

NRC INSPECTION MANUAL

DWM

MANUAL CHAPTER 2561

DECOMMISSIONING POWER REACTOR INSPECTION PROGRAM

2561-01 PURPOSE

To establish the inspection policy and guidance for decommissioning power reactors for the Offices of Nuclear Reactor Regulation (NRR) and Nuclear Material Safety and Safeguards (NMSS).

2561-02 OBJECTIVES

02.01 To obtain information through direct observation and verification of licensee activities to determine whether the power reactor is being decommissioned safely, that spent fuel is safely stored onsite or transferred to another licensed location, and that site operations and license termination activities are in conformance with applicable regulatory requirements, licensee commitments, and management controls.

02.02 To ensure that the licensee's systems and techniques for decommissioning and license termination activities are adequate and in accordance with regulatory requirements. These systems include, in part, management and organization effectiveness; self-assessment, auditing, and corrective actions; design control; maintenance and surveillance; radiation protection; radioactivity measurements; and, effluent controls.

02.03 To identify declining trends in performance and perform inspections to verify that the licensee has resolved the issue(s) before performance declines below an acceptable level.

02.04 To provide for effective allocation of resources for the inspection of Part 50 power reactors following permanent cessation of operation.

2561-03 APPLICABILITY

This program is to be implemented following the certification date for the removal of all nuclear fuel from the reactor vessel (10 CFR 50.82(a)(1)(ii)) and is to continue until license termination.

2561-04 DEFINITIONS

Permanent Cessation of Power Operations. The permanent cessation of power operations is a licensee determination certified to the NRC in writing in accordance with 50.82(a)(1)(i). Following this certification, the licensee would possess the power reactor structures, systems, and components, site, and related radioactive material, but be prohibited by regulation from operating the reactor.

Decommissioning. The process of removing a reactor facility safely from the operating mode to a permanent shutdown condition and reducing the residual radioactivity to a level that permits -- (1) release of the property for unrestricted use and termination of the license; or, (2) release of the property under restricted conditions and termination of the license.

| Post-Operation Transitional Phase. The interval between the final reactor shutdown and establishment of a safe stable permanently shut-down defueled condition based on the completion of regulatory and safety milestones (see NRR Office Instruction COM-101 and NMSS Policy and Procedures Letter P&PL 1-77). During this phase, the licensee would establish safe shutdown conditions and could conduct activities to dismantle and decontaminate structures, systems, and components or place them in a decommissioning configuration. Also, the licensee will be implementing policies, programs, and plans to reflect the permanently shut-down and defueled condition of the facility.

| Post-Shutdown Decommissioning Activities Report. A licensee's report required by 10 CFR 50.82(a)(4) that provides a description of planned decommissioning activities, a schedule for their accomplishment, an estimate of the decommissioning costs, and a discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning will be bounded by appropriate previously issued environmental impact statements.

Major Decommissioning Activity. For a nuclear power facility, any activity that results in permanent removal of major radioactive components, permanently modifies the structure of the containment (for PWRs, primary containment; for BWRs, the primary and secondary containments), or results in the dismantling of components or systems for shipment containing "greater than Class C" waste (10 CFR 61.55). The licensee is precluded by regulation from conducting major decommissioning activities until 90 days after the NRC has received the Post-Shutdown Decommissioning Activities Report (PSDAR) submittal and the 50.82(a)(1) certifications have been submitted.

Major Radioactive Component. For a nuclear power plant, this includes the reactor vessel and internals, steam generators, pressurizer, large bore reactor coolant system piping, and other large components that are radioactive to a comparable degree.

DECON. The decommissioning method of removing equipment, structures, and portions of a facility and site containing radioactive contaminants or decontaminating them to a level that permits release of the property and termination of the license.

SAFSTOR. The decommissioning method of placing and maintaining the nuclear facility in a condition that allows the facility to be safely stored and subsequently decontaminated utilizing the DECON method, to permit the release of the property and termination of the license.

ENTOMB. A decommissioning alternative in which radioactive contaminants are encased in a structurally long-lived material. The entombed structure is appropriately maintained and continued surveillance is performed until the radioactivity decays to a level permitting release of the property and license termination.

Licensing Basis. Is the set of NRC requirements applicable to a specific plant and a licensee's written commitments for ensuring compliance with and operation within applicable NRC requirements and the plant-specific design basis (including all modifications and additions to such commitments over the life of the license) that are docketed and in effect. The licensing basis includes the NRC regulations and the appendices thereto; orders; license conditions; exemptions; and technical specifications. It also includes the plant-specific design-basis information defined in 10 CFR 50.2 as documented in the most recent final safety analysis report as required by 10 CFR 50.71 and the licensee's commitments remaining in effect that were made in docketed licensing correspondence such as licensee responses to NRC bulletins, generic letters, and enforcement actions, as well as, licensee commitments documented in required certifications and submittals, NRC safety evaluations, and licensee event reports.

