# DECOMMISSIONING PROGRAM ACTIVITIES

Attachment 1

# DECOMMISSIONING PROGRAM ACTIVITIES

The fiscal year (FY) 2001 Operating Plan divides the decommissioning program activities into two main areas: (1) Materials Decommissioning; and (2) Reactor Decommissioning. The activities associated with each program area are provided below. Since development of guidance and regulations is an activity common to both program areas, it will be discussed in terms of the overall program.

## 1.0 DEVELOPMENT OF GUIDANCE AND REGULATIONS

On July 21, 1997, the U.S. Nuclear Regulatory Commission (NRC) published the final rule on "Radiological Criteria for License Termination" (the License Termination Rule) as Subpart E to 10 CFR Part 20. NRC regulations require that materials licensees submit decommissioning plans (DPs), to support the decommissioning of their facility, if it is required by license condition, or if the procedures and activities necessary to carry out the decommissioning have not been approved by NRC and these procedures could increase the potential health and safety impacts on the workers or the public. NRC regulations also require that reactor licensees submit Post-shutdown Decommissioning Activities Reports (PSDARs) and License Termination Plans (LTPs) to support the decommissioning of nuclear power facilities. In September 2000, the NRC staff published NUREG-1727, "NMSS Decommissioning Standard Review Plan" to aid the staff in reviewing and evaluating plans and information submitted by licensees to support the decommissioning of nuclear facilities.

In SRMs dated July 20, 2000, and September 5, 2000, the Commission directed the staff to develop a Rulemaking Plan to address the entombment option for power reactors. On June 1, 2001, the staff forwarded SECY-01-0099, "Rulemaking Plan and Advance Notice of Proposed Rulemaking: Entombment for Power Reactors" which contained three options for proceeding with entombment. The first option is to continue with the current approach and handle entombment requests on a case-by-case basis. The second option is to conduct rulemaking to add flexibility to 10 CFR 50.82 to amend the 60-year time frame for completion of decommissioning and to clarify the use of engineered barriers for reactor entombments. The third option is to conduct rulemaking to establish performance objectives and licensing requirements for entombment.

On March 23, 2000, the staff provided the Commission with a paper (SECY-00-070) which provided recommendations on issues concerning the control of solid materials at licensed facilities. In an SRM, dated August 18, 2000, the Commission decided to defer a final decision on whether to proceed with rulemaking and directed the staff to proceed with a National Academies (NAS) study on possible alternatives for control of solid materials, and to continue the development of a technical information base to support a Commission policy decision in this area. The staff expects to have the NAS report in early 2002 and, as also directed by the SRM, will provide its recommendations on how best to proceed to the Commission approximately three months after completion of the NAS study.

The staff prepared a rulemaking plan to standardize the process for allowing the partial site release of a reactor facility or site prior to approval of the LTP. The plan was approved by the Commission on April 26, 2000. The Advisory Committee on Nuclear Waste (ACNW) was briefed on the proposed rule in March 2001, and the proposed rule package was sent to the

Commission on May 9, 2001. The staff will go forward and issue the proposed rule after receiving the SRM.

The staff published final Regulatory Guide 1.191, "Fire Protection Program for Nuclear Power Plants During Decommissioning and Permanent Shutdown," in May 2001. The Regulatory Guide describes methods acceptable to the staff for complying with NRC's regulations regarding fire protection programs for power reactors that have permanently ceased operations.

The staff also published SECY-01-099, "Rulemaking Plan and Advanced Notice of Proposed Rulemaking: Entombment for Power Reactors," on June 1, 2001. In addition, the staff continues to support the development of the rulemaking for the recycling/reuse of radioactively contaminated materials. A complete listing of the guidance developed is presented in Attachment 15.

