORISE results compared favorably with the licensee's results in all other locations. The licensee subsequently remediated the 23 locations identified by ORISE, and submitted a survey report dated April 27, 1993.

After reviewing the licensee's final radiological survey, the supplemental survey, and the ORISE survey, the NRC staff concluded that additional surveys were warranted. The licensee agreed, and conducted these surveys concurrent with an NRC Region III confirmatory survey in October 1993. The results of these two surveys compared favorably, and identified only a few isolated spots that were subsequently remediated. Therefore, in November 1993, based on both the licensee's and NRC's final radiological survey reports, the NRC staff concluded that the radioactive contamination at the Woodland Avenue facility had been remediated to levels that are below the NRC criteria for unrestricted use.

NRC Region III staff reviewed Victoreen's license for the Woodland Avenue facility to identify any historical information regarding release of materials or onsite disposal of radioactive materials. Based on this review, the staff concluded that licensed materials were properly disposed of, and decommissioning activities and radiological surveys conducted by the licensee's contractor addressed all appropriate areas of the facility.

Based on the licensee's remedial actions, the NRC staff's review of licensee survey reports, and the results of NRC confirmatory surveys, the NRC staff concluded that decommissioning had been completed, and the site was eligible for release to unrestricted use. The NRC informed

the Commission of this decision in a paper dated December 13, 1993. The NRC also notified the licensee and U.S. EPA via letters in February 1994, and removed the site from the SDMP list.

NRC/Licensee Actions and Schedule

No further action is necessary.

Problems/Issues

None

PAWLING (NEW YORK SITE)

Site Identification

Pawling, New York Site
Nuclear Lake
Pawling, NY

License No.:	SNM-871
Docket No.:	070-00903
License Status:	Terminated in 1975
Project Manager:	M. (Sam) Nalluswami, DWM

Status of Decommissioning Activities

After issuance of a confirmatory order by the NRC on July 2, 1993, Chevron and the National Park Service (NPS) undertook the remediation of the contaminated buildings and soils in accordance with decommissioning plans approved by the NRC. Chevron completed its termination survey in November 1993, and ORISE completed a confirmatory survey in February 1994. Both of these reports concluded that the site is suitable to release for unrestricted use.

Based on the data in Chevron's termination survey report and ORISE's confirmatory survey report, the NRC performed a pathway analysis using the RESRAD computer code. This pathway analysis report was requested by the New York Department of Environmental Conservation (NYDEC) in March 1994. The resultant doses were below guidelines for unrestricted use.

The staff notified the Commission of its decision to release the site for unrestricted use in SECY-94-162, "Pawling Site Release and Removal from the Site Decommissioning Management Plan," dated June 9, 1994. By letter dated July 6, 1994, the NRC notified Chevron and the NPS that the site was adequately remediated, and was released for unrestricted use. On July 13, 1994, the NRC notified the U.S. EPA of its action, and removed the site from the SDMP list.

NRC/Licensee Actions and Schedule

No further action is required.

Problems/Issues

None

PERMAGRAIN PRODUCTS, INC.

Site Identification

PermaGrain Products. Inc.
Media, PA

License No.:	37-17860-02
Docket No.:	030-29288
License Status:	Active
Project Manager:	M. Bouwens, Region I
DWM Monitor:	D. Orlando

Status of Decommissioning Activities

A draft characterization report submitted on September 30, 1992, fulfills the requirements in PermaGrain's license regarding site characterization and preparation for decommissioning. On April 2, 1993, the licensee submitted the final characterization report.

In a meeting on August 23, 1993, NRC staff and representatives from PermaGrain and the Commonwealth of Pennsylvania discussed the characterization report, as well as a schedule for submitting a site remediation plan. The Commonwealth is acting on behalf of the licensee. On October 13, 1993, the NRC approved the characterization report, with the condition that the licensee include specified additional information in the remediation plan.

The NRC conducted an inspection at the site on November 10–12, 1993. While a remediation plan was expected in Summer 1994, the Commonwealth of Pennsylvania had difficulties preparing the contract. The Commonwealth now intends to submit the plan in Summer 1995.

NRC/Licensee Actions and Schedule

- PermaGrain submits site decommissioning plan — June 1995
- NRC reviews decommissioning plan, and requests additional information — December 1995
- NRC approves decommissioning plan — June 1996

Problems/Issues

Availability of State funds has been cited as a problem in the past. State representatives indicate that sufficient funds have been authorized in existing State budgets to develop and implement the decommissioning plan. The State, acting for the licensee, is currently obtaining bids for the remediation.

PESSES COMPANY (METCOA)

Site Identification

Pesses Company (Metcoa)
Pulaski, PA

License No.:	STB-1254
Docket No.:	040-08406
License Status:	Expired on July 31, 1986 (licensee bankrupt)
Project Manager:	M. Roberts, Region I
DWM Monitor:	D. Orlando

Status of Decommissioning Activities

Because of the presence of hazardous wastes onsite, the EPA has taken lead responsibility for cleanup activities at this site. Region I continues to monitor site activities, and review the radiological remediation procedures.

The EPA issued a final consent order to the potentially responsible parties (PRPs) in the Spring of 1993. This order required the PRPs to initiate excavation of the remaining soils contaminated with radioactive material, as well as treatment or disposal of the mixed waste (Phase 3 of the METCOA Removal Plan). Action at the site is being delayed by EPA enforcement action associated with the final consent order. The EPA confirms that they will keep Region I informed of their plans for additional remediation of the site.