Technical Specifications (TS). An appendix to the facility license that contains safety requirements, bases, safety limits, limiting conditions for operation, and administrative requirements to provide assurance that decommissioning can be conducted safely and in accordance with regulatory requirements. Terminology such as "defueled TSs" or "decommissioning TSs" has been used to describe TSs that have been amended to reflect the permanent shutdown condition of the reactor.

Possession-Only License. A possession-only licensee (POL) was a name for the license retained by a Part 50 licensee that was amended to reflect the permanent shutdown condition of the facility and the licensee's continued possession of nuclear fuel.

License Termination Plan. A plan required by 10 CFR 50.82(a)(9) that includes, in part, 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 site decommissioning.

Independent Spent Fuel Storage Installation (ISFSI). A complex designed and constructed for the interim storage of spent nuclear fuel and other radioactive materials associated with spent fuel storage. An ISFSI may either have a general license (10 CFR 72, Subpart K) for a facility located at an operating Part 50 reactor licensee or a site-specific license (10 CFR 72, Subpart C).

Quarterly (Qtr). Performed four times each year so that the interval between inspections is no less than 2 months or no more than 4 months.

Semi-annual (SA). Performed two times each year so that the interval between inspections is no less than 4 months and no more than 8 months.

Annual (A). Performed every year so that the interval between inspections is no less than 9 months and no greater than 15 months.

When Required (WR). Performed when the activity or event occurs at the facility as specified in the guidance section of the specific inspection procedure.

2561-05 RESPONSIBILITIES AND AUTHORITIES

05.01 Director, Office of Nuclear Reactor Regulation and Director, Office of Nuclear Materials Safety and Safeguards. Provides overall direction for the decommissioning power reactor inspection program for assigned power reactor plants.

05.02 Chief, Decommissioning Branch. Coordinates, develops, and implements decommissioning power reactor inspection requirements and policies.

| 05.03 Chief, Inspection Program Branch. Provides overall agency lead for the Reactor Oversight Process and concurs in changes to IMC 2561 that impacts or potentially affects the inspection of commercial power reactors in the Post-Operation Transition Phase.

| 05.04 Regional Administrator. In concert with headquarters, directs the implementation of the inspection program for decommissioning power reactors. Ensures, within budget limitations, that the regional office staff includes adequate numbers of inspectors in various disciplines to carry out the inspection program as assigned and described in this chapter. Determines the need for the temporary assignment of an inspector at a facility that has permanently shutdown and the duration and scope of this inspection coverage. Applies inspection resources, as necessary, to deal with issues and problems that arise at specific facilities undergoing decommissioning.

2561-06 DECOMMISSIONING INSPECTION PROGRAM

06.01 Program Discussion

The decommissioning power reactor inspection program describes the inspection of decommissioning Part 50 power reactor licensees. This program should be implemented on or shortly after the licensee-assigned date for the permanent and safe removal of all fuel from the reactor vessel and is to continue during all phases of decommissioning.

| The decommissioning of power reactors may take a few years or up to 60 years depending on a number of considerations. Further, decommissioning activities may range from relative inactivity (e.g., SAFSTOR) to activities that have a greater potential to challenge public health and safety and the environment (e.g., DECON). Because of this wide range of decommissioning and safety considerations, this manual chapter promulgates inspection and inspection program requirements and guidance necessary to provide reasonable assurance that NRC regulatory oversight contributes to public health and safety. This inspection program focuses on ensuring that:

1. Licensee documents are adequately implemented, maintained, and reflect the status of decommissioning.
2. Licensee activities, organization, and controls are effective to provide reasonable assurance that decommissioning can be conducted safely and in accordance with regulatory requirements.
3. NRC staff project oversight and inspection resources are effective, consistent, and appropriately focused.
4. Licensee radiation and radioactivity measurement programs provide accurate quantification and classification of radioactivity.

These fundamental objectives are promoted by the inspection effort described and required by the decommissioning core inspections listed in Appendix A. This effort is divided into functional area assessments to inspect licensee performance, identify performance trends, preclude problems, identify weaknesses, and foster corrective actions to contribute to public health and safety and the protection of the environment. The inspection program also provides appropriate latitude for NRC management to administer, plan, and implement site-specific master inspection plans commensurate, in part, with licensee performance, site activities, and safety.

The decommissioning inspection program is comprised of two major program elements: core inspections and discretionary inspections (i.e., reactive and initiative inspections). The core inspection program element, detailed in Appendix A, is to be performed at all decommissioning power reactors. Deviations from the core program should be handled as discussed in Section 06.04, "Master Inspection Plans." Decommissioning core inspections include, but are not limited to: organization and management controls; quality assurance; spent fuel wet storage and handling, if necessary; maintenance and surveillance; radiation protection; security; and, safety evaluations. Other core procedures include those applicable to site and license termination activities and the transportation of irradiated fuel and other radioactive materials. The inspection procedures will be reviewed by headquarters and the regions and revised by headquarters, as necessary, to enhance the program for the early identification of decommissioning safety problems.

