

POLICY AND GUIDANCE DIRECTIVE
PG 97-XX

STANDARD REVIEW PLAN
FOR
EVALUATING PART 50
LICENSE TERMINATION PLANS
(10 CFR 50.82(a)(9))

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U.S. Nuclear Regulatory Commission
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A. INTRODUCTION

1. General

On July 29, 1996, the Commission published amendments to its regulations in 10 CFR Parts 2, 50, and 51 (61 FR 39278) (Ref 1), prescribing specific criteria for decommissioning nuclear power reactors, effective August 28, 1996. The amendments specify that a licensee would no longer be required to submit a decommissioning plan for approval before undertaking decommissioning activities. Under the new rules, a licensee would be able to begin decommissioning after certain actions occur. First, the licensee would need to make two certifications to the U.S. Nuclear Regulatory Commission: 1) that the reactor was permanently shut down; and 2) all spent fuel was removed from the reactor. After these certifications were submitted to NRC, the licensee would no longer be permitted to operate the facility, and a number of Part 50 technical requirement modifications would become effective to reflect the changed status of a reactor facility undergoing decommissioning. Next, the licensee would need to submit a Post-Shutdown Decommissioning Activities Report (PSDAR) to NRC which describes the activities it plans to undertake, along with a schedule for these activities, an estimate of the expected costs, and a discussion of whether the environmental impacts of the proposed actions are bounded by existing environmental impact statements. In addition, a mandatory hold for ninety (90) days was included in the proposed rule, to allow time for the staff to review the licensee's submittal and to hold a public information meeting in the site vicinity.

The licensees would only be permitted to undertake activities meeting the requirements of 10 CFR 50.59, assuming they have in place a Final Safety Analysis Report (FSAR). Additional criteria for using 10 CFR 50.59 during decommissioning were included in the rule (Refs. 1 and 2). These criteria prohibited activities that would foreclose release of the site for unrestricted use, cause any significant environmental impact not previously reviewed, violate terms of the existing license, or significantly increase decommissioning costs. It should be clearly indicated that decommissioning activities are orientated toward unrestricted use of the site. Any restricted use would be handled on a case-by-case basis. Current residual radioactivity criteria (dose-based) address limitations on restricted release of sites.

Furthermore, the rule also specifies that an application for license termination must be accompanied or preceded by a License Termination Plan (LTP), which is reviewed and approved by NRC. The process outlined in the new rule for the LTP approval processes is similar to the process occurring under the previous 10 CFR 50.82 rule when a decommissioning plan was submitted. A public meeting would be scheduled near the site and any hearing held in relation to this plan (LTP) would fall under Subpart L of 10 CFR Part 2 because, with fuel removed from the site, the reactor licensee would be more like a materials licensee where a less formal hearing process is involved.

The new 10 CFR 50.82 rule states that its provisions apply to all power reactor licensees that did not have an approved decommissioning plan on the effective date of the rule (August 28, 1996). The new rule also provides that power reactor licensees in SAFSTOR and with an approved decommissioning plan would need to submit a PSDAR to initiate dismantlement activities (enter the DECON phase). The existing decommissioning plan could satisfy the PSDAR requirements, with a little modification. However, the PSDAR needs to be based on material contained in an FSAR, which many old plants would not have.

Guidance on reviewing SARs/FSARs is contained in NUREG-0800, "Standard Review Plans," (Ref. 3).

Under 10 CFR 50.82(a)(4) a licensee, when permanently shutting down a power reactor facility (research reactor facilities are handled slightly differently via submittal of a decommissioning plan) must submit a PSDAR to NRC for review and public comment. The purpose of the PSDAR is to provide the public and NRC with a general overview of the licensee's proposed decommissioning activities, through license termination. Within the PSDAR, the licensee will stipulate the following:

- The licensee's proposed decommissioning activities and schedule, through license termination;
- The results of an assessment of whether the proposed decommissioning activities are bounded by existing analyses of environmental impacts; and
- A general decommissioning cost estimate for the proposed activities.

Ninety days after the PSDAR submittal to NRC and approximately 30 days after a public information meeting is held in the vicinity of the reactor site, the licensee can initiate major decommissioning activities (as defined in 10 CFR 50.2) under the provisions of 10 CFR 50.59, if NRC does not offer an objection. After dismantlement and 2 years before the planned initiation of license termination (as set forth in the PSDAR) the licensee must submit a license amendment request for license termination. This application will contain the licensee's LTP. The LTP can take the form of either of the following requests:

- Release of facility and site for unrestricted use; or
- Release of the facility and site under restricted use conditions (residual radioactivity above release guidelines).