NRC/Licensee Actions and Schedule

- NRC reviews and comments on work plan provided by PRPs — late 1995
- NRC inspects ongoing removal activities — Spring 1996
- NRC reviews EPA analytical data — Fall 1996

Problems/Issues

All funding and action for the site depends on the success of the EPA's enforcement action and/or cooperation of the PRPs. The NRC staff may consider deferring remediation oversight to the EPA for this site.

RMI TITANIUM COMPANY

Site Identification

RMI Titanium Company
Ashtabula, OH

License No.:	SMB-602
Docket No.:	040-02384
License Status:	Active; decommissioning
Project Manager:	R. Uleck, DWM

Status of Decommissioning Activities

On June 4, 1993, RMI submitted to the NRC a license amendment request to begin predecommissioning work activities such as characterization, preliminary remediation activities, removal of equipment, and disposal of existing waste at DOE-designated disposal facilities. RMI sent additional information in support of this request on September 9, 1993, and the NRC approved this request on November 9, 1993.

The NRC developed a safety evaluation report (SER) and an environmental assessment (EA), which led to a finding of no significant impact (FONSI). On November 5, 1993, the NRC published a *Federal Register* notice announcing the FONSI and an opportunity for a hearing.

RMI is continuing to move ahead with decommissioning of its site in Ashtabula, Ohio. In November 1993, RMI submitted for NRC review and comment site radiological characterization work plans for groundwater, soils, and buildings, in support of the decommissioning effort. The NRC finished reviewing the plans in August 1994. RMI has since performed additional site characterization work to support its decommissioning plan (DP).

On April 28, 1995, RMI submitted to the NRC a revised DP, an environmental report (ER), a site characterization report (SCR), and an updated cost estimate for decommissioning activities. In addition, RMI submitted to the EPA a draft corrective measures study (CMS) for the corrective action management unit, in compliance with RMI's hazardous waste permit under the Resource Conservation and Recovery Act.

The CMS contains remediation alternatives for trichloroethylene and Tc-99 in groundwater on a portion of the RMI site and offsite areas. The EPA approved the CMS, and the NRC finished reviewing the CMS in August 1994 for conformance with NRC criteria for unrestricted release.

The DOE has restructured the funding schedule for remediation of the site. The new schedule increases funding for RMI remediation beginning in FY96, and will accelerate decommissioning of the site.

NRC Actions and Schedule

- NRC reviews DP, SCR, ER, and cost estimate, and provides comments to RMI — September 1995

Problems/Issues

None

RTI, Inc.
(Formerly Process Technology of North Jersey, Inc.)

Site Identification

RTI, Inc.
Rockaway, NJ

License No.:	29-13613-02
Docket No.:	30-07022
License Status:	Active
Project Manager:	A. Dimitriadis, Region I
DWM Monitor:	W. Lahs

Status of Decommissioning Activities

License No. 29-13613-02 was due to expire on March 31, 1993; however, on January 15, 1993, the licensee submitted an application for renewal. On April 13, 1995, the NRC renewed the license, which is now scheduled to expire on April 30, 2000.

Based upon a series of surveys following remediation, the licensee has requested that the NRC reduce or eliminate the license authorization for unsealed material. This action would preclude the requirement for submitting financial assurance and a decommissioning funding plan.

NRC Actions and Schedule

- NRC evaluates the need for additional surveys by licensee — June 1995
- NRC performs confirmatory survey — September 1995
- NRC reduces license limits authorizing storage of contaminated materials — December 1995
- NRC prepares Commission paper and removes site from SDMP — December 1995

Problems/Issues

None

SAFETY LIGHT CORPORATION

Site Identification

Safety Light Corporation
Bloomsburg, PA

License No.:	37-00030-08
	37-00030-02
Docket No.:	030-05980
	030-05982
License Status:	Active
Project Manager:	J. Kinneman, Region I
DWM Monitor:	J. Parrot

Status of Decommissioning Activities

Safety Light Corporation (SLC) requested a hearing on an immediately effective order, issued by the NRC staff on January 29, 1993. That order prevented SLC from taking any further steps to implement an announced transfer of funds, or any other major transfer of assets that may reduce its ability to comply with previous NRC orders. The NRC staff, SLC, and other parties to the hearing resumed settlement negotiations in September 1993.

As part of the settlement negotiations, the staff reviewed a characterization plan and a health and safety plan dated May 31, 1994, and prepared a deficiency letter dated May 31, 1994. SLC provided acceptable responses in telephone conferences and in writing on July 21, 1994. On October 18, 1994, the staff participated by telephone in a hearing before the NRC Atomic Safety and Licensing Board (ASLB) concerning the settlement agreement and issuance of the licenses.

The staff and the parties reached a settlement late in 1994. On December 28, 1994, the ASLB approved the settlement, which became the final agency action on February 17, 1995. Under the terms of the settlement, the NRC renewed the licenses for a period of 5 years. In addition, SLC and USR must make monthly payments to a trust fund, and SLC must pay for and complete an agreed upon characterization of the site. All litigation between the parties has been withdrawn.

NRC Actions and Schedule

- SLC submits characterization report — December 1995
- NRC reviews characterization, and requests additional information — June 1996

Problems/Issues

No action is expected on the site after the characterization is completed in late 1995, even though characterization is expected to confirm the presence of radiologically contaminated waste, soil, buildings, and groundwater at the site. The ability of the licensee to pay for remediation is questionable.