The direct inspection effort associated with the implementation of the core inspection procedures should, in part, be dependent on the decommissioning activities being planned or performed at the facility. For planning purposes, the range of decommissioning activities are grouped into six categories. These categories are defined as follows:

1. Post-Operation Transition Phase
2. Actively Decommissioning, Fuel in the Spent Fuel Pool
3. Actively Decommissioning, No Fuel in the Spent Fuel Pool
4. SAFSTOR, Fuel in the Spent Fuel Pool
5. SAFSTOR, No Fuel in the Spent Fuel Pool
6. Final Surveys Underway, No Fuel in the Spent Fuel Pool

It is expected that the category, and thus the appropriate direct inspection effort for a facility, will change over time, based on the progress of decommissioning at the facility (i.e.,

| an actively decommissioning facility would be expected to go from category 1 to 2 and
| eventually to 6 as decommissioning progresses).

Appendix B inspection procedures lists the discretionary inspections that could be performed (as determined by management) or used as guidance during the conduct of the core program. Appendix B procedures include generic safety reviews, team inspections, and functional area assessments that focus on radiation protection, radioactive material control, transportation, and other disciplines. These inspection procedures are referenced from Manual Chapters 2515, 2600, and 2800 to provide insight into the allocation of resources, completion of inspection procedures, and follow-up of open items. Discretionary inspections should augment the core inspection program and assess particular functional areas, safety concerns, or aspects of licensee performance.

In summary, the inspection program for power reactor facilities that have permanently shutdown emphasizes a balanced look at a cross section of licensee activities important to the conduct of safe decommissioning. Licensee decommissioning programs and procedures should be assessed to ensure that they afford a comparable level of quality, rigor, and effectiveness as those in existence during reactor power operations. The inspection program also provides Regional Administrators flexibility in the application of inspection resources to deal with issues and problems at specific plants.

06.02 Inspection Procedures

Inspection procedures detailed in Appendix A are either explicitly applicable to decommissioning power reactors or based on the use of inspection procedures described in Manual Chapters 2515, 2600, or 2800. Decommissioning inspection procedures are either core or discretionary, as described in Section 06.01. Although all inspection requirements need not be completed for every particular inspection, the objectives of the inspection procedure shall be met.

06.03 Direct Inspection Effort

The estimation of inspection hours in each inspection procedure for decommissioning power reactor licensees refers to the estimated average times needed to adequately complete inspection procedure requirements at one unit actively pursuing dismantlement, decontamination, decommissioning, or as stated in the applicable inspection procedure. Deviations from the provided estimate should be made based on, in part, licensee performance, multi-unit site and resident inspection considerations, the type and schedule of decommissioning activities being conducted by the licensee, and the radiological source term.

Inspection hour estimates are based on current experience and will be reviewed and revised periodically. It is expected that actual inspection hours will vary from site to site and from the estimate depending on the status of decommissioning. Inspection hours shall be pre-planned, tailored to the particular licensee, and scheduled. The actual inspection hours used for a particular inspection procedure shall be accurately recorded. Planning of estimated inspection hours for multi-unit sites undergoing decommissioning shall be addressed on a case-by-case basis as discussed in Section 06.05, "Periodic Management Review of Site-Specific Master Inspection Plans."

06.04 Master Inspection Plans

The regional and headquarters staffs should develop site-specific master inspection plans (MIP) for reactor power facilities undergoing decommissioning consistent with the guidance in this manual chapter using the inspection procedures listed in Appendix A and B of this manual chapter, or an applicable Temporary Instruction (TI), if necessary. One method could be to review planned licensee activities for the up-coming year or to the extent reasonably possible based on the schedular detail in the PSDAR and discussions with licensee management. The site-specific master inspection plans should facilitate the efficient allocation of inspection resources, list the inspection effort planned for each IP or TI, identify the dates of the inspection, and be specific for each facility. Master inspection plans should be reviewed every 6-12 months for a facility characterized as actively decommissioning or conducting final surveys (Categories 1, 2, 3, and 6) or every 12-24 months for a SAFSTOR facility (Categories 4 or 5). Master inspection plans may be incorporated into the Reactor Program System (RPS). Note: In RPS, for decommissioning power reactors, core inspections are scheduled as Other Activities.

Every core inspection procedure should be accomplished as described in this manual chapter and should be placed in a site-specific master inspection plan. Discretionary procedures could be used to augment the site-specific inspection plan or used as guidance (and not listed in the MIP). Discretionary IPs or TIs may be used in lieu of core-designated IPs as long as the functional area assessments are equivalent. The scope of a particular IP and its respective requirements may be adjusted by management, as appropriate, to satisfy the objectives of this manual chapter as it applies to the specific plant being inspected. A TI may be required during decommissioning and will be determined on a case-by-case basis. If a core functional area inspection can not or will not be performed, the region shall inform the headquarters staff in writing.