NOTE

Restricted release of a site is not envisioned by the rule nor by the Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities (NUREG-0586) (Ref. 4) and would constitute an environmental impact not previously discussed in the licensee's environmental statement nor bounded by any previous generic environmental impact statements.

The LTP can also be an integral part of the licensee's PSDAR and be submitted at with it. In this case the requirements for approval would apply to the PSDAR even though, pursuant to 10 CFR 50.82(a)(4), the staff (the Office of Nuclear Reactor Regulation (NRR)) need only notice receipt of the PSDAR and hold public hearing on it. The staff is not required to approve the PSDAR, but could comment on it.

For the most part the LTP will be a final site characterization, remediation, and survey plan, and similar in context to the material contained in a typical decommissioning plan for material licensees. The LTP will be submitted as a supplement to the licensee's FSAR or equivalent document.

2. Power Reactor Decommissioning Memorandum of Understanding

The Office of Nuclear Material Safety and Safeguards (NMSS) responsibility for decommissioning power reactors will begin as soon as the reactor is transferred from NRR. The conditions for transferring responsibility for power reactors undergoing decommissioning from NRR to NMSS are defined in the March 15, 1996, Memorandum of Understanding (MOU) between NRR and NMSS. The NMSS/NRR MOU is found as an attachment to Manual Chapter 2560 (Ref. 5). NMSS's involvement in power reactor decommissioning is addressed in Manual Chapter 2560 (Ref. 5).

It is expected that power reactor LTPs undergoing active NRC review would only involve licensees seeking to release the site for unrestricted use.

3. Expected LTP Submittal Scenarios

This section provides an overview of what a licensee can be expected to submit, which depends on the state of decommissioning of the facility; the major attributes of a submittal; and general criteria for acceptability. This standard review plan contains references to NRR's draft Regulatory Guide, "Decommissioning of Nuclear Power Reactors," (TAC No. M92374) (Ref. 2) and detailed information concerning acceptability for each area addressed.

a. Former SAFSTOR Facility

A reactor facility coming out of SAFSTOR could possibly elect to enter dismantlement by submittal of a PSDAR with or without an accompanying LTP. If a PSDAR were submitted (generally describing the decommissioning process, schedule, and decommissioning funding, etc., as required by 10 CFR 50.82(a)(4), then the review of the licensee's submittal would follow the NRR standard review plan (SRP) for PSDARs (in development).

If the submittal were in the form of an LTP involving extensive dismantlement, the review would take on the form of a decommissioning plan review and a final survey review. In both cases the licensee's organization and radiation protection program need to be closely evaluated before start of dismantlement activities. The licensee would need to have in place an FSAR to conduct remaining operations under 10 CFR 50.59.

b. Transition from NRR Cognizance

When dismantlement is ongoing, the reviewer would rely on the reviews done in the PSDAR stage (which most likely would not involve an LTP) and, when the LTP is submitted, process it using this SRP.

c. Decommissioning Alternatives

This SRP is designed to be used for the review of License Termination Plans that basically involves the DECON method of decommissioning commercial reactor plant facilities. Alternatives such as SAFSTOR and ENTOMB would be addressed during the acceptance review of the PSDAR.

B. LICENSE TERMINATION PLAN - INITIAL SUBMITTAL ACCEPTANCE REVIEW

1. Initial Submittal Acceptance Review

This section provides an overview of what subject areas should be addressed in the LTP and the criteria for review acceptability.

NOTE

LTPs shall be processed through the Low-Level Waste and Decommissioning Projects Branch (LLDP) licensing assistant to ensure accurate tracking of any resultant review actions. The licensing assistant should ensure that the LTP has been docketed. (Ref. 5)

LLDP will review the licensee's LTP submittal to ensure that it addresses/discusses the following 10 CFR 50.82 required attributes:

- The LTP is a supplement to the FSAR or equivalent document;
- The LTP includes a detailed summary of the licensee's site characterization (facility's current radiological and non-radiological status);
- The LTP identifies the remaining dismantlement activities (decontamination tasks and schedule);
- The LTP includes plans for site remediation;
- The LTP includes detailed plans for the final radiation survey (including where site characterization data will be used in lieu of final-release-type surveys);
- The LTP describes the end use of the site, if restricted;
- The LTP includes an updated site-specific estimate of remaining decommissioning costs; and
- The LTP includes a supplement to the environmental report (10 CFR 51.53), describing any new information or significant environmental change associated with the licensee's proposed termination activities.