The Office of Nuclear Regulatory Research (RES) provides data and models to NMSS to support assessments of public exposure to environmental releases of radioactive material from site decommissioning. Since SECY-0094 was published, RES provided DWM with: (1) data on degradation of archeological slags that will be used as the basis for assessing long-term performance of slags as a source of radioactive contamination; (2) documentation of unsaturated zone-monitoring strategies for use in review of monitoring proposals for licensing actions concerning decommissioning and waste disposal facilities in unsaturated media; (3) a technical basis to support selection of site-specific parameter values for estimating flux and transport in dose-assessment codes; (4) a probabilistic version of RESRAD; (5) a final user's guide on probabilistic version of D and D software; (6) a draft technical report on test application of methodology for selecting and testing conceptual models with respect to a specific site; and (7) verification and validation testing of 4SIGHT (computer code for predicting performance of barriers). Major RES activities to be completed in 2001 include: (1) a draft report on the uncertainty methodology for hydrologic parameter uncertainties; (2) publish NUREG/CR on radionuclide solubilities that will be used in assessments at slag sites; and (3) publish NUREG/CR on radionuclide solubilities that will be used in assessments of soil.

## 2.0 REACTOR DECOMMISSIONING

Reactor decommissioning activities include: (1) Office of Nuclear Material Safety and Safeguards (NMSS) project management and technical review responsibility for decommissioning of two power reactors; (2) Office of Nuclear Reactor Regulation (NRR) project management and licensing oversight for 17 decommissioning reactor facilities; (3) conducting of core inspections; (4) project management for all licensed non-power reactors; (5) supporting development of rulemaking on entombment; (6) development of rulemaking and guidance on partial site release; and development of guidance on changing LTPs without requiring a license amendment.

- NMSS has project management and technical review responsibility for the Fermi 1 and Peach Bottom Unit 1 power reactors. Status summaries for these reactors are contained in Attachment 11. In addition, NMSS is currently reviewing LTPs for Maine Yankee, Connecticut Yankee, and Saxton. NRC approved the LTP for Trojan on February 12, 2001.

- NRR has project management and licensing oversight for 17 power reactors that have either submitted DPs (or equivalent) or PSDARs (see Attachments 11 and 14).

## 3.0 MATERIALS AND FUEL CYCLE DECOMMISSIONING

Material and Fuel Cycle Decommissioning activities include: (1) regulatory oversight of Site Decommissioning Management Plan (SDMP) sites and other complex decommissioning sites; (2) implementing the Commission's direction under DSI-9 by conducting a pilot study for performing decommissioning without the submittal of a DP; (3) undertaking license termination file reviews; (4) undertaking financial assurance reviews; (5) providing West Valley oversight; (6) decommissioning guidance consolidation; (7) examination of issues and funding options to facilitate remediation of sites in non-agreement states including working with the U.S. Department of Energy (DOE) to facilitate the long-term control of sites with long-lived radionuclides; (8) interacting with the U.S. Environmental Protection Agency (EPA) and the Interagency Steering Committee on Radiation Standards (ISCORS); (9) inspecting SDMP and other complex decommissioning sites; (10) maintaining the Computerized Risk Assessment and Data Analysis Lab (CRADAL); (11) evaluating Agreement State implementation of the LTR; and (12) public outreach.

- Activities associated with the SDMP and complex site decommissioning program include: (1) review of site characterization plans; (2) review and approval of DPs; (3) implement streamlined licensing approach by conducting pre-decommissioning plan development meetings with licensees; (4) review of licensee final status survey reports and conduct of confirmatory surveys; and (5) preparation of environmental assessments (EAs) and environmental impact statements (EISs). Since publication of SECY-00-0094, the staff has approved 7 DPs, conducted 4 pre-DP development meetings with licensees, and prepared 7 EAs. When SECY-00-0094 was published, the staff had indications that 12 SDMP and other complex decommissioning sites would request restricted release resulting in the preparation of 12 EISs. During the past year, the staff has been informed that three of these sites now intend to pursue unrestricted release. The staff believes that difficulties associated with securing legally enforceable institutional controls may cause other licensees to change from restricted to unrestricted release options. Sequoyah Fuels Corporation (SFC) is a good example of a site which is having difficulty securing legally enforceable institutional controls.

