

POLICY ISSUE
INFORMATION

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FOR: The Commissioners
FROM: William D. Travers
Executive Director for Operations
SUBJECT: STATUS OF DECOMMISSIONING PROGRAM

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 - 1. Summary of Decommissioning Program
 - 2. Decommissioning Activities
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PURPOSE:

To provide the Commission with a comprehensive overview of decommissioning activities, including the decommissioning of Site Decommissioning Management Plan (SDMP) sites and other complex decommissioning sites, and commercial reactor decommissioning, as requested in the June 23, 1999, Staff Requirements Memorandum (SRM). The status of progress made on the removal of contaminated sites from the SDMP list will be presented as requested in the August 26, 1999, SRM. In addition, the staff will summarize its efforts to rebaseline the decommissioning program and present current schedules for the cleanup of all decommissioning sites.

SUMMARY:

This paper subsumes the annual report to the Commission on SDMP sites and provides a comprehensive overview of the decommissioning program. Consistent with Commission direction, it is the first time that the staff has provided a combined overview of the decommissioning activities within the Office of Nuclear Material Safety and Safeguards (NMSS) and the Office of Nuclear Reactor Regulation (NRR).

BACKGROUND:

The NMSS staff provided a report on the status of the decommissioning program and progress on the remediation of the SDMP sites in [SECY-99-035](#), "Status of Decommissioning Program and Site Decommissioning Management Plan Sites," dated February 1, 1999. In addition, NMSS staff briefed the Commission on implementation of the License Termination Rule (LTR) and the Program on Complex Decommissioning Cases on July 29, 1999. Further, the NRR staff briefed the Commission on March 17, 1999, regarding commercial reactor decommissioning regulatory issues.

The Commission issued SRM ([M990317C](#)) dated June 23, 1999, requesting that the staff: (1) consider the viability of an integrated, risk-informed reactor decommissioning rule versus individual rulemakings, to address insurance, emergency preparedness, safeguards, backfit, fitness-for-duty, and staffing. If viable, the staff should outline its plans for pursuing a rule; and (2) provide a single coordinated annual report on all decommissioning activities. [SECY-99-168](#), dated June 30, 1999, recommended approval of an integrated rulemaking approach and outlined plans for such a rulemaking. Accordingly, the staff subsumed previous rulemaking activities in the areas of emergency planning, insurance, safeguards, operator staffing, and backfit into one integrated rulemaking.

The Commission issued SRM ([M990729B](#)) dated August 26, 1999, requesting that the staff provide: (1) the status of the remaining active SDMP sites, including plans and schedules for each site; and (2) a summary report on all sites currently in the SDMP. The status of all SDMP and other complex decommissioning sites is addressed in this paper. The Commission also requested that the staff provide a paper that describes and analyzes the issues that need to be considered before the Commission could propose legislation aimed at facilitating the cleanup of sites in non-Agreement States. This latter issue will be the subject of a separate Commission paper.

DISCUSSION:

1. Summary of Decommissioning Program

The function of the decommissioning program is to regulate the decontamination and decommissioning of material and fuel cycle facilities, power reactors, and non-power reactors, resulting in the ultimate goal of license termination. A broad spectrum

of activities associated with these program functions are discussed in [Attachment 1](#). Principal program areas focused on licensing casework and status of sites undergoing decommissioning are discussed below.

Approximately 300 materials licenses are terminated each year. Most of these license terminations are routine and the sites require little, if any, remediation to meet the U.S. Nuclear Regulatory Commission's (NRC's) unrestricted release criteria. The decommissioning program is responsible for setting policies, procedures, and criteria, for routine terminations, and for the termination of licenses that are not routine because the sites require more complex decommissioning activities. Currently, there are 19 nuclear power plants, 9 research reactors, and 29 materials facilities undergoing non-routine decommissioning. Details on these sites are presented in Section 2 below.

NMSS, NRR and the Office of Nuclear Regulatory Research (RES) have responsibility for decommissioning program activities. In general, NRR has oversight of the initial stages of power reactor decommissioning; NMSS regulates the decommissioning of nuclear material facilities and has oversight of power reactors once the spent fuel is no longer stored in the spent fuel pool; and RES provides technical contributions through the development of guidance and dose-modeling techniques. The staff has taken steps to ensure that integration of decommissioning activities within the Agency occurs. First, as noted in SECY-99-035, the Agency Operating Plan is being used to track and manage major decommissioning issues. In some cases, NMSS tracks RES decommissioning activities in the Agency Operating Plan. Second, the Decommissioning Management Board (hereafter the Board) meets bi-weekly to provide management input on decommissioning activities and issues. The Board, composed of managers from NMSS, RES, NRR, OGC, and the Regions, serves as an effective mechanism for integrating inter-Office and regional coordination of program activities and issue resolution.

2. Decommissioning Activities



a. SDMP and Other Complex Site Decommissioning

NMSS initially presented the SDMP to the Commission in SECY-90-121, dated March 29, 1990. The SDMP was created in response to SRMs dated August 22, 1989, and January 31, 1990, which directed the staff to develop a comprehensive strategy for achieving closure of decommissioning issues in a timely manner, and to develop a list of contaminated sites in order of cleanup priority, respectively. [Attachment 2](#) provides the criteria for placing a site on the SDMP.

The LTR (10 CFR Part 20, Subpart E) authorizes two different sets of cleanup criteria for SDMP sites--the SDMP Action Plan criteria, and dose-based criteria. Under the provisions of [10 CFR 20.1401](#) (b), any licensee that submitted its Decommissioning Plan (DP) before August 20, 1998, and received NRC approval of that DP before August 20, 1999, could use the SDMP Action Plan criteria for site remediation. In the [SRM on SECY-99-195](#), the Commission granted an extension of the DP approval deadline to August 20, 2000. All other sites must use the dose-based criteria of the LTR.