Acceptance Criteria

The licensee's LTP is submitted as a supplement to the FSAR or equivalent facility licensing document (Ref. 1).

The licensee's LTP submittal specifically addresses each of the above attributes in sufficient detail to allow evaluation of the viability of the licensee's LTP submittal (Ref. 2, Section C.10).

If the site is being considered for restricted release, then the submittal will be acceptable for review if a change to the licensee's environmental report accompanies the submittal.

NOTE

If, through communication with the regional inspection staff, it is determined that the licensee does not have in place an adequate decommissioning organization, including such support programs as radiological protection, training, quality assurance, radwaste management, etc., then the LTP should be rejected until such programs are adequately addressed in the LTP or the FSAR.

Staff evaluation of such an organization, if not accomplished via the routine inspection program (see Appendix A or B of Reference 5) for the facility, can be accomplished using the guidance contained in Section 2 of the NMSS SRP entitled, "Standard Review Plan for Evaluating Decommissioning Plans for Licensees under 10 CFR Parts 30, 40, and 70," and NUREG-0800 (Refs. 6 and 3).

2. Actions

- a) The LLDP Project Manager (PM) will inform the licensee in writing, within 30 days, of the acceptance of the submittal for review or omissions that need to be addressed.
- b) The LLDP PM will establish a schedule for the review of the LTP.
- c) The LLDP PM will coordinate any public meeting and 10 CFR 50.82 required hearings concerning the LTP.

C. LTP STANDARD REVIEW PLAN AND ACCEPTANCE CRITERIA

NOTE

Licensees may address locations of data in other documents such as FSARS, PSDARs, and environmental assessments (EAs).

1. General Information

The LTP must be submitted in the form of a supplement to the FSAR and accompanied by an application for license termination (Ref. 2, Section C.10).

The licensee's name and address, license number, and docket number should agree with most recent license. (Verify with licensing assistant.) The LTP table of contents should address each of the following 10 CFR 50.82(a)(9) criteria, with any supporting information required:

- Site radiological characterization,
- Remaining site dismantlement activities,
- Remaining site remediation,
- Plan for the final radiation/release survey,
- Description of the end use of the site if not for unrestricted release,
- Site-specific estimate of remaining decommissioning costs, and
- A supplement to the environmental report, pursuant to 10 CFR 51.53, describing any new information or environmental changes associated with the licensee's proposed termination activities.

2. Site Characterization

NOTE

In lieu of submitting the entire characterization survey package, the site characterization may be submitted in the form of a detailed summary that provides sufficient information (ranges of contamination levels, specific locations, area maps, etc.,) for the reviewer to assess the radiological and non-radiological conditions at the site without having to review extensive survey data tables and extract the desired information. Because of the normally large size of most site characterizations, the site characterization can be docketed separately by the licensee and be an integral part of the LTP.

The LTP should include an historical description--including dates and type of occurrences--of all locations in and outside of the facility where such events as neutron irradiation of components and structures, radiological spills, burials, or other radiological accidents/incidents that did or could have resulted in contamination of structures, equipment, laydown areas, or soils (subfloor and outside area) have occurred.

The LTP should include a list of all locations in and outside the facility where any work with radioactive materials was ever performed, what materials were involved, processes used in the work, and the typical radiation and contamination levels existing during this work. Maps and drawings of the facility showing all modifications made to the radiological work areas in and outside of the facility during the life of the facility should be included. The LTP shall provide a quantitative site characterization (of radiological and non-radiological contaminants).

The licensee should describe in a summary form the current radiological and non-radiological status of the site. The detail of the characterization should allow NRC to determine the extent and range of radiological contamination of structures, residues, and environmental media. The survey should be sufficiently detailed to provide data for planning further remediation/decommissioning activities, which include decontamination techniques, projected schedules, costs, waste volumes, and health and safety considerations. A typical characterization should follow the guidance in NRC's "Draft Branch Technical Position on Site Characterization for Decommissioning," dated November 1994 (Ref. 7).

The staff should review data related to the facility's existing radiological conditions, and the licensee's estimated radionuclide inventory. This characterization should include sufficient historical information on operations, full power hours, previous burials/spills of radioactive materials, and losses of radioactive materials, so that the reviewer can ascertain the acceptability of the full characterization. The radiological characterization should address any toxicological characterizations performed. This should also include a contamination survey of the major equipment, components, and structures discussed in the facility description that require further decommissioning.