  SFC submitted a decommissioning plan requesting decommissioning in accordance with the restricted release provision of 10 CFR 20.1403. SFC has not contracted with a competent party to provide the required institutional controls. Staff is currently exploring if DOE might take the site under the Nuclear Waste Policy Act (NWPA) Section 151(b), that authorizes, but does not compel, DOE to take control of such sites. DOE and NRC are pursuing a Memorandum of Understanding by which sites would be selected for DOE control under its long-term stewardship program. In January, 2001, SFC proposed that its site be reclassified as a byproduct material facility because it believes approximately 80% of the waste could meet the definition in the Atomic Energy Act Section 11(e)(2). The bases for this position are that the front end of the SFC process is the same as that at a mill (solvent extraction to purify uranium ore), and "milling" is a function not a location. Such a reclassification would mandate DOE control of the site after decommissioning under Title II of the Uranium Mill Tailings Radiation Control Act.

The NRC staff and Office of General Counsel has not reached a resolution of this issue. DOE has reviewed the SFC submittal, and informed NRC, via letter, that DOE "has no formal opinion on this matter" and will abide by any NRC decision. Staff is currently evaluating SFC's request and will communicate with the Commission on a course of action.

- The staff continues to implement the Commission's direction under DSI-9. Three facilities (Westinghouse Cheswick Pump Repair Facility, Viacom/CBS Forest Hill Laboratory, Phillips Petroleum Radiation Laboratory) are taking part in the pilot study to perform decommissioning without the submittal of a DP. All three facilities have now completed decommissioning. On March 7, 2001, NRC authorized release of the Westinghouse Pump Repair Facility for unrestricted use. Region 1 has approved final site survey reports for the Viacom/CBS Forest Hill Laboratory and awaits the amendment request to release the site for unrestricted use. Region IV transferred the license docket for Phillips Petroleum Radiation Laboratory to the State of Oklahoma in September 2000, after the decommissioning was completed, but before receiving the license amendment requesting release of the laboratory for unrestricted use. Staff is currently finalizing the evaluation of the Pilot Program.

- In 1990, the NRC decided to undertake a review of terminated materials licenses to assure that facilities were properly decontaminated and posed no threat to public health and safety. Oak Ridge National Laboratory (ORNL) was contracted to review all materials licenses terminated by the NRC or its predecessor agencies, from the inception of materials regulation, to: (1) identify sites with potential for meaningful residual contamination, based on information in the license documentation; and (2) to identify sealed sources with incomplete or no accounting that could represent a public hazard. ORNL identified approximately 675 loose material licenses and 564 sealed source licenses that required further review by the Regions. Regional staff reviewed ORNL identified sites in accordance with Temporary Instruction 2800/026, "Follow-up Inspection of Formerly Licensed Sites Identified as Potentially Contaminated," dated April 15, 1998. Regional staff continue to review terminated license files and conduct follow-up, as appropriate, within existing resources. The following table, revised May 30, 2001, shows the number of formerly licensed sites yet to be reviewed by the Regions. The Regions are scheduled to complete all remaining reviews by September 2001.

| | Region I | Region II | Region III | Region IV | **Total** |
|---|---|---|---|---|---|
| Number of loose material sites pending site review (non-Agreement State sites) | 0 | 4 | 0 | 6 | **10** |
| Number of sealed source sites pending review (non-Agreement State sites) | 0 | 7 | 0 | 8 | **15** |
| **Total** | **0** | **11** | **0** | **14** | 25 |

- Staff routinely reviews financial assurance submittals for materials and fuel facilities, and maintains a financial instrument security program. Between 40 and 60 financial assurance submittals are reviewed each year.

- NRC's decommissioning responsibilities at the West Valley Demonstration Project (WVDP) and West Valley site are specified under the WVDP Act and 10 CFR 20, respectively. Responsibilities under the WVDP Act include: prescribing decontamination and decommissioning criteria; reviewing draft portions of the EIS for decontamination and decommissioning and closure of the site; reviewing safety analysis reports; and performing periodic onsite monitoring of project activities and records, to assure radiological health and safety. The Commission's draft policy statement regarding decommissioning criteria for the WVDP and West Valley site was issued in December 1999 for public comment. Staff received public comments from December 1999 through April 2000. Considering the public comments, staff prepared a final draft policy statement which was submitted to the Commission for review in December 2000. The draft policy statement specified NRC's License Termination Rule as the decommissioning criteria. NRC's final decommissioning criteria will be a significant component of the EIS for decommissioning and closure of the site. The Commission is considering approaches to finalize the policy statement.