There are currently 26 SDMP sites and three additional complex decommissioning sites undergoing decommissioning (see [Attachment 3](#)). Twenty sites have been removed from the SDMP after successful remediation (see [Attachment 4](#)). In addition, 11 sites have been removed from the SDMP by transfer to an Agreement State or the U.S. Environmental Protection Agency (see [Attachment 5](#)). The NRC is currently committed to removing three sites from the SDMP in fiscal year 2000 (FY00) and FY01. The staff should be able to remove three sites from the SDMP in FY00. However, since the remaining SDMP sites are rather complex decommissioning cases and dose modeling required under the LTR places more demands on licensees, it is likely that fewer sites will be removed from the SDMP in FY01.

In addition to regulating the cleanup of SDMP and complex decommissioning sites, the decommissioning program is responsible for overseeing the cleanup of contaminated sites identified under the Oak Ridge National Laboratory (ORNL) Terminated License Review Project. As a result of the ORNL review, and subsequent follow-up by the Regions, a total of 38 formerly licensed sites were found to have residual contamination levels exceeding NRC's criteria for unrestricted release (see [Attachment 6](#)). Seventeen of these sites have been re-released after successful remediation, and 11 have been closed by transfer to Agreement States or a Federal entity. Ten sites remain open pending remediation. Two of the formerly licensed sites were added to the SDMP because these sites will require non-routine decommissioning activities. The remaining sites are considered to be non-complex and, therefore, do not warrant placement on the SDMP at this time. However, it is possible that these sites may be added to the SDMP if the staff's assessment of site conditions change. The staff continues to work toward review of all remaining ORNL identified sites, with each Region budgeted at 0.1 full-time equivalents (FTEs) per year for this purpose.

In September 1999, the Division of Waste Management (DWM) began rebaselining the materials decommissioning program to determine the current status of each SDMP and complex decommissioning sites, and to develop a comprehensive integrated plan for successfully bringing the sites to closure. To facilitate planning, site status summaries as of December 31, 1999, were developed for each SDMP and complex decommissioning site (see [Attachment 7](#) ). These summaries indicate the status of each site and identify the technical and regulatory issues impacting removal of the site from the SDMP or completion of decommissioning. For those licensees that have submitted a DP, the schedules are based on the staff's assessment of the complexity of the DP review. For those licensees that have not submitted a DP, the schedules are based on other information available to the staff and the decommissioning approach anticipated by the staff. The comprehensive plan for each site includes identification of all major milestones and management of the sites, using project management software. An example of a site Gantt chart is presented in [Attachment 8](#) .

As part of the rebaselining process, the staff is also implementing streamlining objectives such as: assuming a more proactive role in interacting with licensees undergoing decommissioning; implementing procedures to reduce the number of requests for

additional information; conducting in-process/side-by-side confirmatory surveys; and, relying more heavily on licensees quality assurance programs rather than conducting large scale confirmatory surveys. Further, the staff is incorporating strategies to achieve the performance goals identified as part of the Agency's strategic planning process and draft Strategic Plan for FY00-05. Examples of strategies being incorporated include: focusing on resolving key issues such as institutional control for restricted release, partial release, and rubbleization; conducting stakeholder workshops to seek licensee, industry, and public input; and, enhancing the decommissioning standard review plan.

A table summarizing the decommissioning schedule for all SDMP and complex decommissioning sites is provided in [Attachment 9](#). The schedules depicted may be influenced by the quality and timeliness of licensee submittals and modifications in the licensee's remediation schedule. However, the staff's streamlining efforts may mitigate these schedule impacts somewhat. From the table, the following conclusions can be drawn: (1) 6 of 29 SDMP and complex decommissioning sites have not yet submitted DPs (the last DP should be submitted in 2002); (2) 3 sites have submitted partial DPs; (3) the NRC has approved 10 of 23 DPs submitted to date [the last DP (Fansteel, Inc.) should be approved by 2009]; and (4) the last site (Fansteel) should be removed from the SDMP by 2020. Fansteel has an extremely protracted schedule because its current license allows continuation of reprocessing waste residue for 10-12 more years. Each site schedule was developed independently by the staff, without formal licensee input, using the standard assumptions presented in [Attachment 10](#) and the site-specific assumptions stated in the site summaries. Changing any of the site-specific or standard assumptions could have a significant impact on the site decommissioning schedules but this approach represents a reasonable model for planning.

The site decommissioning schedules presented in Attachment 9 are based on the assumption that the NRC will retain regulatory responsibility for SDMP and other complex decommissioning sites located in States likely to become Agreement States soon. The staff made this assumption because it represents a worse-case resource and planning requirement for the staff. This approach facilitates planning because it eliminates an unknown. However, it is possible that as many as 16 current SDMP sites may be transferred to Agreement States (Minnesota-1, Oklahoma-5, Pennsylvania-10) in or before 2002. Issues associated with transferring sites to Agreement States are discussed in SECY-97-188, SECY-98-011, and SECY-98-273.

b. Reactor Decommissioning

NMSS and NRR signed a Memorandum of Understanding (MOU) on March 10, 1995, which delineates the responsibilities for power reactor decommissioning between NRR and NMSS. In accordance with the MOU, NRR along with the appropriate Region, will be responsible for project management, and inspection oversight for a power reactor undergoing decommissioning until the spent fuel is permanently removed from the spent fuel pool. Once the spent fuel is permanently transferred from the spent fuel pool, the facility is transferred to NMSS and NMSS assumes responsibility for project management, and along with the appropriate Region, inspection oversight. However, a facility may submit a license termination plan (LTP) before the spent fuel is permanently transferred from the spent fuel pool. In this case, NMSS staff is responsible for reviewing the LTP, and preparing the safety evaluation report, the environmental assessment, and the license termination order or amendment. NMSS is also responsible for confirmatory surveys and license termination activities, including assurance that appropriate site release criteria have been met.