SCHOTT GLASS TECHNOLOGIES, INC.

Site Identification

Schott Glass Technologies, Inc.
Duryea, PA

License No.:	STB-988
Docket No.:	040-07924
License Status:	Timely renewal; possession only/decommissioning
Project Manager:	M. Miller, Region I
DWM Monitor:	D. Orlando

Status of Decommissioning Activities

License No. STB-988 expired on April 30, 1992, and is currently in timely renewal. The licensee submitted an onsite disposal plan for all licensed material in their possession, and the NRC approved the plan in a license amendment. Financial assurance is not associated with the plan, but the licensee indicated the availability of resources and the desire to implement the plan as soon as all approvals are received and the weather permits.

The licensee's onsite disposal plan became unacceptable when nonradioactive hazardous material was discovered in the disposal area. As a result, on November 5, 1992, the licensee submitted a new site remediation plan for approval by the Pennsylvania Department of Environmental Regulation and the NRC.

On May 12, 1993, the NRC held a meeting with the licensee at Region I to discuss deficiencies in the site remediation plan. Region I staff completed the review of the licensee's submission in June 1993, and visited the site on June 22, 1993.

On October 5, 1993 Region I submitted to the NMSS a Commission paper describing the staff's intention to approve the plan and the basis for the approval. On December 1, 1993, Region I staff met with DWM staff to discuss the Region I proposal. Based on that meeting and additional reviews by Region I staff, Region I issued a deficiency letter on April 1, 1994, requesting additional information concerning the licensee's proposals. The licensee responded on June 14, 1994. Region I is currently evaluating the response, and updating the Commission paper.

NRC/Licensee Actions and Schedule

- NRC staff submits a paper to the Commission describing the modified site closure plan and bases — December 1995
- Commission approves/disapproves modified site closure plan — March 1996

Problems/Issues

The contamination at the site consists of small pieces of thoriated glass mixed with soil and non-radioactive glass. Therefore, a site-specific pathway analysis and dose assessment is required.

SEQUOYAH FUELS CORPORATION

Site Identification

Sequoyah Fuels Corporation Fuel Cycle Facility
Gore, OK

License No.:	SUB-1010
Docket No.:	40-8027
License Status:	Expired; decommissioning
Project Manager:	J. Shepherd, DWM

Status of Decommissioning Activities

In February 1993, Sequoyah Fuels Corporation (SFC) notified the NRC, pursuant to 10 CFR 40.42(b), that it had ceased all uranium hexafluoride (UF_6) production, and that it would cease all depleted uranium tetrafluoride (DUF_4) production in July 1993. In July 1993, SFC notified the NRC, pursuant to 10 CFR 40.42(e), that all DUF_4 operations had ceased, and SFC would pursue license termination in accordance with the schedule defined in the Preliminary Plan for Completion of Decommissioning (PPCD).

In August 1993, SFC withdrew its application for license renewal. Also in August 1993, the Native Americans for a Clean Environment (NACE) applied to the ASLB for a standing in the case, and requested a hearing. The Board reviewed the NACE request and granted their standing in September 1993. In December 1993, the ASLB found NACE's arguments to be without merit, and granted SFC's request to withdraw their application.

NACE appealed to the Commission in January 1994, and in March 1994, the Commission agreed to hear the appeal. In March 1995, the Commission approved an order denying the intervenor's petition and affirming the ASLB decision to allow withdrawal of the license renewal application.

SFC was scheduled to submit a site characterization plan in September 1993. However, on August 4, 1993, the EPA signed and executed an Interim Status Corrective Action Order under Section 3008(h) of the Resource Conservation and Recovery Act (RCRA). Because of the schedule specified in the RCRA consent order, SFC requested NRC permission to adjust the PPCD schedule to match that of the RCRA order. The NRC agreed to the change, and SFC submitted the site characterization plan in January 1994.

Intervenors and other Federal agencies (U.S. Army Corps of Engineers, Geological Service, Fish and Wildlife Service, and Bureau of Indian Affairs) expressed interest in the site characterization. As a result, the NRC granted additional time for review of the plan by those groups. The NRC received all comments by the end of April 1994.

As a result of its own review and the comments received from other interested parties, the NRC determined that the current plan would not adequately characterize the extent of contamination from the facility. The NRC formalized and discussed the comments with the commentors and the EPA, transmitted the results to SFC in November 1994, and discussed the results with SFC by phone.

In accordance with the RCRA Order, SFC submitted an RCRA facility investigation (RFI) workplan to the EPA. That workplan was finalized and approved in December 1994, giving SFC until December 1995 to provide the RFI Report to the EPA.

To alleviate concerns SFC expressed to the EPA in the November 1994 RFI Status Report concerning potential differences between NRC and EPA schedules, the NRC informed SFC that the draft site characterization report (SCR) was expected in January 1996. This schedule closely matches that of the EPA (December 1995), and is in keeping with the guidelines in the SDMP Action Plan.

Since neither SFC nor GA provided sufficient financial assurance in accordance with 10 CFR 40.36, the NRC issued an order in October 1993 requiring both GA and SFC to provide such assurance. SFC had previously certified financial assurance for $750,000, but this amount is far less than the tens of millions of dollars that decommissioning is expected to cost. Both parties have appealed the order; SFC because they have not renewed their license since the effective date of the change in regulations, and GA on grounds that the NRC lacks jurisdiction over them in this matter. The NRC has admitted NACE as a party to the proceedings, and the Cherokee Nation has requested admission.

