Decommissioning Process

Related Information

- Performance Assessment
- Review of Performance Assessment for Decommissioning Plans

The decommissioning process begins when a licensee decides to permanently cease operations.

On this page:

Power Reactors

Several major steps make up the reactor decommissioning process: notification; submittal and review of the Post-Shutdown Decommissioning Activities Report (PSDAR); submittal and review of the license termination plan (LTP); implementation of the LTP; and completion of decommissioning.

Notification

When the licensee has decided to permanently cease operations, it is required to submit a written notification to NRC. In addition, the licensee is required to notify NRC in writing once fuel has been permanently removed from the reactor vessel.

Post-Shutdown Decommissioning Activities Report (PSDAR)

Before or within two years following cessation of operations, the licensee must submit a PSDAR. The PSDAR must include:

- A description and schedule for the planned decommissioning activities;
- An estimate of the expected costs; and
- A discussion that provides the means for concluding that the environmental impacts associated with the decommissioning activities will be bounded by appropriately issued environmental impact statements (EISs).

NRC will notice receipt of the PSDAR in the *Federal Register* and make the PSDAR available for public comment. In addition, NRC will hold a public meeting near the licensee's facility to discuss the PSDAR. NRC does not approve the PSDAR.

The licensee cannot perform any major decommissioning activities until 90 days after NRC has received the PSDAR. After this period, the licensee can perform decommissioning activities as long as the activities do not

- Foreclose release of the site for unrestricted use;
- Result in significant environmental impacts not previously reviewed; or
- Result in there no longer being reasonable assurance that adequate funds will be available for decommissioning.

In taking actions permitted under 10 CFR 50.59 following submittal of the PSDAR, the licensee must notify NRC in writing before performing any decommissioning activity inconsistent with, or making any significant schedule change from, those actions and schedules in the PSDAR.

License Termination Plan (LTP)

Each power reactor must submit an application for termination of its license. The application must be accompanied or preceded by an LTP submitted for NRC approval. The LTP must include

- A site characterization;
- Identification of remaining dismantlement activities;
- Plans for site remediation;
- Detailed plans for the final radiation survey;
- A description of the end use of the site, if restricted;
- An updated site-specific estimate of remaining decommissioning costs; and
- A supplement to the environmental report describing any new information or significant environmental change associated with the licensee's proposed termination activities.

In addition, the licensee must demonstrate that the applicable requirements of the License Termination Rule (LTR) will be met.

NRC will notice receipt of the LTP and make it available for public comment. In addition, NRC will hold a public meeting near licensee's facility to discuss the LTP and the LTP review process. The review process is similar to that for material and fuel cycle licensees. The technical review is guided by NUREG-1700, "Standard Review Plan for Evaluating Nuclear Power Reactor License Termination Plans." The LTP is approved by license amendment.

Similar to material and fuel cycle facilities, NRC staff will inspect the licensee during decommissioning operations to ensure compliance with the approved LTP. These inspections will normally include in-process and confirmatory radiological surveys.

Decommissioning must be completed within 60 years of permanent cessation of operations unless otherwise approved by the Commission.

Completion of Decommissioning

At the conclusion of decommissioning activities the licensee will submit a final radiation survey report. NRC will terminate the license if it determines that

- The remaining dismantlement has been performed in accordance with the approved LTP; and
- The final radiation survey and associated documentation demonstrates that the facility and site are suitable for release in accordance with the LTR.

TOP

Materials Sites

Complex Site Decommissioning Process

The materials decommissioning process is initiated by any one of the following conditions:

- The license expires;
- The licensee has decided to permanently cease principal activities at the entire site or in any separate building or outdoor area;
- No principal activities have been conducted for 24 months; or
- No principal activities have been conducted for 24 months in any separate building or outdoor area.

Several major steps make up the complex materials site decommissioning process: notification; submittal and review of the decommissioning plan (DP); implementation of the DP; and completion of decommissioning.

TOP

Notification

Within 60 days of the occurrence of any of the triggering conditions, the licensee is required to notify NRC of such occurrence and either begin decommissioning or, if required, submit a DP within 12 months of notification and begin decommissioning upon approval of the plan. Alternative schedules are authorized under the regulations, with NRC approval.