NRR currently has regulatory project management responsibility for 17 power reactors. Plant status summaries for reactors under NRR project management are provided in [Attachment 11](#). Regulatory project management responsibility for two reactors (Fermi 1 and Peach Bottom Unit 1) has been transferred from NRR to NMSS. Plant status summaries for Fermi 1 and Peach Bottom Unit 1 are provided in [Attachment 12](#). NMSS is currently reviewing the LTPs for Trojan, Maine Yankee, and Saxton, and expects to receive the LTP for Connecticut Yankee in 2000. The staff has developed a generic schedule for reviewing LTPs (see Attachment 13). Attachment 14 provides a schedule for reactor decommissioning activities.

3. Guidance and Rulemaking Activities

In an SRM dated July, 8, 1998, the Commission directed the staff to prepare various guidance documents in support of the "Final Rule on Radiological Criteria for License Termination." As a result, the staff is in the process of developing several guidance documents that will help licensees prepare decommissioning documents, and provide the staff with uniform criteria for reviewing licensee submittals. The staff conducted several workshops with stakeholders to obtain input on the development of the Standard Review Plan (SRP) for decommissioning.

A listing of the decommissioning guidance documents under development and a schedule for completion are presented in [Attachment 15](#). In addition to the Regulatory Guides and SRPs identified in [Attachment 15](#), the staff has also developed building surface concentration screening values and surface soil concentration values to support implementation of the LTR. These values were published in the Federal Register on November 18, 1998, and December 7, 1999, respectively. In addition, DWM provides support to ongoing rulemaking efforts regarding the control of solid materials.

SECY-99-168, dated June 30, 1999, recommended that risk posed by spent fuel pools at decommissioning reactors be assessed and the results of the risk assessments be used as a technical basis for developing an integrated approach to decommissioning reactor rulemaking in the areas of emergency planning, insurance, safeguards, operator staffing and backfit. The [SRM for SECY-99-168](#) was issued on December 21, 1999, and approved the staff's development of an integrated rulemaking plan for decommissioning regulations. A draft technical study on spent fuel pool risks at decommissioning reactors was issued for public comment on February 15, 2000. Based on the decommissioning risks and report recommendations, NRR staff is currently developing regulatory options and will propose a rulemaking plan as required by the SRM for Commission approval by June 30, 2000.

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 sent to the Commission in [SECY-00-0023](#), dated February 2, 2000.

RESOURCES:

The total decommissioning program staff budget for FY00, 01, and 02 is 85 FTEs, 87 FTEs, and 83 FTEs, respectively. These resource figures include licensing casework directly related to SDMP and other complex decommissioning sites, inspections, Region follow-up on formerly terminated license sites, project management and technical support for decommissioning power reactors, and development of rules and guidance. Resource breakdown for staff (in FTEs), and contractor support (in \$K), as reflected in the FY01 budget to Congress, by Office follows:

	FY2000		FY2001		FY2002	
	Staff (FTEs)	Contractor Support (\$K)	Staff (FTEs)	Contractor Support (\$K)	Staff (FTEs)	Contractor Support (\$K)
NMSS	31	2823	29	2895	26	3385
NRR	22	740	23	500	21	0
RES	10	2625	11	2357	11	2425
OGC	3		3		3	
Regions	19		21		22	
TOTAL	85	6188	87	5752	83	5810

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objections. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

/RA/

William D. Travers
Executive Director For Operations

CONTACT: John T. Buckley, NMSS
(301) 415-6607

- ATTACHMENTS:
1. ["Decommissioning Program Activities"](#)
 2. ["Criteria for Placing Site on the SDMP"](#)
 3. ["Current SDMP and Complex Decommissioning Sites"](#)
 4. ["Sites Removed from the SDMP after Successful Remediation"](#)
 5. ["Sites Removed from the SDMP by Transfer to Agreement States or EPA "](#)
 6. ["Contaminated Formerly Licensed Sites"](#)
 7. ["Site Status Summaries for SDMP and Complex Decommissioning Sites"](#) 
 8. [Example Site Gantt Chart](#) 
 9. ["Schedule for Termination of SDMP and Complex Decommissioning Sites"](#) 
 10. ["Assumptions Used to Develop SDMP and Complex Decommissioning Site Gantt Charts"](#)
 11. ["Status Summaries for Reactors Undergoing Decommissioning"](#) 
 12. ["Plant Status Summaries for Fermi Unit 1 and Peach Bottom Unit 1"](#)
 13. ["Generic LTP Review Schedule"](#) 
 14. ["Schedule for Reactor Decommissioning Activities"](#)
 15. ["Decommissioning Guidance Documents Under Development"](#)

ATTACHMENT 1

DECOMMISSIONING PROGRAM ACTIVITIES

- 1.0 DEVELOPMENT OF GUIDANCE AND REGULATIONS
- 2.0 REACTOR DECOMMISSIONING
- 3.0 MATERIALS AND FUEL CYCLE DECOMMISSIONING

	Region I	Region II	Region III	Region IV	Total
Number of loose material sites pending site review (non-Agreement State sites)	6	11	2	18	37
Number of sealed source sites pending review (non-Agreement State sites)	50	7	6	50	113
Total	56	18	8	68	

- 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.
- Staff reviews former 10 CFR Part 20.302 and 20.304 burials, and licensee requests for disposal under 10 CFR Part 20.2002.
- NRC's decommissioning responsibilities at the West Valley Demonstration Project (WVDP) and West Valley site are specified under the WVDP Act. Presently this includes: prescribing decontamination and decommissioning criteria; reviewing draft portions of the EIS for 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. 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 an EIS for decommissioning and closure of the site.
- 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 continue to implement 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.
- RES continues to provide data and models to NMSS to support assessments of public exposure to environmental releases of radioactive material from site decommissioning. RES will provide NMSS with: (1) data on radionuclide solubilities that will be used to assess releases from ore-processing slags; (2) 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; (3) guidance on characterization of decommissioning sites containing mineral slags from ore processing; (4) 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; (5) a technical basis to support selection of site-specific parameter values for estimating flux and transport in dose-assessment codes, (6) probabilistic version of RESRAD; and (7) a modification of the Sandia Environmental Decision Support System to allow multi-dimensional groundwater pathways.