NRC/Licensee Actions and Schedules

- NRC issues notice of intent to prepare EIS on decommissioning at SFC — September 1995
- NRC conducts a public meeting on the scope of the EIS — November 1995
- SFC submits preliminary site characterization report — January 1996
- NRC approves site characterization report — May 1996
- SFC submits preliminary decommissioning plan — October 1996

Problems/Issues

The major issues are SFC's proposal to rely on onsite disposal of large quantities of radiologically and chemically contaminated materials, and the lack of financial assurance to support the proposed long-term decommissioning effort. The potential exists for extensive litigation by intervenors during decommissioning of the SFC site.

SHIELDALLOY METALLURGICAL CORPORATION (CAMBRIDGE, OH)

Site Identification

Shieldalloy Metallurgical Corporation
Cambridge, OH

License No.:	SMB-1507
Docket No.:	040-08948
License Status:	Active
Project Manager:	R. Nelson

Status of Decommissioning Activities

In September 1993, Shieldalloy Metallurgical Corporation (SMC) filed a bankruptcy petition under Chapter 11 of the U.S. Bankruptcy Code. During their financial reorganization, SMC has continued to operate its facility in Newfield, New Jersey.

As a part of the bankruptcy proceedings, SMC is required to quantify the environmental liabilities of the Cambridge and Newfield facilities. SMC claims that it will be forced into Chapter 7 liquidation if any decommissioning alternative other than onsite disposal is required.

In October 1993, the NRC staff completed SECY-93-298, which informed the Commission of SMC's decommissioning policy issues. To determine the financial requirements for future decommissioning, the NRC intended to draft an environmental impact statement (EIS) to determine if onsite disposal will be a viable, safe alternative. The NRC indicated that the EIS would evaluate the onsite stabilization and disposal of waste (SMC's preferred alternative), along with other alternatives for the ultimate disposal of licensable material stored at the Cambridge site. In addition, the licensee requested that the EIS evaluate relocation to the SMC facility of contaminated slag found offsite. To begin the EIS process, the NRC intended to hold a public scoping meeting in December 1993, and to allow public comments through January 1994.

The Commission approved the staff's approach to initiate an EIS and convene a public scoping meeting for the EIS. The NRC held the meeting on December 13, 1993, and allowed public comments through January 1994, as planned. In May 1994, the staff issued a an EIS scoping process summary report based upon review of public comments.

On June 21, 1994, the NRC issued to SMC a request for additional information (RAI) needed to develop the EIS. SMC responded in part on August 19, 1994, and has since supplemented this response with several additional submittals.

In a related matter, at the request of the Ohio Environmental Protection Agency (OEPA), the Attorney General's Office for the State of Ohio prepared a consent order for preliminary injunction (COPI) concerning the remediation of hazardous wastes, industrial wastes, water pollution, and other wastes associated with the Cambridge facility. The parties agreed i n As a result of the COPI, SMC initiated a remedial investigation/feasibility study (RI/FS) at the Cambridge site. Onsite field work began in late February 1995. Because the RI/FS is expected to result in information needed by the NRC to develop the EIS, the NRC staff is participating in discussions between SMC and OEPA concerning the development of the RI/FS

for this site. The draft RI/FS was submitted in June 1995, and the data collected and information developed as a result of the RI/FS is expected to satisfy the staff's remaining EIS information needs.

Nonetheless, because information submitted in response to the first RAI was incomplete, the NRC issued a second RAI in January 1995. This second RAI was delayed until the impact of the consent order negotiations was known.

NRC/Licensee Actions and Schedule

- SMC submits Final RI/FS Report — August 1995
- NRC publishes draft EIS — December 1995
- NRC publishes Final EIS — October 1996
- SMC submits Decommissioning Plan — TBD

Problems/Issues

There is a lack of viable options for remediation of the large volumes of waste with concentrations of uranium and thorium above current criteria for unrestricted use. SMC asserts that offsite disposal will force liquidation. In addition, as noted above, SMC has stated that it requires NRC's draft EIS by December 1995, in order to emerge from bankruptcy.

SHIELDALLOY METALLURGICAL CORPORATION (NEWFIELD, NJ)

Site Identification

Shieldalloy Metallurgical Corporation
Newfield, NJ

License No.:	SMB-1507
Docket No.:	040-07102
License Status:	Active; timely renewal
Project Manager:	Gary Comfort, FCSS
DWM Monitor:	R. Nelson

Status of Decommissioning Activities

In September 1993, Shieldalloy Metallurgical Corporation (SMC) filed a bankruptcy petition under Chapter 11 of the U.S. Bankruptcy Code. During their financial reorganization, SMC has continued to operate its facility in Newfield, New Jersey.

SMC is required to quantify the environmental liabilities of the Cambridge and Newfield facilities. SMC claims that it will be forced into Chapter 7 liquidation if any decommissioning alternative other than onsite disposal is required.

To determine the financial requirements for future decommissioning, the NRC is drafting an environmental impact statement (EIS) to determine if onsite disposal will be a viable, safe alternative. To begin the EIS process, the NRC held a public scoping meeting in December 1993, and allowed public comments through January 1994. In July 1994, the staff issued a an EIS scoping process summary report based upon review of public comments.