Survey maps that delineate contamination zones should be used to report general facility contamination levels. Specific survey results, presented in tables or detailed maps, should be provided for significantly contaminated components and structures. Nonradiological contaminants should also be discussed as to how they affect radiologically contaminated areas and nonradiologically contaminated areas.

The description of historical incidents such as past spills or operational occurrences (as documented in accordance with 10 CFR 50.75(g)(1)) which could adversely affect the health and safety of workers and the public during license termination activities (remediation and decommissioning) is acceptable if the information is relevant to affecting unrestricted release of the facility and presented in manner equivalent to that "Draft of the Branch Technical Position on Site Characterization for Decommissioning" (Ref. 7). The current assessment of residual radioactive contamination is acceptable if it includes the loose and fixed (maximum and average) contamination levels and ambient exposure rate measurements of all relevant areas (structures, equipment, and soils) of the site using appropriate survey instruments and methodologies (Refs 8 through 12).

The units used to express radiation and radioactivity levels shall comply with 10 CFR 20.1004 and 20.1005 requirements.

3. Identification of Remaining Dismantlement Activities

The LTP should indicate the decommissioning objective and discuss how the proposed activities and tasks will achieve this objective and the reasoning used to select particular methods to be used in the dismantlement. The LTP should discuss tasks associated with the decontamination and dismantling methods, estimation of the quantity of radioactive material to be released to unrestricted areas, and the proposed control mechanisms, person-rem estimates, and radioactive waste characterization. Those areas and equipment that need further remediation need to be described in sufficient radiological detail to allow the reviewer to estimate the radiological conditions that will be encountered during remediation of equipment, components, and structures. Dismantlement techniques used should be thoroughly described. The details of this section should be of sufficient detail for NRC to identify any inspection or technical resources needed during the dismantlement activities.

The radiological status of each structure and component decontaminated or dismantled should be known. A remediation activity description that involves significant components, structures, contaminated soils, etc. that have not been

identified in the facility descriptions or that have not been radiologically characterized is unacceptable. However, a decommissioning activity that includes minor components or structures which have not been described is acceptable if the reviewer can reasonably estimate the component's or structure's relationship to other parts of the facility and contamination level from the general information provided in the LTP.

For major activities such as waste tank removal, reactor internals removal, spent fuel pool decontamination, etc., the relationship between activities and tasks should be shown. Any significantly hazardous dismantlement method (use of divers in dismantlement, major component removal, blasting of facilities to rubble, etc.) should be discussed. The LTP should discuss worker and public safety for hazardous dismantlement activities.

The staff should review all work required to be performed in radiation fields, and contaminated areas. The staff's review should include an evaluation of the licensee's estimated occupational doses (in person-rem) for each of the major tasks identified in the licensee's LTP. Particular attention should be paid to the following activities and tasks to be reviewed: decontamination methods both physical and chemical; systems and structure dismantlement methods (including systems that are contaminated and will be left in place); removal methods intended for the reactor vessel and its internals; and the removal methods anticipated for the sacrificial shield. If SAFSTOR is selected, activities and tasks used to prepare the facility and site for storage should be reviewed in detail.

The staff should review the licensee's data that define contamination levels of systems, structures, and components. The staff should review information related to radiation sources that form the basis for radiation protection measures. The staff should evaluate all radiation sources (R/hr) identified by the licensee. The staff should review spill data to determine which radionuclides may be present, and the potential concentration of individual radionuclides. The staff should also review the licensee's descriptions of high radiation levels in inaccessible areas of the facility, especially contamination present as a result of spills and leaks of radioactive materials.

Acceptance Criteria

The dismantlement and remediation tasks discussed in the LTP are considered acceptable if alternatives are considered and the rationale for making the selection are consistent with NUREG-0586, (Ref. 7). NUREG-0586 does not address restricted release of facilities.

The list of planned dismantlement activities is acceptable if it includes the decontamination and dismantling of the structures on site and removal of equipment relevant to license termination per §50.82(a)(10).

NOTE

Certain decommissioning activities as noted in the PSDAR submittal may be performed by the licensee without prior NRC approval, if they do not involve unreviewed safety questions, or changes in a facility's technical specifications. A listing of such activities extending beyond the PSDAR schedule should be included in the licensee's LTP, and the staff should review a summary of these activities to confirm that they may in fact be carried out under 10 CFR 50.59.