4.0 ENVIRONMENTAL TASK FORCE⁽¹⁾

Environmental Task Force activities include: (1) Preparation and review of EIS'; and (2) review of EAs. Presently, it is estimated that the Environmental Task Force will be required to prepare EIS' for the following SDMP and complex decommissioning sites: (1) U.S. Department of Army - Jefferson Proving Ground; (2) Dow Chemical Company; (3) SCA Services; (4) Michigan Department of Natural Resources; (5) Mallinckrodt Chemical Inc.; (6) Shieldalloy Metallurgical Corp.; (7) Fansteel Inc.; (8) Kaiser Aluminum; (9) Sequoyah Fuels Corp.; (10) Babcock & Wilcox-Shallow Land Disposal Area; (11) Molycorp Inc. - Washington; and (12) Whittaker Corp. The Task Force will also prepare an EIS for the West Valley site. EAs must be prepared for all licensing actions, including approval of DPs for SDMP and complex decommissioning sites. The Environmental Task Force will review all EA.

CRITERIA FOR PLACING A SITE ON THE SDMP

For a site to be placed on the original Site Decommissioning Management Plan (SDMP) it had to meet one of the following five

criteria:

1. Problems with a viable responsible organization (e.g., inability to pay for, or unwillingness to perform, decommissioning);
2. Presence of large amounts of soil contamination or unused settling ponds or burial grounds that may be difficult to dispose of;
3. Long-term presence of contaminated, unused facility buildings;
4. License previously terminated; or
5. Contamination or potential contamination of the groundwater from onsite wastes.

In accordance with SECY-98-155, the following criteria will be used to add new sites to the SDMP list:

1. Restricted-use sites; or
2. Complex unrestricted-use sites (sites requiring detailed site-specific dose modeling, sites subject to heightened public, State, or Congressional interest; or sites with questionable financial viability).

To date, no new sites have been added to the SDMP using these criteria.

ATTACHMENT 3

CURRENT SDMP AND COMPLEX DECOMMISSIONING SITES

	Name	Location	Date Put On SDMP	Date DP Submitted	Date DP Approved	Cleanup Criteria	Projected Removal
1	Jefferson Proving Ground (Dept. Of Army)	Madison, IN	2/95	8/99	4/02*	LTR-RES	6/03
2	Watertown Mall	Watertown, MA	3/90	4/92	9/93	Action-UNRES	9/00
3	Watertown GSA	Watertown, MA	3/90	10/92	9/93	Action-UNRES	12/03
4	AAR Manufacturing, Inc.	Livonia, MI	8/94	9/99	12/00*	LTR-UNRES	11/02
5	Dow Chemical Co.	Bay City Midland, MI	3/92 3/92	10/95 10/95	7/97 7/97	RES Action-UNRES	2/02 6/00
6	Michigan Department of Natural Resources	Kawkawlin MI	3/90	8/01*	8/04* +	LTR-RES	8/05
7	SCA Services	Kawkawlin, MI	3/92	10/00*	9/03* +	LTR-RES	9/04
8	Minnesota Mining & Manufacturing (3M)	Pine County, MN	3/90	11/99	4/00*	LTR-UNRES	8/00
9	Lake City Army Ammunition Plant	Independence, MO	3/90	4/99	4/00*	Action-UNRES	4/02
10	**Mallinckrodt Chemical Inc.	St. Louis, MO	NA	(Phase1) 11/97 (Phase 2) 6/00	7/00* 3/03* +	LTR-RES	1/07
11	Heritage Minerals	Lakehurst, NJ	5/92	11/97	8/99	Action-UNRES	9/01
12	Shieldalloy Metallurgical Corp.	Newfield, NJ	3/90	1/02*	10/06* +	LTR-RES	9/10

13	Fansteel, Inc.	Muskogee, OK	3/90	8/99	1/09* +	LTR-RES	8/20
14	Kaiser Aluminum	Tulsa, OK	8/94	(Phase 1) 8/98 (Phase 2) 1/01*	2/00 9/03*	Action-UNRES LTR-RES	6/07
15	Kerr-McGee	Cimarron, OK	3/90	4/95	8/99	Action-UNRES	5/02
16	Kerr-McGee	Cushing, OK	3/90	4/94	8/99	Action-UNRES	12/03
17	Sequoyah Fuels Corp.	Gore, OK	6/93	3/99	8/04* +	LTR-RES	4/09
18	Babcock & Wilcox	Vandergrift, PA	10/93	1/96	10/98	Action-UNRES	12/02
19	Babcock & Wilcox (Shallow Land Disposal Area)	Vandergrift, PA	10/95	12/00*	9/05* +	LTR-RES	8/09
20	Cabot Corp.	Reading, PA	3/90	8/98	9/00*	LTR-UNRES	4/01
21	Cabot Corp.	Revere, PA	3/90	11/97	1/01* +	LTR-UNRES	7/01
22	**Kiski Valley Water Pollution Control Auth.	Vandergrift, PA	NA	1/01*	11/02*	LTR-UNRES	5/05
23	Molycorp, Inc.	Wash., PA (partial) (Disposal cell)	9/93	6/99 12/00*	7/00* 5/05*	Action-UNRES LTR-RES	2/08
24	Molycorp, Inc.	York, PA	3/90	8/95	5/00*	Action-UNRES	12/00
25	Permagrain Products	Karthus, PA	3/90	4/98	7/98	Action-UNRES	7/02
26	Safety Light Corp.	Bloomsburg, PA	3/90	11/98	9/99	LTR-UNRES	12/04
27	Westinghouse Electric	Waltz Mill, PA	3/90	4/97	1/00*	LTR-UNRES	5/01
28	Whittaker Corp.	Greenville, PA	3/90	12/00*	12/03*	LTR-RES	8/09
29	**Union Carbide	Lawrenceberg, TN (Buildings) (Soil)	NA	8/98	6/00* 12/00*	Action-UNRES LTR-UNRES	12/03