In December 1994, SMC submitted an application for authorization to export licensed material in slag for use in foreign steel production. The slag has characteristics that allow it to act as a flux for the steel process, and to remove impurities from the steel. At the same time, the source material in the slag is diluted by a factor of more than 3. The NRC is currently evaluating the application. If the application is approved, the scope of the EIS may be reduced to reflect removal and export of the largest amount of contamination onsite.

In December 1994, the staff increased SMC's possession limits for uranium because the total volume of licensed material currently allowed on site is controlled by the possession limit for thorium. The evaluation of this possession increase showed no expected impact on the environment or the health and safety of the public.

The staff is currently developing a paper to inform the Commission about how the staff plans to address financial assurance and future increases in possession limits. Because SMC cannot provide financial assurance for unrestricted release of their site, the staff plans to require financial assurance adequate for the *in situ* disposal of the material, as proposed by the licensee. After completing the EIS, the staff will require additional financial assurance (if necessary) for actions developed in the EIS to protect the environment and the health and safety of the public.

NRC/Licensee Actions and Schedule

- Safety Evaluation Report for license renewal — August 1995
- Draft EIS — May 1996
- Final EIS — December 1996

Problems/Issues

SMC's lack of funds to dispose of licensed material offsite poses a problem. SMC is currently generating waste at a rate that will exceed their possession limits in 1996. The NRC has told SMC that the possession limits cannot be increased unless an acceptable decommissioning funding plan (DFP) is submitted.

The staff's interim acceptance of a DFP for *in situ* disposal should allow SMC to submit an adequate plan. The NRC could also make acceptable disposal of the material economically viable for SMC by allowing SMC to export the material for beneficial use.

TEXAS INSTRUMENTS, INC.

Site Identification

Texas Instruments, Inc.
Attleboro, MA

License No.:	SNM-23
Docket No.:	070-00033
License Status:	Decommissioning; expiration date removed by amendment
Project Manager:	M. Roberts, Region I
DWM Monitor:	J. Shepherd

Status of Decommissioning Activities

In August 1992, the NRC approved the Texas Instruments (TI) decommissioning plan for exhuming the onsite burial, and TI began remediation at that time. In December 1992, the NRC conducted a confirmatory survey, which determined that further remediation would be required. The licensee conducted additional remediation, and submitted supplemental final survey information on January 12, 1993.

In February 1993, Region I reviewed the updated survey information, and concluded that radiological contamination in excess of NRC guidelines remained in the disposal area. The licensee completed additional remediation in the summer of 1993, performed another survey in September 1993, and submitted the results of this survey in October 1993. During November 1993, ORISE conducted confirmatory surveys at the site, and determined that the concentrations of licensed material were below the guidelines for unrestricted use.

In late 1993, the licensee performed additional radiological surveys to ensure that no areas remained at the site with radioactive contamination in excess of current unrestricted use criteria. The surveys identified three areas in the vicinity of Building 5 with contamination in excess of the criteria. By 1994, approximately 2,800 m^3 (100,000 ft^3) had been excavated from this area. Region I staff reviewed the ongoing removal activities during an inspection on May 10, 1994, and found that they were proceeding acceptably. TI completed remediation of this area in November 1994.

On March 23, 1994, Region I staff met with the U.S. EPA and the Commonwealth of Massachusetts to discuss the NRC's intention to release the site for unrestricted use, provided that all reviews in progress indicate the release is appropriate. However, because additional contamination was identified, a formal request for comment was delayed until 1995.

In 1994, contamination surveys inside buildings where licensed materials were previously used identified areas of non-removable contamination in excess of the criteria for release to unrestricted use. Also, following a meeting between NRC and TI staff in May 1994, TI agreed to perform a comprehensive review of the site to ensure that all contamination was identified. This review identified additional areas of soil contamination, and TI initiated remediation of these areas in the Spring of 1995. The NRC inspected these activities in March 1995. In May 1995, the NRC then published a *Federal Register* notice of intent to approve a supplement to the final decommissioning plan, and to offer an opportunity for a hearing.

NRC/Licensee Actions and Schedule

- TI submits final survey report for excavated area near Building 5 — June 1995
- TI completes remediation and submits final survey — July 1995
- NRC performs confirmatory survey for excavated area near Building 5 — September 1995
- NRC performs confirmatory survey — September 1995
- NRC releases site for unrestricted use — December 1995

Problems/Issues

Discovery of additional contamination during final surveys resulted from inadequate site characterization, and has prolonged decommissioning.

UNC RECOVERY SYSTEMS

Site Identification

UNC Recovery Systems
Wood River Junction, RI

License No.:	SNM-777
Docket No.:	070-00820
License Status:	Active (until termination by the Commission)
Project Manager:	J. Parrott, DWM

Status of Decommissioning Activities

Upon finalizing a consent agreement between the State of Rhode Island and UNC Recovery Systems concerning continued groundwater monitoring, the State assumed regulatory jurisdiction for the nitrates in the groundwater. A public meeting on license termination was held near the site in December 1994. At this meeting, the State requested an opportunity to review the draft environmental assessment (EA) that was written regarding the license termination request. NRC transmitted this EA to the State by letter dated February 17, 1995. By letter dated April 6, 1995, the State responded with four comments. The NRC is currently responding to the comments with an attachment to the environmental assessment concerning license termination. The NRC staff is also preparing a paper notifying the Commission of its intent to terminate the license.