Decommissioning Plan

A DP must be submitted if required by license condition or if the procedures and activities necessary to decommission have not been previously approved by NRC and these procedures could increase potential health and safety impacts to workers or the public, such as in any of the following cases:

- Procedures would involve techniques not applied routinely during clean up or maintenance operations;

- Workers would be entering areas not normally occupied where surface contamination and radiation levels are significantly higher than routinely encountered during operation;
- Procedures could result in significantly greater airborne concentrations than are present during operations; or
- Procedures could result in significantly greater releases of radioactive material to the environment than those associated with operations.

The DP review process begins with an acceptance review. While primarily an administrative review, the acceptance review includes, but is not be limited to (a) completeness of the application; (b) legibility of drawings; (c) general adequacy of information; (d) justification for proprietary information; and (e) obvious technical inadequacies. The objective of the acceptance review is to verify that the application contains sufficient information before the staff begins an in-depth technical review. In addition, a limited technical review will be conducted. The purpose of the limited technical review is to identify significant technical deficiencies at an early stage, thereby precluding a detailed technical review of a technically incomplete submittal. At the conclusion of the acceptance review, the DP will either be accepted for detailed technical review or rejected and returned to the licensee with the deficiencies identified. For DPs proposing unrestricted release, a full technical review will be initiated after the successful conclusion of the acceptance review. The staff's review is guided by NUREG-1757, "Consolidated NMSS Decommissioning Guidance." The results of the staff's review will be documented in an Environmental Assessment (EA) and a Safety Evaluation Report (SER). The EA will be shared with the appropriate State, and State comments will be considered in finalizing the EA. The final EA must be summarized in the *Federal Register* in the form of a Finding of No Significant Impact (FONSI), provided an EIS is not necessary.

For reviews of DPs proposing restricted release, the review will be conducted in two phases. The first phase of the review will focus on the financial assurance (FA) and institutional control (IC) provisions of the DP. The review of the remainder of the DP will be initiated only after the staff is satisfied that the licensee's proposed IC and FA provisions will comply with the requirements of the License Termination Rule (LTR) (10 CFR Part 20, Subpart E). Toward that end, the staff will conduct a Review of Performance Assessment for Decommissioning Plans. The applicable portions of NUREG-1757, "Consolidated NMSS Decommissioning Guidance", will be used to guide this phase of the review. Phase II of the review will address all other sections of the technical review as guided by NUREG-1757 and will include the development of an EIS. Therefore, one of the first steps in Phase II is the publication of a Notice of Intent to develop an EIS. The basic EIS development steps are

- Notice of Intent;
- Public scoping meeting;
- Preparation and publication of the scoping report;
- Preparation and publication of the draft EIS;
- Public comment period on the draft EIS including a public meeting;
- Preparation and publication of the final EIS; and
- Preparation and publication of the Record of Decision (ROD).

In parallel with the development of the EIS, the staff will develop a draft and final Safety Evaluation Report (SER). The development of the draft SER will be coordinated with the development of the draft EIS so that any requests for additional information (RAIs) can be consolidated.

Regardless of whether an EA or EIS is developed, the staff structures its reviews so that the number of RAIs is minimized, without diminishing the technical quality or completeness of the licensee's ultimate submittal.

Following publication of the FONSI (for a DP involving an EA) or the ROD (for a DP involving an EIS), a license amendment will be issued approving the DP along with any additional license conditions found to be necessary as a result in the EA/EIS and/or the SER.

TOP

Implementation of the Decommissioning Plan

Following approval of the DP, the licensee must complete decommissioning in accordance with the approved DP within 24 months or apply for an alternate schedule. NRC staff will inspect the licensee during decommissioning operations to ensure compliance with the DP. These inspections will normally include in-process and confirmatory radiological surveys.

Completion of Decommissioning

As the final step in decommissioning, the licensee is required to

- Certify the disposition of all licensed material, including accumulated wastes, by submitting a completed NRC Form 314 or equivalent information; and
- Conduct a radiation survey of the premises where licensed activities were carried out (in accordance with the procedures in the approved DP, if a DP is required) and submit a report of the results of the survey, unless the licensee demonstrates in some other manner that the premises are suitable for release in accordance with the LTR;
- Properly dispose of licensed material;
- Make reasonable effort to eliminate residual radioactive contamination, if present;
- Ensure the site meets the approved DP; and
- Perform a radiation survey or demonstrate that the premises are suitable for release in accordance with the LTR.