* - Estimated Date

** - Complex Decommissioning Site (Non-SDMP)

+ - Timeline for approving DP is protracted due to (1) satisfying NEPA requirements, (2) conduct of public hearing, (3) Multi-phase DP submittals, or (4) combination of all the above

Action - SDMP Action Plan Criteria

LTR - License Termination Rule Criteria

RES - Restricted Use

UNRES - Unrestricted Use

NOTE: NFS is a complex decommissioning site not listed above because; (1) it is an operating licensee undergoing partial decommissioning, (2) project managed by the Division of Fuel Cycle Safety and Safeguards.

ATTACHMENT 4

SITES REMOVED FROM THE SDMP AFTER SUCCESSFUL REMEDIATION

	Name	Location	Date On SDMP	Date of Lic. Term.	Date Off SDMP	Current Use
1	Pratt & Whitney	Middletown, CT	6/92	6/71	10/95	Property and warehouses remain under Pratt & Whitney control
2	Texas Instruments, Inc.	Attleboro, MA	3/90	3/97	3/97	Managed under active MA license

3	Anne Arundel County / Curtis Bay	Anne Arundel County, MD	1/93	NA	7/97	Site is currently used for baseball fields and a prison
4	Frome Investments	Detroit, MI	8/94	NA	7/96	Currently operating as a warehouse
5	Allied Signal Aerospace	Teterboro, NJ	3/90	1975	2/92	Aerospace operation still active under new owner (Honeywell), property under owner control.
6	RTI Inc.	Rockaway, NJ	5/92	2/97	1/97	Property attached to facility owned and operated by Sterigenics, Intl, NRC License No. 29-30308-01.
7	Chevron Corp.	Pawling, NY	4/92	1975	6/94	Recreation area controlled by the Department of Interior
8	Alcoa	Cleveland, OH	3/90	2/61	4/96	ALCOA's Cleveland works remains a large, multiple-function aluminum refining, casting and refinishing facility
9	Chemetron Corp. (Bert Ave)	Cleveland, OH	3/90	7/99	7/99	This ravine-like, former uncontrolled landfill is now an engineered disposal cell with a thick soil cover, topped by a level, grassy field with unrestricted use
10	Chemetron Corp. (Harvard Ave)	Cleveland, OH	3/90	7/99	7/99	This site is now owned by McGean-Rohco, Inc. There is a closed engineered disposal cell at the west end of the property(where the main processing building stood) and the buildings remaining on the site are being used for industrial chemical production and processing.
11	Clevite Corp.	Cleveland, OH	8/94	NA	9/98	Building used for multiple small businesses and light manufacturing
12	Elkem Metals Inc.	Marietta, OH	1/95	1985	9/99	This site is a manufacturer of manganese products for the steel industry, with several onsite storage facilities.
13	Old Vic	Cleveland, OH	3/92	7/93	12/93	This site is now the location of an ongoing warehousing operation.
14	Babcox & Wilcox	Apollo, PA	9/93	4/97	1/97	Fenced field
15	Budd Co.	Philadelphia, PA	3/90	4/93	4/93	Property secure; under owner control
16	Cabot Corp.	Boyerton, PA	3/90	Active	9/98	Active license
17	Pesses Co. (METCOA)	Pulaski, PA	3/90	7/86	9/99	Abandoned buildings and property controlled inside security fence
18	Schott Glass Technologies	Durea, PA	3/90	4/92	9/98	Security fence maintained around owner controlled area
19	UNC Recovery Systems	Wood River Junction, RI	3/90	9/95	10/95	Property remains under UNC ownership, CERLCA issues being addressed
20	Amax Inc.	Washington, WV	3/90	6/94	6/94	Department of Energy site

SITES REMOVED FROM THE SDMP BY TRANSFER TO AGREEMENT STATES OR EPA

Name & Location	Date On SDMP	Date Transferred	Cleanup Criteria	Status

1	Kerr-McGee (West Chicago) Chicago, IL	3/90	11/90	Surface- 20 pCi/g U _{total} Subsurface-50 pCi/g U _{total}	Active decommissioning, estimated completion date-2004. No unforeseen factors delaying decommissioning.
2	Englehard Corp. Plainville, MA	1/92	3/97	Buildings - SDMP Soils - To be determined	Analyzing chemical contamination, not actively decommissioning. No unforeseen factors delaying decommissioning. Estimated closure date - 2003.
3	Nuclear Metals, Inc. Concord, MA	6/93	3/97	SDMP - but licensee wants to revise criteria	Current Licensee, active decommissioning. No unforeseen factors delaying decommissioning. No license termination planned.
4	Wyman Gordon N. Grafton, MA	4/91	3/97	To Be Determined	Groundwater monitoring, no plans to decommission. No unforeseen factors delaying decommissioning. No estimated site closure date.
5	West Lake Landfill (to EPA) Bridgeton, MO	6/92	6/95	Site will utilize cap or cover rather than soil cleanup criteria. If soil remediation is required - 40 CFR 192.	EPA reviewing remediation plan. Remediation to start in 2001. No estimated date for completion. No unforeseen factors delaying decommissioning.
6	Advanced Medical Systems, Inc. Cleveland, OH	3/90	8/99	LTR	Site being relicensed. No decommissioning to date. No unforeseen factors delaying decommissioning. No estimated license termination date.
7	BP Chemicals America Lima, OH	4/92	8/99	SDMP	Active decommissioning. Estimated license termination date is 2001. No unforeseen factors delaying decommissioning.
8	Horizons, Inc. Cleveland, OH	8/94	8/99	SDMP	Non-licensee. Active decommissioning. Estimated clean-up completion date 2000. No unforeseen factors delaying decommissioning.
9	Northeast Ohio Reg. Sewer Dist. Cleveland, OH	4/92	8/99	SDMP	On hold - no activity. No estimated clean-up completion date. No unforeseen factors delaying decommissioning.
10	RMI Titanium Co. Ashtabula, OH	8/91	8/99	SDMP	Active decommissioning. No unforeseen factors delaying decommissioning. Estimated termination date - 2005+
11	Shieldalloy Metallurgical Corp. Cambridge, OH	3/90	8/99	LTR	Active decommissioning. Estimated termination date - 2002+ if terminated at all. Identification of additional off-site residential contamination delaying decommissioning.