The following factors should be considered while developing and implementing a site-specific master inspection plan:

Design. Some power reactors will have unique designs, configurations, and environmental considerations that would bias an inspection effort to specific areas of potential concern. For example, unique or challenging hydrological conditions at a site (such as diversion of the radiological effluent stream, excavation of contaminated soils from below a water table, or dredging of soils from outfalls or intakes) or shared systems (as discussed below) between reactor units, may warrant an increased inspection effort. Similarly, technologically advanced contamination removal methods, dismantlement techniques, or transportation packaging may require enhanced NRC monitoring.

Plant Status. Plant status will vary from reactor unit to unit and depend, in part, on the phase of decommissioning. For example, even if a power reactor is in long-term storage, the licensee could elect to change system(s) operation, configuration, or design to enhance performance or efficiency, or reduce costs. These plant status changes may then change the NRC inspection effort listed in Appendix A. The plans should also take into account the licensee's spent fuel storage location and transfer plans; criticality and decay heat removal considerations; decommissioning fund status; and, planned facility and environmental changes.

Licensee Performance, Management, and Decommissioning Scheduling. The site-specific master inspection plans should also be based on licensee performance, staffing plans, effectiveness of management oversight and contractor control, and the timing and scheduling of significant decommissioning activities. Other elements such as the loss of licensee technical expertise and nuclear experience should factor into the development of a site-specific inspection plan. For example, a lack of detail or missing licensee radiological release records (10 CFR 50.75); a marked reduction in staff experience or technical expertise or significant changes in quality assurance management; or, significant problems that originated during reactor power operations may require additional NRC inspection assessment.

Multi-Unit Sites. The inspection plan should take into account whether the decommissioning facility shares systems, structures, and components (SSCs) with other operating or decommissioning units on site. These SSCs could include service water, fire water, electrical systems, and radiological effluent streams. The amount of direct inspection should be tailored to take advantage of the plans, programs, and procedures shared among the units or increased to provide assurance that potential vulnerabilities are understood and mitigated.

Inspections conducted early in decommissioning should be implemented as described in Appendix A, "Core Inspection Procedures for Decommissioning Power Reactors," and should: (1) provide sufficient evidence to confirm that the licensee can or will safely transition into decommissioning; (2) verify that procedures, programs, and facility operation implement license requirements and reflect the current licensing bases as described in the Final Safety Analysis Report, PSDAR, or other applicable licensing basis documentation; (3) confirm that management control and oversight are adequate; and, (4) take appropriate credit for NRC inspections conducted while the unit was operating.

For power reactors in a true SAFSTOR condition, it is not expected that the licensee will undertake activities that have the potential to adversely impact public health and safety or the environment. Therefore, the inspection effort is likely to be at the lower end of the expected range of decommissioning inspection effort and still maintain an acceptable, periodic NRC presence at the site. Again, based on NRC assessment of licensee performance (see Section 06.05) and the conduct of facility activities, appropriate changes to the inspection plan, procedure periodicity, or level of effort should be implemented. Similarly, although a power reactor licensee is in long-term storage, they may elect to incrementally dismantle their SSCs over the course of years through the periodic implementation of the 10 CFR 50.59 process. To account for incremental dismantlement or a facility in SAFSTOR, the decommissioning inspection program conservatively assumes that licensee procedures and controls and staff knowledge and cognizance of Part 50 requirements could diminish over time and anticipates that the direct inspection effort for these sites could increase to a value at the upper end of the expected range of decommissioning inspection effort.

For a licensee planning or preparing to actively dismantle, decontaminate, or decommission their facility after a long period of relative inactivity, the NRC staff expects that the NRC's inspection effort will also accelerate commensurate with licensee activities and may approach a level of effort for actively decommissioning facilities.

For a licensee planning or conducting irradiated fuel handling activities, direct inspection effort should be based on the values provided in Appendix A. Inspection of spent fuel handling could consist of two phases: an initial inspection and in-process inspections. The initial inspection could review, in part, training, qualification, engineered features, and management controls prior to the conduct of the fuel handling activities. This review should be coordinated with NMSS/SFPO and their implementation of IPs 60851, 60852, 60853, 60854 60855, 60856, and 81001 such that oversight is staggered, complementary, and focused on, in part, spent fuel pool activities, conduct of in-plant operations, and heavy load controls. These NMSS/SFPO dry fuel storage IPs shall be accomplished in accordance with Manual Chapter 2690, "Inspection Program for Dry Storage of Spent Reactor Fuel at Independent Spent Fuel Storage Installations."