3.1 Schedules

For major dismantlement activities (as defined in 10 CFR 50.2), the relationship between those activities and supporting tasks should be shown. Schedules should clearly indicate the estimated time for completion of decommissioning.

The staff should review the licensee's schedule for completion of major activities and tasks associated with the selected decommissioning to determine if the 60-year time limit will be met. The schedules provided in the LTP should be reviewed to determine the completion dates for decommissioning activities and tasks and their effect on NRC resources.

Acceptance Criteria

The schedule is acceptable if it demonstrates that the decommissioning will be completed as soon as is reasonable and within the 60-year time limit of 10 CFR 50.82(a)(3).

If the licensee's decommissioning extends beyond 60 years, the staff should review all factors that have an impact on public health and safety, and the issues causing the decommissioning to be delayed beyond 60 years.

4. Remediation Plans

NOTE

During remediation the release criteria in effect will be either that of Regulatory Guide 1.86 (Ref. 14) or the proposed decommissioning criteria undergoing rulemaking (Ref. 15).

The LTP should address the radiological controls to be implemented for the control of non-radiological and radiological contamination associated with further decommissioning and remediation.

The LTP should discuss in detail how facility areas and site areas will be remediated to meet NRC release criteria. Discussions should focus on any unique techniques or procedures used to evaluate the effectiveness of remediation, including any computer modeling programs. If the end use of the site is not for unrestricted release the LTP should provide in detail dose modeling projections and institutional controls to be effected over the site. The LTP should clearly indicate the residual release criteria being applied to each area and justification for using a specific dose pathway analysis. The LTP should explicitly describe the radiation and contamination levels expected upon release of the facility for unrestricted use and provide a justification if they are different from existing or accepted guidance.

The LTP should address the waste handling procedures for minimizing the spread of contamination when transporting the waste from the point of generation to the area where it is to be processed, or packaged and shipped. A major area of review is the licensee's proposed methods for processing, packaging, and shipping radioactive waste. Radioactive waste can be characterized by volume, form, and classification. The isotopic composition, activity, and construction material of the waste should also be described.

NOTE

The material and geometry of the waste generated during decommissioning may be significantly different from that encountered during operation. The classification and packaging methods should be described in detail for each material and geometry. Examples of materials that may be encountered include concrete, aluminum, steel, and soil. The material may be in the form of a large slab, small pieces, dust, ventilation ductwork, piping, or dismantled large components in various configurations. The review of the proposed waste handling LTP can be best accomplished if the above characteristics are estimated for each decommissioning activity. This allows the reviewer to evaluate the volume and classification of waste generated by each activity, and to estimate the volume, type, and activity of waste that will be onsite at a given time. Knowledge of the type and volume of waste onsite at a given time is necessary to evaluate the licensee's waste handling, processing, and storage capabilities.

References 16-19, 15 contain certain information that may be useful in reviewing the licensee's radioactive waste handling and shipping procedures.

The staff should review the licensee's remediation plans to determine if methods used will achieve the licensee's end goal objectives for the site (release for unrestricted use is the expected goal) and that facility/site remediation can be accomplished safely.

The staff should review licensees submitted operational histories concerning previous operations and radiological contamination events. To the extent necessary, the staff should evaluate the licensee's inclusion of all information important to a safe and effective remediation of the site. Data such as activation analysis, spills, and facility design will be used to assess radioactive material inventories, and identify potential locations of contamination involving hard-to-detect radionuclides (e.g. Fe-55, C-14, H-3, etc.).

Acceptance Criteria

The methods for accomplishing the remediation of the facility/site are acceptable if alternate methods and experience at other similar facilities were considered (Refs. 13, 20, and 21).

The LTP demonstrates that the remediation will be performed in accordance with the regulations of 10 CFR Part 20, and the SAR or equivalent (Ref. 6).

Radiological survey equipment and methods are able to detect and accurately quantify hard-to-detect radionuclides. Survey methods should closely follow the guidance contained in NUREG/CR-6230 and 5343 (References 16 and 17).

Compliance with 10 CFR Part 61 will be demonstrated if the classification and form of the waste are determined according to the Branch Technical Positions for waste characterization and classification (Refs. 18 and 19).