LTR - License Termination Rule Criteria
SDMP - SDMP Action Plan Criteria

revised - ATTACHMENT 6

CONTAMINATED FORMERLY LICENSED SITES

	Name	Location	Date of Lic. Term.	Status
1	U.S. Army Chemical Corp.	Fort McClellan,	1965	In process of decommissioning

		AL		
2	Reynolds Metals	Bauxite, AR	1957	Transferred to Arkansas (AR completed remediation)
3	Aerojet General Co.	San Ramon, CA	1970	Transferred to California
4	Isotope Specialties	Burbank, CA	1959	Transferred to California
5	Isotope Specialties	Burbank, CA	1959	Transferred to California
6	Verdi Mill	Mohave, CA	1958	Transferred to California
7	United Nuclear	New Haven, CT	1974	In process of decommissioning
8	U.S. Naval Research Lab.	Washington, DC	1987	Closed via letter from Navy
9	Norton	Worcester, MA	1968	Closed- successfully remediated
10	AAR Manufacturing, Inc.	Livonia, MI	1970	In process of decommissioning
11	American Metal Products	Ann Arbor, MI	1964	Closed- successfully remediated
12	Frome Investment Co.	Detroit, MI	1970	Closed- successfully remediated
13	General Electric	Warren, MI	1970	Closed- successfully remediated
14	Tenneco Chemicals	Fords, NJ	1973	Closed- successfully remediated
15	Navy	St. Albans, NY	1973	Closed-new license issued to Veterans Affairs
16	Cleveland Pneumatic Tool Co.	Cleveland, OH	1972	Closed- successfully remediated
17	Clevite	Cleveland, OH	1962	Closed-successfully Remediated
18	Horizons, Inc.	Cleveland, OH	1959	Transferred to Ohio
19	National Carbon Co. (Union Carbide)	Fostoria, OH	1964	Closed- successfully remediated
20	Standard Oil Co. (BP America)	Cleveland, OH	1973	Closed- successfully remediated
21	Thompson Products	Cleveland, OH	1963	Closed- successfully remediated
22	Union Carbide	Parma, OH	1972	Closed- successfully remediated
23	Kaiser Aluminum	Tulsa, OK	1971	In process of decommissioning
24	Atlantic Metals	Philadelphia, PA	1971	Closed - successfully remediated
25	International Chemical and Nuclear	West Mifflin, PA	1969	Closed - successfully remediated
26	Nuclear Laundry Rental Services	Jeanette, PA	1973	Closed - successfully remediated
27	Superior Steel	Pittsburgh, PA	1958	Review pending
28	Westinghouse Electric	Blairsville, PA	1961	In process of decommissioning
29	Union Carbide	Lawrenceburg, TN	1974	In process of decommissioning
30	American Smelting & Refining	Houston, TX	1971	Transferred to Texas
31	Dow Chemical	Freeport, TX	1964	Transferred to Texas
32	LTV Corporation	Dallas, TX	1964	Transferred to Texas
33	Marquardt Corp.	Ogden, UT	1971	Transferred to Utah
34	Marquardt Corp.	Hill AFB, UT	1972	Transferred to U.S. Air Force Radioisotope Committee

35	Atlantic Research Corp.	Alexandria, VA	1979	Under Regional review
36	Fostoria Glass	Moundsville, WV	1969	Closed- dose assessment indicated facility below 25mrem/yr
37	Homer Laughlin	Newell, WV	1972	Under Regional review
38	International Mining Co.	Greenville, WY	1961	Under Regional review

In addition, Region 1 has identified 92 sites with minor amounts of contamination and therefore not included on this list. Of these sites, 82 have been remediated and closed, four have been transferred to Agreement States for closure, and six are pending closure.

ATTACHMENT 10

ASSUMPTIONS USED TO DEVELOP SDMP AND COMPLEX DECOMMISSIONING SITE GANTT CHARTS

- **GENERIC ASSUMPTIONS:**
- **SPECIFIC ASSUMPTIONS:**
 - A. Sites Requesting License Termination under Unrestricted Use
 - B. Sites Requesting License Termination under Restricted Use

GENERIC ASSUMPTIONS:

- Staff will meet with licensees before the submission of the Decommissioning Plan (DP), to ensure that the licensee understands the type and quality of information needed in a DP.
- No major policy decisions will be needed to complete the decommissioning.
- The budget will provide adequate resources [FTEs and contractor (\$)] to support decommissioning activity schedules.
- The decommissioning Standard Review Plan (SRP) will be completed and will provide sufficient guidance to evaluate the DP.
- If necessary, staff will be adequately trained in the use of the SRP.
- All requests for additional information (RAIs) will be developed using the Division of Waste Management's "streamlined approach to licensing actions," and only one RAI will be generated per licensing action or licensee submission [DP, Final Status Survey Report (FSSR), etc].
- Technical Evaluation Reports will be developed to serve as the basis for all RAIs.
- It will not be necessary for licensees to collect significant additional information to respond to an RAI (i.e., large numbers of additional samples).
- Licensees will be available to meet with the NRC staff in a timely fashion, to ensure that the planned schedule is met.
- Staff will use a multiplication factor of 2.0 to convert level of effort (i.e., actual task time) to "calendar" time in developing Gantt charts (basis: experience and budget load factor).
- DPs will be approved as a license amendment.
- All sites requesting license termination with restrictions on future site use will require the development of an environmental impact statement (EIS), and approval of the DP will include a public hearing.
- All sites requesting license termination without restrictions on future use will only require the development of an environmental assessment/finding of no significant impact, and approval of the DP will not include a public hearing.
- All licensees have sufficient financial assurance to cover the cost of decommissioning.