NRC/Licensee Actions and Schedule

- NRC staff prepares paper notifying the Commission of decision to terminate license — July 1995
- NRC publishes *Federal Register* notice and opportunity for a hearing — September 1995
- NRC terminates license — September 1995

Problems/Issues

Onsite groundwater is contaminated with nitrate at concentrations above EPA drinking water standards. Although strontium-90 concentration in groundwater also exceeds current drinking water standards, the EPA intends to revise the standards, and current groundwater concentrations of strontium-90 are below the revised standards.

UNITED TECHNOLOGIES/PRATT & WHITNEY

Site Identification

United Technologies/Pratt & Whitney
Middletown, CT

License No.:	06-00550-03
Docket No.:	Unknown
License Status:	Terminated on June 21, 1971
Project Manager:	M. Roberts, Region I
DWM Monitor:	W. Lahs

Status of Decommissioning Activities

The licensee completed decommissioning activities in Building 450 in December 1992, and the NRC received the final survey report for the decommissioned portion of the site on February 2, 1993. An inspection and confirmatory survey for this portion of the site, conducted in October 1993, detected no residual radioactivity in excess of normal background. In May 1993, the NRC received the final survey reports for the remaining buildings associated with terminated License No. 06-00550-03.

In September 1993, the EPA approved a plan for the RCRA facility investigation (RFI) of the site. This RFI includes procedures for detecting radioactive contamination during subsurface soil sampling and monitoring well installation. The October 1993 inspection confirmed that the RFI contractors are properly implementing the procedures.

To discuss NRC plans to release the site for unrestricted use, Region I staff met with representatives of the State of Connecticut on March 21, 1994, and with representatives of the U.S. EPA on March 23, 1994. In addition, the Region I staff reviewed nearly all of the survey reports and other documentation, and is currently preparing a final inspection and survey plan to verify that the site meets the criteria for unrestricted release.

NRC/Licensee Actions and Schedule

- NRC completes confirmatory survey — July 1995
- NRC prepares paper to notify Commission of decision to release site for unrestricted use — July 1995
- NRC prepares *Federal Register* notice on site release — July 1995
- NRC releases site for unrestricted use — December 1995

Problems/Issues

None

WATERTOWN ARSENAL/MALL

Site Identification

Watertown Arsenal/Mall
Watertown, MA

License No.:	20-01010-04 SUB-238 SNM-244
Docket No.:	030-04593 040-02253 070-00263
License Status:	Active
Project Manager:	M. Bouwens, Region I
DWM Monitor:	D. Orlando

Status of Decommissioning Activities

Mall Area

On October 19, 1993, the licensee submitted the preliminary assessment (PA) of the mall site. Region I accepted the PA in a letter dated January 31, 1994, and requested a confirmation that the recommendations in the PA would be implemented, as well as a schedule for the implementation. The U.S. Army Corp of Engineers, New England Division (NED), agreed to implement the recommendations in a letter dated February 18, 1994, and submitted an implementation schedule to the NRC on September 19, 1994.

On March 22, 1995, the NED submitted a Phase I initial site investigation (ISI). The NRC reviewed the ISI, and determined that it addressed only non-radiological hazards. The NRC will request an assessment of potential radiological hazards.

On August 10, 1992, the NED submitted a plan and schedule for radiological assessment of the Arsenal Apartments, Arsenal Condominiums, and the Harvard Community Health areas of the Mall site. The NED revised the plan on July 12, 1993. The NED conducted soil sampling at the Arsenal Condominiums on July 23, 1993, and at the Arsenal Apartments and Harvard Community Health areas on October 28, 1994. The analysis of the soil samples did not identify residual radioactive contamination from previous licensed operations.

The NRC reviewed the current status of the site with the Army during a meeting on March 22, 1994, and with the Massachusetts Department of Environmental Protection on March 23, 1994.

MTL Area

On September 28, 1992, Region I amended the license based on the Army's responses regarding the decommissioning plan (D-Plan). The Army then submitted an Addendum to the D-Plan on January 19, 1993. Region I requested additional information necessary to continue the review of the Addendum on May 6, 1993; September 20, 1993; December 21, 1993; and May 31, 1994. The Army submitted additional information on June 21, 1993; October 12,

1993; February 8, 1994; April 12, 1994; and August 10, 1994. The Addendum was approved on October 26, 1994.

The NRC must complete its review of the MTL site hydrogeology and groundwater characterization. This review is essentially complete; however, Region I requested additional information from ARL, and forwarded the information to the NMSS on June 8, 1993, and March 3, 1995. The NMSS responded on January 28, 1994, and April 11, 1995.

Region I staff conducted an inspection of the remediation activities at the MTL site on October 4–6, 1993. Based on the results of the inspection, Region I requested, in a letter dated November 24, 1993, that MTL conduct additional characterization of several areas. MTL responded in a letter dated March 1, 1994, and the response was incorporated as a requirement when the Addendum request was approved.

Region I also conducted an inspection of the remediation at ARL on May 23–24, 1994; June 16–17, 1994; and August 29–30, 1994. No violations were identified. On September 28, 1994, ARL requested approval for a method to average the soil contamination in Building 43. Region I reviewed and approved the request on October 22, 1994.