Fuel Cycle Facility Decommissioning Process

In general, the decommissioning process for fuel cycle facilities and complex material sites is the same. Project management responsibility for fuel cycle facilities resides in the Division of Fuel Cycle Safety and Safeguards (FCSS) during licensee operations. Project management responsibility for decommissioning activities transfers to Division of Waste Management and Environmental Protection (DWMEP) for entire site decommissioning in support of license

termination. However, the transfer from FCSS to DWMEP only occurs after the critical mass of material no longer remains at the site.

TOP

Uranium Recovery Sites

Uranium Recovery Facility Decommissioning Process

Decommissioning requirements for uranium recovery facilities are contained in 10 CFR 40.42 and supplemented by the criteria in Appendix A to Part 40. Examples include the following:

- Criterion 5 provides ground-water protection requirements;
- Criterion 6 provides cover design requirements for uranium mill tailings impoundments and includes radiological criteria for decommissioning [Criterion 6(6)];
- Criterion 6A requires a Commission-approved reclamation plan;
- Criteria 9 and 10 provide financial assurance requirements;
- Criterion 11 specifies site ownership requirements; and
- Criterion 12 specifies long-term surveillance requirements.

Guidance concerning the license termination process is contained in Appendix E of NUREG-1620, Rev. 1, June 2003, "Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978." For the license termination of UMTRCA Title II sites under Agreement State jurisdiction, guidance is provided in Procedure SA-900 of the Office of State and Tribal Programs (STP).

TOP

Role of Nuclear Regulatory Commission

In accordance with Section 83c of the Atomic Energy Act of 1954, as amended (AEA), NRC determines whether the licensee has met all applicable standards and requirements or whether a licensee-proposed alternative meets the standards. This determination will involve NRC review of licensee submittals relative to the completion of decommissioning, reclamation, and, if necessary, groundwater cleanup.

In addition, the staff will review the site Long Term Surveillance Plan (LTSP) submitted by the custodial agency, for both NRC and Agreement State sites. On NRC acceptance of the LTSP, NRC terminates the specific license and places the long-term care and surveillance of the site by the custodial agency under the general license provided at 10 CFR 40.28.

A final NRC responsibility is the determination of the final amount of long-term site surveillance funding. Criterion 10 of Appendix A specifies a minimum charge of $250,000 (1978 dollars), revised to reflect inflation, which may be escalated on a site-specific basis because of surveillance and long-term monitoring controls beyond those specified in Criterion 10 of Appendix A.

Role of Uranium Mill Licensees

Before license termination, licensees are required by license conditions to complete site decontamination, decommissioning, and surface and groundwater remedial actions consistent with decommissioning, reclamation, and groundwater corrective action plans. Licensees must document the completion of these remedial actions in accordance with procedures developed by NRC. This information will include a report documenting completion Because the LTSP must reflect the remediated condition of the site, the licensee will work with the custodial agency in preparing the LTSP. Most likely, this coordination will involve supplying the custodial agency with appropriate documentation (e.g., as-built drawings) of the remedial actions taken and reaching agreements (formal or informal) with the custodial agency regarding the necessary surveillance control features of the site (e.g., boundary markers, fencing). It is the responsibility of the custodial agency to submit the LTSP to NRC for approval. However, the licensee may elect to help prepare the LTSP, to whatever degree is agreed upon between the licensee and the custodial agency.

Finally, the licensee provides the funding to cover long-term surveillance responsibilities in accordance with Criterion 10 of Appendix A. NRC will determine the final amount of this charge on the basis of final conditions at the site.

After termination of the existing license and transfer of the site and byproduct materials to the custodial agency, the remaining liability of the licensee extends solely to any fraudulent or negligent acts committed before the transfer to the custodial agency, as provided for in Section 83b(6) of the AEA.

Role of Custodial Agency

Section 83 of the AEA, as amended, states that before termination of the specific license, title to the site and byproduct materials should be transferred to (a) the DOE, (b) a Federal agency designated by the President, or (c) the State in which the site is located, at the option of the State. It is expected that the DOE will be the custodial agency for most, if not all, of the sites.

It is the responsibility of the custodial agency to submit the LTSP to NRC for review and acceptance. Provisions and activities identified in the final LTSP will form the bases of the custodial agency long-term surveillance at the site. The NRC general license in 10 CFR 40.28(a) becomes effective when the licensee's current specific license is terminated and the Commission accepts the LTSP. Custodial agencies are required, under 10 CFR 40.28(c)(1) and (c)(2), to implement the provisions of the LTSP.

TOP

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