SPECIFIC ASSUMPTIONS:

A. Sites Requesting License Termination under Unrestricted Use

Acceptance Reviews:

- DP will be complete when submitted and meet acceptance criteria.
- Licensing Assistant's (LA's) concurrence will be no more than 3 days.
- Staff will use a standardized "acceptance" letter [see Office of Nuclear Material Safety and Safeguards (NMSS) Decommissioning Handbook, Appendix G].
- The Office of the General Counsel (OGC) will not need to concur on acceptance review letters.
- Section Leader/Branch Chief (SL/BC) concurrence will be no more than 5 days.
- Staff will use acceptance review checklists to perform acceptance reviews.

"Notice of Intent" (NOI) Federal Register Notices (FRN's):

- Staff will always prepare an NOI/FRN when a DP is received.
- Staff will use a standard FRN to announce its intent to amend the license to incorporate the DP.
- LA concurrence will be no more than 3 days.
- SL/BC concurrence will be no more than 5 days.
- OGC review not needed for NOI FRN.
- There will be FRNs will be published within 7 days of being sent to the Publications Branch.

Develop DP Review Plan:

- SL review/approval only.

DP Evaluation:

- No unresolvable or policy-challenging issues will be raised as a result of the review of the DP.

Final Radiological Status Surveys:

- In general, confirmatory surveys will not be conducted at the end of licensee remediation activities. Instead, the Regions will perform in-process, side-by-side confirmatory surveys and rely on the licensee's quality assurance (QA) program.
- No additional cleanup will be required and no significant additional information will need to be collected to support the FSSR.

Removal of site from the Site Decommissioning Management Plan (SDMP):

- The Commission will approve the staff's recommendation to remove the site from the SDMP.
- States, U.S. Environmental Protection Agency (EPA), or others will not challenge the staff's decision to remove the site from the SDMP and terminate the license.

B. Sites Requesting License Termination under Restricted Use

Acceptance Reviews:

- DP will be complete when submitted and will meet acceptance criteria.
- LA concurrence will be no more than 3 days.
- Staff will use a standardized "acceptance" letter (see NMSS Decommissioning Handbook, Appendix G).
- OGC will not need to concur on acceptance review letters.
- SL/BC concurrence will be no more than 5 days.
- Staff will use acceptance review checklists to perform acceptance reviews.

"Notice of Intent" Federal Register Notices:

- Staff will always prepare an NOI/FRN when a DP is received.

- Staff will use a standard FRN to announce its intent to amend the license to incorporate the DP.
- LA concurrence will be no more than 3 days.
- SL/BC concurrence will be no more than 5 days.
- OGC review will not be needed for NOI FRN.
- FRNs will be published within 7 days of being sent to the Publications Branch.

10 CFR 20.1405 Letters:

- Staff will use standard 10 CFR 20.1405 letter to solicit input from interested parties.
- LA concurrence will be no more than 3 days.
- SL/BC concurrence will be no more than 5 days.
- OGC will not need to review 10 CFR 20.1405 letter.

Develop DP Review Plan:

- SL review/approval only.

DP Evaluation (including EIS development):

- One scoping meeting will be held to support the development of the EIS.
- EIS team will be the lead for developing the EIS and will be supported by Decommissioning Branch (DCB) staff.
- EIS team will prepare FRN - "Intent to Develop EIS."
- Staff will prepare the Safety Evaluation Report during the 90-day draft EIS (DEIS) comment period.
- No unresolvable or policy-challenging issues will be raised as a result of the review of the DEIS.
- All comments on the DEIS will be submitted within the prescribed comment period.
- The Commission will approve/concur on the staff's Record of Decision.
- The DP will be approved after the public hearing.

Final Radiological Status Surveys:

- In general, neither the Regions nor ORISE will conduct confirmatory surveys at the end of licensee remediation activities. Instead, the Regions will perform in-process, side-by-side confirmatory surveys and rely on the licensee's QA program.
- No additional cleanup will be required and no significant additional information will need to be collected to support the FSSR.

Removal of site from the SDMP:

- The Commission will approve the staff's recommendation to remove the site from the SDMP.
- States, EPA, or others will not challenge the staff's decision to remove the site from the SDMP and terminate the license.

ATTACHMENT 12

**PLANT STATUS SUMMARIES
FOR
FERMI UNIT 1 AND PEACH BOTTOM UNIT 1**

FERMI - UNIT 1

1.0 SITE IDENTIFICATION

Location: Monroe, Michigan
License No.: 50-16
Docket No.: DPR-9
Licensing Status: Active/Decommissioning
Project Manager: S. Brown

2.0 SITE STATUS SUMMARY

Licensee's initial stage of decommissioning complete; bulk sodium has been removed from the site. Facility is in a SAFSTOR condition. Spent fuel was removed from the site. The licensee is currently performing occupational safety enhancement activities, concentrating in non-radioactive areas, such as asbestos removal. A contractor was selected in January 1999 to conduct trace sodium cleanup, starting in about October/November 1999. The facility is expected to be dismantled under the provisions of 10 CFR 50.59. PSDAR public meeting was held on April 22, 1998. Current decommissioning cost estimate is \$28-31 million (1998 dollars). Current amount in trust fund is \$32 million.