In-process inspections should also be coordinated with NMSS/SFPO. These inspections should include, in part, the in-field inspection of: all certified fuel handler crews that will conduct activities in the near future; management oversight and control; quality assurance and resolution of corrective actions; and, implementation of regulatory requirements and licensee procedures. Again, NMSS/SFPO inspection requirements should complement the inspection effort required by this manual chapter.

The level of NRC inspection oversight for irradiated fuel handling during decommissioning should be comparable with that conducted for an operating power reactor, as detailed in Appendix A. This decommissioning inspection effort could be changed based on licensee performance, the magnitude of the source term, or the licensee's implementation of engineered design or safety features to preclude or mitigate the probability and/or consequences of a irradiated fuel handling event. Similarly, following long periods of fuel handling inactivity, the level of NRC inspection oversight could approach or exceed that of an operating power reactor facility.

06.05 Periodic Management Review of Site-Specific Master Inspection Plans

The staff should periodically review the site-specific master inspection plans and adjust the plans to reflect inspection findings or changes in plant status and decommissioning activities. During these plan reviews, regional management should take the lead (with headquarters involvement) in the assessment of decommissioning licensee performance and use these insights as one of the many possible justifications to change the site-specific master inspection plan (i.e., increased or decreased inspection effort, schedule changes, or deletions). This review of licensee performance should focus on the four major inspection areas of the decommissioning power reactor inspection program: facility management and control; decommissioning support activities; spent fuel safety; and, radiological safety. The regions could coordinate this review with the periodic Plant Performance Reviews (PPRs) and use the guidance provided in Manual Chapter 2604, "Licensee Performance Review," if desired.

Periodic management reviews may include, but need not be limited to:

- a. General plant status and type of fuel storage.

- b. Quality assurance.
- c. Management organization, support, and oversight.
- d. Technical and contractor support and performance.
- e. Decommissioning activities, planning, and scheduling.
- f. Enforcement actions and open items.
- g. Allegation status.
- h. Licensee events.
- i. Housekeeping and material condition.
- j. Status of licensee commitments and regulatory requirements (including the verification of exemptions and license amendments).

06.06 Management Communication with Licensee Representatives and Public Outreach

In addition to the 10 CFR 50.82 requirements to hold public meetings, NRC headquarters and regional management should visit the facility to understand the licensee's plans to decommission their facility. Licensee programs for the control and handling of radioactive materials, conduct of 50.59s, and configuration control are potential topics to be discussed for the benefit of both parties. Further, licensee staffing and retention plans could be discussed and understood to provide assurance that changes in site staffing, experience, or expertise will not result in unsafe decommissioning or excessive use of decommissioning funds. The NRC staff could also ascertain whether the licensee is planning any significant licensing actions and/or changes to their programs as understood by the NRC. Licensee plans to maintain and preserve the licensed configuration of the facility (as described in the current licensing basis) should be addressed. NRC management should consider visiting the site prior to development of a site-specific master inspection plan or a significant change in decommissioning status. State representation and other interested parties should be invited to attend these visits.

As decommissioning progresses, additional site visits may be held periodically or prior to major changes in the status of decommissioning to gain licensee management insights and perspectives. Focus should be to understand licensee plans and schedules, and the controls implemented to provide quality, cost management, and safety. Performance elements involving radiation dose, curie removal and transportation, scheduler accuracy, and nuclear and radiological safety could be discussed to ascertain the licensee's assessment of their own performance. Discussions could include the dissemination of press and public information; status of site radiological surveys, results and problems; problems associated with staffing and contractors; and, storage and transportation of radioactive material. The NRC staff should also consider inviting State representation and other interested parties to these discussions.

As a matter of management philosophy, the NRC maintains an “open door” policy with regard to access by the public or state or local officials to the NRC staff or to publicly available electronic documentation concerning a licensee’s performance. Some local officials or community groups may desire increased interaction with the NRC’s staff and inspectors. The degree of interaction that is considered necessary to enhance public confidence in the NRC is expected to vary widely dependant upon the situation at each decommissioning plant. In each case where inspectors are utilized for this purpose, regional management must carefully balance the use of inspection resources to complete inspections with the need to enhance public confidence.

06.07 Use of Resident Inspectors at Decommissioning Power Reactors

After a licensee permanently ceases power operations, the inspection program for decommissioning power reactor facilities considers the following: (1) there will be initial, short-term, resident inspector coverage; (2) that licensee decommissioning programs and procedures should be comparable to the rigor, quality, and effectiveness of those used during reactor power operation; (3) few changes would be expected in the technical ability and safety perspective of the licensee’s staff and management; and, (4) that the primary safety- significant licensee activities would consist of maintaining safe reactor shutdown, conducting safe fuel handling and storage, and placing systems (no longer necessary for the safe facility operation) in a storage configuration. During this period with a resident inspector staff assigned, the site-specific inspection will be based on the NRC Inspection Manual Chapter (IMC) 2515 program. However, the inspection effort would normally be commensurate with the effort described in this manual chapter. After the licensee certifies the safe removal of all nuclear fuel from the reactor vessel, IMC 2561 is implemented, and resident inspector (or region-based) inspection effort will be based on the effort in Category 1, “Post-Operation Transition Phase. Therefore, resident inspectors assigned at decommissioning facilities can be temporarily detailed to other sites or assignments, as necessary, to support the NRC’s mission.