The Army submitted part of the termination survey results for the facility on September 9, 1993; October 25, 1993; August 5, 1994; and April 17, 1995. ORISE provided comments on part of this submission for Region I consideration on April 12, 1994. Region I requested additional information from ARL on March 21, 1995. On April 26, 1995, a conference telephone call was held between Region I staff, ARL, and ARL's contractors to discuss the Region I request. Three additional volumes of an eight volume set of final surveys are scheduled for submission in mid-1995. In addition, on March 23, 1994, Region I staff met with representatives of the Massachusetts Department of Environmental Protection and the U.S. EPA concerning the site.

NRC Actions and Schedule

- NRC reviews Army final survey for MTL area — September 1995
- NRC completes confirmatory survey for MTL area — June 1996
- NRC releases MTL area for unrestricted use, and terminates license — December 1996

Problems/Issues

None

WATERTOWN GSA

Site Identification

General Services Administration (GSA)
Boston, MA

License No.:	None
Docket No.:	None
License Status:	N/A
Project Manager:	M. Bouwens, Region I
DWM Monitor:	D. Orlando

Status of Decommissioning Activities

No NRC license formally covers this site. Nonetheless, information currently available to the NRC staff indicates that the site was formerly authorized by U.S. Army license(s) at the Watertown Arsenal. Specifically, the site was licensed for the storage and shipment of radioactive waste, as well as the burning of uranium-contaminated scrap.

In May 1992, upon request by the GSA, the Army Corps of Engineers, New England Division (NED), agreed to decommission the Watertown GSA site. The NED proposed a scope of work for remediating the burn pit on October 27, 1992. On April 15, 1993, Region I determined that the scope of work was acceptable.

Since the NED identified additional soil contamination during the Summer of 1993, the NED temporarily ceased remediation activities to conduct additional characterization. Region I reviewed a variety of documents regarding site characterization, and requested additional information in a letter dated October 29, 1993. Region I staff then met with the NED at the site to discuss additional remediation and characterization options on March 22, 1994.

On June 8, 1994, the NED submitted a draft workplan for the characterization of the burn pit and Property 20, which is adjacent to the GSA property. On June 10, 1994, Region I determined that the draft workplan was acceptable. On June 22, 1994, the NED provided a draft radiological characterization report.

On July 7, 1994, Region I requested that the NED either remediate or provide additional characterization data regarding two small areas. The NED responded in a letter dated July 26, 1994, containing a final workplan for characterization of the GSA property.

The workplan was implemented in late 1994. Region I inspected the onsite remediation activities on June 15, 1993, and again on August 29–30, 1994. With the exception of a minor deviation, Region I found that the activities are compliant with the workplan.

On March 8, 1995, the NED submitted a radiological characterization and final survey report based on the implementation of the workplan. The report indicated that uranium contamination remained in the area of the burn pit, and that several areas outside of the burn pit had residual radioactive contamination from former operations.

On March 14, 1994, Region I requested additional information from NED regarding groundwater characterization, and NED responded on April 11, 1994. Because of apparent disagreements regarding the evaluation of site groundwater characteristics, NED and NRC hydrologists from the Division of Waste Management held a telephone conference call on August 8, 1994. In addition, the NED responded to the March 14, 1994, NRC letter and the August 8, 1994, conference call on April 11, 1994, and August 25, 1994. Additional groundwater characterization data were included with the report submitted on March 8, 1995.

NRC/Licensee Actions and Schedule

- GSA submits remediation plan for newly identified portions of the site — August 1995
- GSA submits final survey — December 1995
- NRC performs confirmatory surveys — April 1996
- NRC releases site for unrestricted use — June 1996

Problems/Issues

Issues that could delay site decommissioning activities include the resolution of technical disagreements concerning groundwater characteristics, the discovery of additional site contamination, and the presence of a high water table and potential hazardous waste.

WESTINGHOUSE ELECTRIC CORPORATION (WALTZ MILL)

Site Identification

Westinghouse Electric Corporation
Advanced Power Systems Division
Pittsburgh, PA
(Site located at Madison, PA, is known as the Waltz Mill site)

License No.:	SNM-770
Docket No.:	070-00698
License Status:	Active
Project Manager:	M. Roberts, Region I
DWM Monitor:	R. Abu-Eid

Status of Decommissioning Activities

In letters dated December 8, 1992, and January 11, 1993, respectively, Westinghouse requested that the NRC amend the test reactor license (TR-2) and the special nuclear material license (SNM-770). Specifically, Westinghouse requested that the NRC transfer the authorization to possess contaminated soils in three holding basins at the site, from TR-2 to SNM-770. The holding basins were contaminated during cleanup of the test reactor; however, the transfer would facilitate characterization and remediation of the holding basins under the SDMP program. The NRC amended the two licenses on January 14, 1993.

On May 17, 1993, Westinghouse submitted a radiological characterization plan for the site, along with plans for soil and groundwater characterization. The groundwater characterization plan included a summary of historical data.

The NRC conducted an inspection of the onsite characterization activities on August 31, 1993, and received the characterization report for the facilities on February 18, 1994. A meeting concerning the schedule of future decommissioning actions and a tour of the site occurred on February 22, 1994. Based on information received in that meeting, Westinghouse was to provide the groundwater and soil characterization report of the to Region I in April 1994. However, additional investigation was required in the vicinity of the underground process water lines and to complete required laboratory analyses. The final groundwater and soil characterization report was submitted in August 1994.