Involved Parties:

Lynn Goodman
Detroit Edison Company

3.0 MAJOR TECHNICAL AND REGULATORY ISSUES

None

4.0 ASSUMPTIONS

The licensee will maintain its facility in SAFSTOR until 2020 and submits its license termination plan (LTP) in 2018.

5.0 ESTIMATED DATE FOR CLOSURE

3/25

PEACH BOTTOM - UNIT 1

1.0 SITE IDENTIFICATION

Location: Delta, Pennsylvania
License No.: 50-171
Docket No.: DPR-12
Licensing Status: Active/Decommissioning
Project Manager: S. Brown

2.0 SITE STATUS SUMMARY

Facility is in a SAFSTOR condition. Spent fuel has been removed from the site. PSDAR meeting was held on June 29, 1998. Final decommissioning is not expected until 2015, when Units 2 and 3 are scheduled to shut down. Current decommissioning cost estimate is \$48.9 million (1998 dollars). Utility has been collecting \$723,360/year (yr), but will increase the amount to \$1,343,808/yr through 2015, to accumulate sufficient funding. The current trust fund amount is \$11.3 million, as of December 31, 1998.

Involved Parties:

Jerry Phillabaum
PECO Energy Company

3.0 MAJOR TECHNICAL AND REGULATORY ISSUES

None

4.0 ASSUMPTIONS

The licensee will maintain its facility in SAFSTOR until 2010 and submits its license termination plan LTP in 2012.

5.0 ESTIMATED DATE FOR CLOSURE

12/15

ATTACHMENT 14

Schedule For Reactor Decommissioning Activities

	Power Plant	PSDAR** Submitted	LTP Submitted	LTP Approved	Transfer to NMSS
1	Big Rock Point	2/95	TBD	TBD	2001
2	Haddam Neck - CY	8/97	3/00*	11/00*	TBD
3	Dresden - Unit 1	6/98	TBD	TBD	TBD
4	Humboldt Bay	2/98	TBD	TBD	2005
5	Indian Point - Unit 1	1/96	TBD	TBD	TBD
6	Lacrosse	5/91	TBD	TBD	TBD
7	Maine Yankee	9/97	1/00	9/01*	2004
8	Millstone - Unit 1	6/99	TBD	TBD	TBD
9	Rancho Seco	12/94	TBD	TBD	2001
10	San Onofre - Unit 1	12/98	TBD	TBD	2005
11	Saxton	1996	2/00	10/00*	No Plans
12	Three Mile Island - Unit 2	2/79	TBD	TBD	TBD
13	Trojan	1/96	8/99	6/00*	2003
14	Vallecitos	7/66	TBD	TBD	No Plans
15	Yankee Rowe	11/94	9/01*	5/02*	TBD
16	Zion - Units 1 & 2	2/00*	TBD	TBD	2031

* estimated date

** PSDAR or Decommissioning Plan (DP) equivalent

NOTE: Licensees submitted DPs (or equivalent) prior to 1996, and PSDARs from 1996 on.

ATTACHMENT 15

DECOMMISSIONING GUIDANCE DOCUMENTS UNDER DEVELOPMENT

Guidance Document	Status
U.S. Nuclear Regulatory Commission (NRC) Regulatory Guide (DG-1067), "Decommissioning of Nuclear Power Reactors"	Draft guide issued for comment in June 1997; final guide scheduled for issuance by July 2000
NRC Regulatory Guide (DG-1071), "Standard Format and Content for Post-Shutdown Decommissioning Activities Report"	Draft guide issued for comment in December 1997; final guide scheduled for issuance by July 2000
NRC Regulatory Guide 1.179, "Standard Format and Content of License Termination Plans for Nuclear Power Reactors"	Final guide issued in January 1999
NRC Regulatory Guide (DG-1069), "Fire Protection Program for Permanently Shutdown and Decommissioning Nuclear Power Plants"	Draft guide issued in July 1998; final guide scheduled for issuance in November 2000
NRC Regulatory Guide (DG-4006), "Demonstrating Compliance with the Radiological Criteria for License Termination"	Draft guide issued in August 1998; DG-4006 will be incorporated into SRP for decommissioning, due in July 2000
NRC Regulatory Guide, "Cost Estimates Required by 10 CFR 50.82"	Draft guide scheduled for issuance in FY2000
NRC Standard Review Plan (SRP), "Evaluating Nuclear Power Reactor License Termination Plans"	Draft issued for comment in December 1998; final scheduled for issuance as NUREG-1700 in April 2000
NRC SRP, "Cost Estimates Required by 10 CFR 50.82"	Draft scheduled for issuance in FY2000
NRC SRP, "Review of Decommissioning Plans and Other Information Submitted to Support the Release of Nuclear Facilities" (commonly known as SRP for Decommissioning)	Drafts issued for comment in 1999/2000
NRC SRP, "Licensee Requests to Delay Initiation of Decommissioning Activities"	Draft issued for comment in August 1999; final scheduled for issuance as Information Notice in March 2000. Will be incorporated into Decommissioning Handbook.

Division of Waste Management (DWM), "Guidance Document for Streamlining the Decommissioning Program for Fuel Cycle and Material Licensees"	Issued January 1999
Environmental Standard Review Plan for the Office of Nuclear Material Safety and Safeguards	Draft scheduled for issuance in June 2000
NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual"	Published December 1997
NUREG-1505, "Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys"	Published June 1998
NUREG-1507, "Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions"	Published June 1998
Draft NUREG-1549, "Decision Methods for Dose Assessment to Comply with Radiological Criteria for License Termination"	Published July 1998
"Preliminary Guidelines for Evaluating Dose Assessments in Support of Decommissioning"	Published March 1999

1. On or about June 1, 2000, NMSS will implement a reorganization. The Environmental Task Force will be subsumed by the Environmental and Performance Assessment Branch, Environmental and LLW Projects Section.