At a single unit power reactor facility that has just shutdown, one of the two resident inspectors should be detailed from the site shortly after the establishment of safe reactor shutdown. The remaining inspector should then stay at the site for a pre-determined period. If the licensee: (1) plans to enter active decontamination and dismantlement or if licensee operational performance dictates, the remaining resident inspector could stay at the site for up to a year; (2) plans to enter into long-term storage (SAFSTOR), the length of service of the remaining inspector would be based, in part, on the licensee’s decommissioning schedule and the NRC’s assessment of licensee performance, and not exceed 6 months; and (3) had a significant operational event or accident, the assignment of NRC staff to the site would be based solely on NRC management discretion, not encumbered by the guidance in this section. For examples one and two above (and for the multi-unit discussion below), the assignment of resident inspectors in excess of the 6-month and 12-month periods described respectively, should be documented by memo to file and agreed upon by the applicable regional and headquarters Division Directors.

For multi-unit sites that had one or more units permanently shutdown, the guidelines in the proceeding paragraph would be applicable. However, the guidelines should be further defined by the following: (1) if all units are decommissioning and if more than one resident inspector is assigned to the particular licensee, a Senior Resident Inspector (SRI), or

equivalent, should be assigned to supervise NRC site activities; and (2) if one unit remains operational and if there are full- or part-time inspector(s) assigned to the decommissioning unit(s), the decommissioning inspectors should have a primary chain-of-command to the applicable regional division management and a secondary reporting responsibility to the operational-unit SRI when decommissioning activities have the potential of impacting operating unit safety. This command structure establishes one "senior" NRC representative at the site to represent the NRC when the need arises and minimizes any potential adverse impact on the operating-unit resident inspector staff that may be caused by activities at the decommissioning unit(s).

For multi-unit sites in which there is a mix of operating and decommissioning reactors, but with no resident inspector coverage at the decommissioning unit, headquarters or regional management could allocate decommissioning inspection hours to the operating-reactor resident inspector staff to conduct periodic informational assessments of the decommissioning unit(s). Resident inspector time should be charged to the applicable decommissioning core inspection procedure (Appendix A) and not to the operating reactor docket. These informational assessments should focus on observing licensee management meetings or having discussions with the cognitive decommissioning management staff to ascertain the status of decommissioning or problems encountered. Resident inspector activities at the decommissioning unit shall contribute to the NRC's overall mission to ensure adequate protection of public health and safety and the environment in the use of nuclear materials and not detract from the effective inspection oversight of the operating unit(s). For these informational gathering assessments, the applicable decommissioning IP be charged on a quarterly basis at a unit in Category 1, 2, or 3 and yearly for a unit in Category 4, 5, or 6. Follow-up to this routine assessment should be charged as regional initiative or reactive to the appropriate IMC 2515 or 2561 inspection procedure after discussion with regional and headquarters management. For decommissioning event response, resident inspectors could be utilized in the same manner to assess and report the situation.

Resident and Senior Resident Inspectors assigned to decommissioning power reactors are expected to rotate in accordance with the NRC Field Policy Manual, Section 8, "Resident Inspector Relocation Policy." In no case will resident inspector coverage be removed from the site before the licensee has certified (and the NRC staff has independently verified) that the power reactor unit has permanently ceased power operations and all fuel has been permanently and safely transferred from the reactor vessel to the spent fuel pool, ISFSI, or other licensed storage facility. If resident inspector presence is removed, licensee activities are not of sufficient regulatory or safety importance to warrant the need to maintain resident inspector coverage.

06.08 Basic Inspection Process

In addition to the information given below, additional guidance regarding the basic inspection process can be found in Inspection Manual Chapters 2515, 2600, and 2800. All inspections should be conducted in a similar manner in accordance with headquarters staff instructions and regional administrative processes.

Inspection starts with the planning of core and discretionary inspections in the master inspection plan, as described in Paragraph 06.04. MIP implementation also includes the

coordination of site visits and inspections to promote regulatory efficiency and effectiveness and to reduce regulatory burden on the licensee. Then, inspections are conducted, inspection reports are written, license performance is assessed, feedback on the decommissioning inspection program should occur, and this process should repeat until the site is decommissioned. A basic inspection process should entail:

- a. Preparation for the inspection by reviewing appropriate background material (e.g., license, USAR, SER, ER, TSs, PSDAR, hazards analysis report(s), final safety analysis report, license termination plan, past inspection reports, allegations, open item lists (violations, open/unresolved items, deviations, licensee event reports, and other pertinent information). Attention should also be paid to licensee documents that describe how they will conduct decommissioning (i.e., 10 CFR 50.59s, quality assurance plans, etc.).
- b. Preparation of an inspection plan describing the scope and major areas of emphasis that will be reviewed, evaluated, or assessed. This plan should be reviewed by a supervisor. Depending on regional and headquarter's assessment of licensee performance, as described in this manual chapter, NRC management should determine whether the inspection will be announced or unannounced. Observations of licensee activities on back or deep back shifts should be considered. NRC management should also consider periodically observing the conduct of the inspector in-field inspection or the exit meeting. Coordination of inspection activities shall be conducted in accordance with NRC Inspection Manual Chapter 0301, "Coordination of NRC Visits to Commercial Reactor Sites."
- c. Inspectors shall utilize appropriate and calibrated radiation detection instrumentation or any other equipment to verify licensee activities, if applicable for the inspection. *In-situ* measurements with licensee personnel can be beneficial in future determinations as to the scope of confirmatory surveys required for the facility. The use of an outside contractor may also be considered to perform confirmatory *in situ* measurements or laboratory analyses.
- d. Inspectors shall conduct an entrance meeting with the licensee. Inspectors should discuss the inspection scope with licensee management and articulate whether open items will be reviewed. The inspector should state that the inspection may involve the observation of facility operations, interviews with staff, document reviews, and/or radiation surveys to obtain independent and confirmatory data. Appropriate inspection emphasis should be placed on observing staff training, equipment operation, and implementation of the licensed programs. Any change or potential change to the onsite inspection plan should be communicated with appropriate NRC management.

Although unique plant conditions may exist following the permanent cessation of reactor power operations, NRC inspectors should not face situations in which license conditions, regulatory requirements, or licensee commitments do not apply. In cases where unique situations or unclear configurations may be identified and considered potentially adverse to the conduct of safe decommissioning or public health and safety, the inspector(s) should discern whether the licensee is aware of the situation and taking appropriate action, if necessary, to correct and preclude

recurrence. Such cases or problems involving NRC requirements and licensee commitments should be raised to the responsible NRC manager. Equally important, the inspector should determine if the situation is beyond the scope of the inspector's expertise. If it is beyond the inspector's expertise, the inspector should promptly inform his or her supervision and make recommendations, so that management can determine the urgency of the request for assistance, what type of expertise is required, and what extent of effort is required.

- e. An exit meeting shall be conducted with licensee management at the conclusion of the inspection. The inspection scope and applicable findings shall be presented emphasizing their impact on safety. Prior to the exit, the inspector's supervisor should be briefed on the preliminary inspection findings and conclusions and licensee corrective actions.
- f. Upon return to the regional or headquarter's office, the appropriate regional and headquarters personnel should be briefed on the inspection findings and conclusions to ascertain whether inspection follow-up will occur.
- g. Inspection findings, open items, follow-up items, and conclusions shall be documented in accordance with Manual Chapter 0610 and other relevant regional or headquarter instructions. Inspections resulting from allegations will be documented and dispositioned in accordance with Management Directive 8.8.

Because decommissioning involves the reduction of residual radioactivity to a level that permits release of the property and license termination, inspections at decommissioning facilities should (in addition to evaluating and documenting the performance or effectiveness of licensee programs, processes, and equipment used to provide assurance that regulatory requirements are met and that decommissioning is conducted safely) act as a historical record of the licensee's ability to effectively and accurately conduct radiological surveys and characterizations, manage occupational dose, maintain the facility licensing and design basis, and control radiological effluents. This record should help focus inspections in areas of licensee performance directly related to site release and license termination activities.

06.09 Decommissioning Inspector

Depending on the inspection plan requirements and upon approval by headquarters and regional management, an inspector may be assigned to the site for all or part of decommissioning. This inspector will be the major onsite presence for the direct observation and verification of licensee activities in accordance with an approved and documented inspection plan. Management should document to file the scope of the onsite inspection effort, specify the duration of the effort based on, for example, decommissioning activities, milestones, or licensee performance, and allocate inspection resources as needed.

If onsite coverage is allocated, it is expected that the inspector be qualified as a Decommissioning Inspector per IMC 1246. The Decommissioning Inspector shall evaluate site events and conditions and will perform the largest part of the initial event or condition-related inspection effort. The conduct of the decommissioning inspector shall

parallel, in part, that of a resident inspector assigned to an operating power facility (reference IMC 2515, "Resident Inspector Policy" and the NRC Field Policy Manual). For example, the inspector shall, in part: independently verify and assess licensee activities and performance; discuss observations and findings with the licensee; daily discuss inspection issues with NRC management; and, periodically docket inspection observations, findings, and conclusions.

06.10 Regional and Headquarters Inspectors

Regional and headquarters inspectors should conduct inspections as specified in the site-specific master inspection schedule and as directed by their supervisor.