- The staff has initiated a decommissioning guidance consolidation project. The project involves review and consolidation of all existing NMSS decommissioning guidance documents, decommissioning technical assistance requests, decommissioning licensing conditions, and all decommissioning generic communications issued over the past several years. The project will be conducted using the Business Process Re-engineering (BPR) techniques. The BPR approach will be used to both develop the product, and manage the review and concurrence process, using self-managed teams consisting of NRC headquarters and regional resources, with possible Agreement State participation. The goal is to produce consolidated NMSS decommissioning guidance that allows the NRC staff to evaluate information submitted by licensees in a timely, efficient, and consistent manner that protects public health and safety. The end result will be a streamlined multi-volume NUREG grouped into decommissioning functional categories. Further ease of use will be realized by making this a web-based document. The project team began developing the first NUREG volume in June 2001, and the goal is to complete drafts of the NUREG volumes by the end of FY2002. The overall project is scheduled to be completed by the end of FY2003. The updated, consolidated guidance will be provided to all users, both NRC and licensee in hard-copy and/or electronic media. Since each group will have access to the same guidance, the expected results are more complete license documents that will expedite the approval process for both applicants and reviewers. As a result, it is expected that this project will serve to improve the overall decommissioning process.

- In August 2000 the staff provided the Commission with an analysis of issues to facilitate remediation of decommissioning sites in non-Agreement States. The analysis considered both formerly licensed sites and currently licensed sites where future funding of decommissioning might be difficult. The staff also provided options to address these difficulties, and the Commission directed the staff to pursue some of the recommended options.

One of the principle options approved by the Commission was for the staff to pursue an agreement with the U.S. Department of Energy (DOE) to provide long-term control, for a limited number of SDMP and complex sites using the the restricted release option under Part 20, as authorized under section 151(b) of NWPA. NRC and DOE management signed an Agreement in Principle in March 2001 to seek development of a Memorandum of Understanding (MOU) that would define the criteria and process that each agency would use to make determinations regarding the potential transfer of a site consistent with section 151(b) of NWPA. The staff is currently working with the DOE staff to develop the MOU and will report progress to the Commission by October 2001.

The Commission also tentatively approved the staff's recommendation to request authorization and appropriations for State-directed remediation at formerly licensed sites in non-Agreement States where there is insufficient funding available. The Commission requested the staff to better define the number of sites, potential costs for remediation, and willingness of the States to direct remediation with appropriated funds. Staff from both Headquarters and the Regions are working on a response to be provided to the Commission in April 2002, after reviews of remaining terminated license sites are completed. Similarly, the Commission also requested the staff to provide further information about currently licensed sites undergoing decommissioning that might have insufficient funds to decommission the facility. The staff is identifying potential sites that might have insufficient funds, estimating remediation costs for both restricted and unrestricted release, and determining the willingness of States or another Federal agency to direct remediation. The staff will provide this information to the Commission in April 2002. Finally, the staff is preparing a response to the Commission's request to further develop the option of increasing financial assurance requirements.

- The staff continues to work with the EPA and ISCORS to resolve issues related to the regulation of radionuclides. This interaction is necessary to avoid unnecessary duplication of regulatory requirements, including risk harmonization, mixed waste, recycle, decommissioning/cleanup, and sewer reconcentration.

- Staff continues utilizing the Integrated Licensing and Inspection Plan (ILIP) developed in 1998. The primary objective of the ILIP for decommissioning projects is to ensure that appropriate coordination, planning, documentation, and scheduling of key decommissioning inspection and licensing activities take place. The ILIP is used to track and coordinate pending licensing actions and inspections. The ILIP helps keep management and staff focused on decommissioning activities that in many cases are unique events. Because many decommissioning activities are unique events, and occur on schedules established by licensees/responsible parties, it is important for the NRC staff (project managers and inspectors) to be aware of pending decommissioning activities and licensee schedules, to effectively plan and conduct inspections.