The following criteria are used to determine the acceptability of the waste disposal aspects of the LTP:

- a) To be acceptable, the licensee during decommissioning is required to meet the requirements of Subpart K to 10 CFR Part 20 (10 CFR 20.2001 through 20.2007(Ref. 19), as they relate to radioactive waste generator requirements for meeting the Part 61 (Refs. 18 and 19) waste classification and waste form requirements for waste generated during decommissioning.
- b) Handling and disposal of solid radioactive waste generated during decommissioning, based on waste form and waste classification, are acceptable if criteria defined in 10 CFR Part 61 (Ref. 16) and on Branch Technical Positions on waste form and waste classification (Refs. 18 and 19) are met.

- c) Packaging and transportation of radioactive waste generated during decommissioning are acceptable if the requirements of 10 CFR Part 71 (Ref. 9) are met.

In addition to the requirements listed above for disposal of radioactive waste, applicable disposal site license conditions for acceptance of waste generated during decommissioning must be met.

5. Final Radiation Survey Plan

NOTE

The final radiation survey is one of the most important aspects of the license termination since it is the primary document supporting the decision to release a facility for unrestricted use. The guidance in draft NUREG/CR-5849 (Ref. 8) should be closely followed. Specific calculations of instrument sensitivity should be included along with calibration procedures. The statistical basis of the sampling regimen and the reported results should be described in depth and equivalent to that reference in NUREG-1505 (Ref 10). It is helpful if the LTP provides an outline of the proposed final survey report. The outline can be reviewed to ensure that all necessary information will be reported. Examples of survey data sheets to be used should also be provided.

When reviewing the final survey plan the objective of the survey should be considered. The objective may be to determine average and maximum contamination levels and exposure rates, total residual activity, or maximum dose to the public. If a dose calculation is necessary before releasing the facility for unrestricted use, the reviewer should ensure that all necessary data required to run the dose assessment code or to perform a dose calculation are provided in the final survey report.

The LTP should describe the final survey plan for demonstrating that the plant and site will meet criteria for release for unrestricted use. The final radiation survey plan should include:

- a) The proposed method for ensuring that all equipment, systems, structures, and the site are included in the survey (diagrams, plot plans, and facility layout drawings should be used to facilitate presentation) and that sufficient data are included for meaningful statistical survey;
- b) A description of methods to evaluate data on background radiation (variances in background radiation can be expected between structures constructed of different materials) (Ref. 9);

- c) The type, specifications, and operating conditions of instruments to be used (Ref. 12); and
- d) Methods to be used for reviewing, analyzing, and auditing data (Refs. 8, 10).

LLDP will review the licensee's final radiation survey plan. The staff will review information from the LTP that describes the scope of the survey, and the general procedures followed. The following data are evaluated:

- a) The licensee's method for ensuring that sufficient data for all contaminated structures, systems, components, equipment, and sites are included in the survey;
- b) The methods that the licensee used to obtain and analyze survey data;
- c) The licensee's method of auditing and verifying data; and
- d) Data that define background radiation levels.

Acceptance Criteria

The proposed final radiation survey plan will be acceptable if it closely follows the guidance contained in NUREG/CR-5849 (Ref. 8).

The licensee's terminal radiation survey and associated documentation that demonstrates that the facility and site are suitable for release for unrestricted use are acceptable, if they meet 10 CFR 50.82(a)(11)) (Ref. 1).

or

The proposed levels of residual contamination at which the site will be released for unrestricted use are acceptable if they are below those listed in NRC Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors," (Ref. 14). The external radiation exposure rate at 1 meter from facility surfaces, including soil, must not exceed 5 uR/h above background.

NOTE

The unrestricted release criteria are currently under revision and are expected to be similar to those contained in the Radiological Criteria for Decommissioning" (Proposed Rule), 59 FR 43200, August 22, 1994, when approved (Ref. 15).

6. Site End-Use Description (for Restricted Release)

The LTP should discuss in detail the controls to be put in place and maintenance of the controls over the lifetime of the facility, to protect health and safety of the public.

If a restricted release is desired by the licensee, then site-specific dose criteria will be developed for the site and will meet the restriction imposed by the final rule on decommissioning criteria (Ref. 15).

Acceptance Criteria

Restricted release of the site is acceptable if the licensee's dose calculations are within the parameters of the proposed release criteria of Reference 15 (to be developed later).

7. Update Site-Specific Decommissioning Cost

The license termination plan must:

- a) Provide an estimate of the decommissioning cost, and
- b) Compare the cost with the present funds set aside for decommissioning. If there is a deficit in present funding, the LTP must indicate the means for ensuring adequate funds to complete the decommissioning.

Regulatory Guide 1.159 (Ref. 24) provides detailed explanation of methods for estimating decommissioning costs, as well as accepted financial assurance mechanisms. If the LTP indicates that assurance of funding is to be provided by use of a surety method, insurance, or other guarantee, then the method must remain in effect until the Commission has terminated the license.