NRC/Licensee Actions and Schedule

- NRC reviews characterization report, and requests additional information — July 1995
- Westinghouse submits decommissioning plan — September 1995
- NRC reviews decommissioning plan and schedule, and requests additional information — December 1995

Problems/Issues

Westinghouse has been unable to establish the source of ground water contamination.

WEST LAKE LANDFILL

Site Identification

West Lake Landfill
Bridgeton, St. Louis County, MO

License No.:	None
Docket No.:	040-08035
	040-08801
License Status:	N/A
Project Manager:	R. Uleck, DWM

Status of Decommissioning Activities

On August 30, 1990, the EPA listed West Lake Landfill on the Comprehensive Environmental Response, Compensation, and Liability Act National Priorities List for Uncontrolled Hazardous Waste Sites (Superfund List). The NRC and EPA agreed that the EPA would assume lead responsibility for site remediation activities. The EPA has since identified four potentially responsible parties (PRPs) for this site, including Cotter Corporation, Laidlaw Waste Systems, Rock Road Industries, and the U.S. Department of Energy.

In March 1993, the PRPs signed a scope-of-work agreement with the EPA. Following this, the PRPs submitted a workplan to the EPA in May 1993. The workplan is a basic starting point for remediation of the site, which includes information on sources of contamination, migration pathways, potential receptors, remediation alternatives, and other information necessary to complete the characterization of the site. The NRC completed the review of this workplan in January 1994.

In March 1994, the West Lake Respondent Group (the PRPs) submitted to the EPA a revised Remedial Investigation/Feasibility Study (RI/FS) Workplan for the site. The EPA approved the RI/FS workplan in August 1994, and the PRPs began field work to implement the plan in October 1994.

In April 1995, the staff recommended that the NRC defer to EPA oversight of remedial action, rather than conducting duplicate oversight activities. In May 1995, the Commission approved the staff's recommendation. In June 1995, the NRC sent a letter informing the EPA that the NRC plans no further action on the West Lake Landfill, and will remove the site from the SDMP list.

NRC/Licensee Actions and Schedule

No further action is required

Problems/Issues

None

WHITTAKER CORPORATION

Site Identification

Whittaker Corporation
Greenville, PA

License No.:	SMA-1018
Docket No.:	040-07455
License Status:	Active; possession for storage only
Project manager:	L. Bykoski, DWM

Status of Decommissioning Activities

In May 1993, Whittaker submitted a site characterization plan, which the NRC staff reviewed. The NRC then requested additional information in October 1993, and Whittaker provided a revised plan containing additional information in December 1993. The NRC staff reviewed the revised plan, and submitted additional comments to Whittaker in February 1994, based on the revision to 10 CFR Part 20 that became effective in January 1994. Whittaker responded to these comments in March 1994, and the NRC staff approved the plan in July 1994.

Whittaker submitted a characterization report schedule in August 1994, and then requested suspension of the amendment request in September 1994 because of the high estimated cost. In May 1995, Whittaker submitted a workplan that proposed to relocate contaminated material to the center of the site. The NRC is currently reviewing the workplan.

NRC/Licensee Actions and Timing

- Whittaker submits characterization report — August 1996
- Whittaker submits decommissioning plan — April 1997

Problems/Issues

Limited remediation options, other than onsite disposal, exist for the large volume of thorium-contaminated slag and soil.

WYMAN-GORDON COMPANY

Site Identification

Wyman-Gordon Company
North Grafton, MA

License No.:	STB-840
Docket No.:	040-01650
License Status:	Terminated
Project Manager:	T.C. Johnson, DWM

Status of Decommissioning Activities

The NRC staff is withholding action on this site until an analysis of generic thorium disposal issues is completed. These generic thorium issues are being addressed in an environmental impact statement (EIS) for the Shieldalloy Metallurgical Corporation (SMC) site in Cambridge, Ohio. The draft EIS is scheduled to be issued in December 1995.

The Wyman-Gordon staff continues to sample the groundwater in the three wells adjacent to the thorium disposal area. The sampling programs in April 1994 and October 1994 continued to show gross alpha activity less than the EPA primary drinking water limit of 15 pCi/l.

NRC/Licensee Actions and Schedule

- NRC issues draft EIS for SMC site in Cambridge, Ohio — December 1995
- NRC staff reviews Wyman-Gordon site with respect to draft EIS disposal options, and makes decision concerning required site action — April 1996

Problems/Issues

Further NRC action on this site will depend on the evaluation of thorium contamination issues that are being addressed in the EIS related to the SMC site in Cambridge, Ohio.

NRC FORM 335 (2-89) NRCM 1102, 3201, 3202

U.S. NUCLEAR REGULATORY COMMISSION

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(See instructions on the reverse)

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11. ABSTRACT (200 words or less)

The Nuclear Regulatory Commission (NRC) staff has identified 51 sites contaminated with radioactive material that require special attention to ensure timely decommissioning. While none of these sites represent an immediate threat to public health and safety, they have contamination that exceeds existing NRC criteria for unrestricted use. All of these sites require some degree of remediation, and several involve regulatory issues that must be addressed by the Commission before they can be released for unrestricted use and the applicable licenses terminated. This report contains the NRC staff's strategy for addressing the technical, legal, and policy issues affecting the timely decommissioning of the 51 sites and describes the status of decommissioning activities at the sites. This is supplement number one to NUREG-1444, which was published in October 1993.

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