- CRADAL provides the staff with a high-performance computing capability that includes a platform to conduct intensive numerical calculations and parallel computing in support of licensing activities.

- In December 2000, NRC issued a request for technical information to all Agreement States regarding their status of the LTR. Of the 32 Agreement States, 16 States have

adopted dose criteria equivalent to the LTR, two States have adopted criteria more restrictive than the LTR, and 14 have yet to adopt dose criteria. All Agreement States were expected to adopt dose criteria equivalent to, or more restrictive than, the LTR by September 20, 2000. Implementation of decommissioning criteria by the Agreement States, is an agenda item for the annual Organization of Agreement States Meeting, in October 2001.

- Decommissioning staff interacts with the public in several ways including Pubic Meetings at individual sites, workshops, and participation in societal and private symposia.

  On November 1, 2000, the DWM staff held a meeting at NRC Headquarters to gather input on the results of NRC's Decommissioning Pilot Program. Representatives from two participating pilot program licensees: Westinghouse Government Services and Viacom/CBS; the Nuclear Energy Institute; ABB Prospects, Inc.; several consultants; the public; and the Pennsylvania Department of Environmental Protection participated in the meeting. The Pilot Program was initiated in 1998, in response to a Staff Requirements Memorandum on COMSECY-96-058 - Decommissioning Non-reactor Facilities (DSI 9), to test a performance-based decommissioning review process. The pilot process focused on residual contamination goals and allowed participants to decommission without obtaining an approved decommissioning plan. Westinghouse and Viacom participated in the pilot program, completed decommissioning work by the summer of 2000, and shared “lessons learned” at the meeting. Westinghouse and Viacom indicated that their experiences in the pilot program were positive, and that the revised process resulted in schedule and cost savings.

  On November 8 and 9, 2000, DWM staff sponsored a workshop on decommissioning. The purpose of the workshop was to provide a forum for industry and non-industry stakeholders to discuss, with NRC staff, NRC’s processes and procedures for managing the decommissioning of nuclear facilities, as well as current issues facing the staff, and licensees, as they implement NRC’s requirements at 10 CFR Part 20, Subpart E (the License Termination Rule). To ensure that both industry and non-industry stakeholders were represented at the workshop, staff invited representatives from the nuclear industry, various public interest groups, and other Federal and State agencies with responsibilities for regulating the use of radioactive material, to participate in the roundtable discussions. Approximately 130 individuals representing the nuclear industry, citizen’s organizations and the public, Federal and State regulatory agencies, and the media attended the workshop. The staff believes that there are not any outstanding issues that require immediate Commission attention, although the staff and Commission may wish to consider the issues raised as plans for future activities to implement the decommissioning program are developed.

  In March 2001, the staff completed development of a Communication Plan for Regulation of Decommissioning. The goals of NRC’s decommissioning communications activities are: to increase public confidence in NRC’s commitment and ability to carry out licensing and regulatory responsibilities for the decommissioning of nuclear facilities; and to increase the efficiency, effectiveness, and realism of analyses supporting license termination decisions. The Plan provides guidance for developing individual

Communication Plans for specific activities associated with the regulation of radiological decommissioning. These include, but are not limited to, the decommissioning of commercial nuclear power reactors, fuel cycle and materials licensees, and sites on the SDMP. The Plan discusses several topics pertinent to developing site specific communication plans including: cross cutting considerations; identification of stakeholders; application of communications tools and techniques; and costs associated with the Sequoyah Fuels public outreach meeting. Site-specific communication plans are useful tools to help us ensure that we are identifying and reaching the appropriate stakeholders and to help staff focus on messages NRC wants to convey. The Plan was distributed to all NRC staff working in the decommissioning arena in June 2001. Training sessions on the implementation of the Plan are planned for late summer 2001.

On June 1, 2001, the DWM staff conducted a public meeting on its project to update and consolidate NMSS's decommissioning policy and guidance. The purpose of the meeting was to explain the scope of the effort, the business process redesign techniques that will be used, coordination with industry efforts to standardize guidance, and to receive stakeholder input. The meeting was attended by representatives of licensees, industry groups, public interest groups, and a state agency.