LLDP will review the licensee's updated site-specific estimate of remaining decommissioning costs. The review will consider the licensee's detailed cost estimates in relation to whether the licensee elects unrestricted or restricted release of the site.

LLDP's review of the decommissioning cost estimates will include an evaluation of the following elements as related to cost:

Cost Elements

- Cost-comparison final survey activities, including those reviewing contaminated system that will remain in place upon license termination
- Cost assumptions used
- Major decommissioning activities/tasks
- Inventories of equipment/structures
- Unit cost factors
- Calculated equipment/structural decontamination and removal cost
- Calculated waste disposal cost
- Calculated activity-dependent cost
- Calculated period-dependent cost
- Calculated total cost

LLDP will focus on detailed activity-by-activity cost estimates. For each measurable activity associated with the decommissioning, LLDP will review the cost of labor, materials, equipment, energy, and services.

LLDP will compare the available funds for the decommissioning with the calculated total cost from the licensee's detailed cost analysis.

Acceptance Criteria

The licensee's updated cost estimates required by 10 CFR 50.82(a)(9)(ii)(F) will be found acceptable, if the cost estimates for decommissioning are based on credible engineering assumptions, and the assumptions are related to all major decommissioning activities and tasks. Acceptable methods and guidelines for performing detailed decommissioning cost estimates are provided in Regulatory Guide 1.159 (Ref. 24).

8. Supplemental Environmental Report

The LTP will provide any new information or significant environmental change(s) associated with the licensee's proposed termination activities.

LLDP will review the licensee's supplement to the environmental report that applies to the LTP. Attention will be given in the review to the site location, climate, demography and socioeconomic data, land use, surface water, ground water, and biota. The staff will review the data only to the extent necessary to document any changes that may be applicable since the issuance of the PSDAR and the updated Environmental Report - Operating License stage.

D. EVALUATION FINDINGS

The licensee's termination plan demonstrates that the remainder of the decommissioning activities will be performed in accordance with the regulations in 10 CFR 50.82, will not be inimical to the common defense and security nor to the health and safety of the public, and will not have a significant effect on the quality of the environment.

This conclusion is based on the following :

- 1) The licensee has submitted the LTP as a supplement to the facilities FSAR or equivalent hazards analyses document per 10 CFR 50.82(a)(9)(i).
- 2) The licensee has met the objective of providing an adequate site characterization (radiological and non-radiological) as required by 10 CFR 50.82(a)(9)(ii)(A).
- 3) The licensee has identified the remaining dismantlement activities that are necessary to effect the decommissioning of the facility/site that will be performed under 10 CFR 50.59, as required by 10 CFR 50.82(a)(9)(ii)(B).
- 4) The licensee has adequately identified all site areas requiring remediation and has in place an organization to safely perform the remediations as required by 10 CFR 50.82(a)(9)(ii)(C) and Regulatory Guide 1.86 (Reference 14). The licensee has met the requirements of 10 CFR Parts 20, 61, and 71 and the applicable disposal site license conditions for processing, transport, and disposal of low-level radioactive waste.
- 5) The licensee has conformed to 10 CFR 50.82(a)(9)(ii)(D) in that the LTP for a final radiation survey plan provides assurance that residual radioactive contamination levels will meet the criteria for unrestricted use as provided in Reference XXX.
- 6) The decommissioning alternative provides for completion of decommissioning within 60 years, as required by 10 CFR 50.82(a)(3). If the decommissioning alternative results in delay of completion of decommissioning for greater than 60 years, the license has justified the delay in accordance with 10 CFR 50.82(a)(3).
- 7) The licensee has met the requirements of Part 50 with respect to providing detailed cost estimates, and plan for ensuring the availability of adequate funds for decommissioning.
- 8) The licensee has met the requirements of Part 51 by providing acceptable updates to the Environmental Report - Post Operating License Stage.

E. IMPLEMENTATION

This Standard Review Plan will be used to provide information to licensees regarding the NRC staff's Plans for evaluating conformance of LTP submittals--including submittals in acceptable alternative formats--with Commission regulations.

The provisions of this Standard Review Plan apply to submittals made after the date of issuance of this SRP.

F. REFERENCES

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3. U.S. Nuclear Regulatory Commission, NUREG-0800, "Standard Review Plans," Office of Nuclear Reactor Regulation, July 1981.
4. U.S. Nuclear Regulatory Commission, NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities," August 1988.
5. U.S. Nuclear Regulatory Commission NRC Inspection Manual Chapter 2560, "Reactor Facility Decommissioning Management and Inspection Program, Draft, August 28, 1996.
6. U.S. Nuclear Regulatory Commission, "NMSS Standard Review Plan for Evaluating Decommissioning Plans for Licensees under 10 CFR Parts 30, 40 & 70," August 5, 1991.
7. U.S. Nuclear Regulatory Commission, "Draft Branch Technical Position on Site Characterization for Decommissioning," (NMSS/DWM), November 1994.
8. U.S. Nuclear Regulatory Commission, NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination," Draft, June 1992.
9. U.S. Nuclear Regulatory Commission, NUREG-1501, "Background as a Residual Radioactivity Criterion for Decommissioning," Draft, August 1994.
10. U.S. Nuclear Regulatory Commission, NUREG-1505, "A Nonparametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys," Draft, August 1995.
11. U.S. Nuclear Regulatory Commission, NUREG-1506, "Measurement Methods for Radiological Surveys in Support of New Decommissioning Criteria," Draft, August 1995.

12. U.S. Nuclear Regulatory Commission, NUREG-1507, "Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions," Draft, August 1995.
13. NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning Nuclear Facilities," U.S. Nuclear Regulatory Commission, August 1988.
14. Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactor."
15. NUREG-1496, "Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for Decommissioning of NRC-Licensed Nuclear Facilities," August 1994.
16. U.S. Nuclear Regulatory Commission, NUREG/CR-6230, "Radioanalytical Technology for 10 CFR Part 61 and Other Selected Radionuclides," March 1996.
17. U.S. Nuclear Regulatory Commission, NUREG/CR-5343, "Radionuclide Characterization of Reactor Decommissioning Waste and Spent Fuel Assembly Hardware," January 1991.
18. U.S. Nuclear Regulatory Commission, NMSS Branch Technical Position, "Waste Form," Rev. 0, May 1983.
19. U.S. Nuclear Regulatory Commission, NMSS Branch Technical Position, "Radioactive Waste Classification," Rev. 0, 1983.
20. U.S. Nuclear Regulatory Commission, NUREG/CR-0130, "Technology, Safety, and Cost of Decommissioning a Reference Pressurized-Water Reactor Station," June 1978, Addendum 1, August 1979, Addendum 2, July 1983; Addendum 3, September 1984; and Addendum 4, July 1988.
21. U.S. Nuclear Regulatory Commission, NUREG/CR-0672, "Technology, Safety, and Cost of Decommissioning a Reference Boiling Water Reactor," July 1980; Addendum 1, July 1983; Addendum 2, September 1984; and Addendum 3, July 1988.
22. U.S. Nuclear Regulatory Commission, NRC Inspection Procedure 86740, "Inspection of Transportation Activities, October 30, 1992.
23. NMSS Handbook for Decommissioning Fuel Cycle and Materials Licensees, draft, February 23, 1996
24. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors."

MEMORANDUM TO: Charles W. Hehl, Director
 Division of Nuclear Materials Safety, R-I

Bruce A. Mallett, Director
 Division of Nuclear Materials Safety, R-II

Cynthia D. Pederson, Director
 Division of Nuclear Materials Safety, R-III

Ross A. Scarano, Director
 Division of Nuclear Materials Safety, R-IV

Thomas T. Martin, Director
 Division of Reactor Program Management, NRR

FROM: John T. Greeves, Director
 Division of Waste Management, NMSS

SUBJECT: REVIEW OF THE STANDARD REVIEW PLANS FOR EVALUATING
 PART 50 LICENSE TERMINATION PLANS (10 CFR PART 50.82(a)(9))

I have attached a copy of our draft review plan entitled "Standard Review Plan For Evaluating Part 50 License Termination Plans (10 CFR Part 50.82(a)(9))" for your review and comment. The staff has developed the license termination review plan to ensure that the license termination plan adequately addresses the requirements in 10 CFR 50.82(a)(9). I am requesting your comments be provided by April 30, 1997. Note that we are also developing a Regulatory Guide on the Standard Format and Content of a License Termination Plan. A draft is tentatively scheduled to be completed in December 1997.

Attachment: As stated
 Contact: Larry Pittiglio, LLDP/DWM
 (301) 415-6702

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Attachment: As stated
Contact: Larry Pittiglio, LLDP/DWM
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