The regional division responsible for decommissioning inspections of power reactors that have permanently shutdown, should be kept apprised of all inspection activities. All inspections shall be coordinated through the appropriate NRC manager, who is responsible for the facility, well in advance of the inspection. This contact is to obtain information on the availability of specific licensee personnel, on the status of plant conditions that may affect the planned inspection, and to ensure a coordinated presence onsite. Inspectors should advise their responsible manager of any changes to the planned inspection scope and take into consideration management suggestions and perspectives for the conduct of an effective inspection.

Although unique plant conditions may exist following the permanent cessation of reactor power operations, NRC inspectors should not face situations in which license conditions, regulatory requirements, or licensee commitments do not apply. However, unique situations or unclear configurations may be identified and considered potentially adverse to the conduct of safe decommissioning or public health and safety. In these cases, the inspector should discern whether the licensee is aware of the situation and taking appropriate action, if necessary, to correct and preclude recurrence. Such cases and/or problems involving NRC requirements and licensee commitments should be immediately raised to appropriate regional and headquarters management. Equally important, the inspector should determine if the situation is beyond the scope of their expertise. If it is beyond their expertise, the inspector should promptly inform his or her supervision and make recommendations, so that management can determine the urgency of the request for assistance, what type of expertise is required, and what extent of effort is required.

Additional oversight or coordination with NMSS may be needed following approval of the licensing termination program (LTP) to verify or validate implementation of the LTP. Areas requiring further validation or verification have been typically listed in the Safety Evaluation Report that documents the approval of the LTP. These areas may include items that will be reviewed through the core or discretionary procedure program, items beyond the scope of the core inspection procedures, or items that require special expertise for review; e.g., hydrological evaluations. NMSS/DWM staff may be enlisted to support LTP verification and validation efforts beyond the scope of the core or discretionary procedures. The Technical Assistance Request process can be used by Regional staff to initiate action on items requiring special review.

06.11 Modifications or Changes to the Facility

An important inspection activity during facility decommissioning is the assessment of facility design changes and modifications. Changes, tests, and experiments (CTEs) must be performed in accordance with 10 CFR 50.59, license conditions, and licensee procedures. In addition, 10 CFR 50.82(a)(6) states that decommissioning activities must not: (1) foreclose release of the site for possible unrestricted use, (2) significantly increase decommissioning costs, (3) cause any significant environmental impact not previously reviewed, or (4) violate the terms of the licensee's existing license. The NRC project manager will participate in an inspection, at least once per year, to assess the licensee's Safety Evaluation Program.

Further, if decommissioning trust funds are used (10 CFR 50.82(a)(8)), they must be used for legitimate decommissioning activities; their expenditure shall not reduce the value of the decommissioning trust fund below an amount necessary to place and maintain the reactor in a safe storage condition if unforeseen conditions or expenses arise; and their withdrawal shall not inhibit the ability of the licensee to complete funding of any shortfalls in the decommissioning trust needed to ensure the availability of funds to ultimately release the site and terminate the license. Decommissioning funds would generally not be allowed for the development, installation, testing, or operation of a dry spent fuel storage facility, or non-radiological material dismantlement or remediation. The headquarters staff has the lead for assessing the appropriateness of a licensee's decommissioning fund allocation.

Before undertaking any major decommissioning activities (as defined by 10 CFR 50.2), the license shall have: (1) certified the permanent removal of a reactor fuel from the vessel and the permanent cessation of operations; (2) submitted a PSDAR to the NRC; and, (3) waited 90 days. Prior to this time, a licensee may undertake any minor decommissioning activity that does not result in the permanent removal of major radioactive components (i.e., the steam generators, reactor vessel and internals, pressurizer, large bore reactor coolant system piping, and other large components that are radioactive), permanently modifies the structure of the containment, or results in dismantling components for shipment containing greater than Class C waste in accordance with 10 CFR 61.55.

Examples of activities that are not considered major decommissioning activities include: (1) those that could be performed under normal maintenance and repair; (2) removal of certain, relatively small radioactive components, such as control rod drive mechanisms, control rods, pumps, and valves; (3) removal of components similar to that for maintenance and repair; (4) removal of non-radioactive components and structures not required for safety; and, (5) activities related to radiation and contamination characterization.

END

Appendices

- A. Core Inspection Procedures for Decommissioning Power Reactors
- B. Discretionary Inspection Procedures for Decommissioning Power Reactors

Appendix A

I. Core Inspection Procedures

- 36801 Organization, Management & Cost Controls at PSRs
- 37801 Safety Reviews, Design Changes, and Mods at PSRs
- 40801 Self-Assessment, Auditing, and Corrective Action
- 71801 Decommissioning Performance and Status Review at PSRs
- 62801 Maintenance and Surveillance at PSRs
- 71714 Cold Weather Preparations
- 81XXX Physical Security Assessment at PSRs
- 60801 Spent Fuel Pool Safety at PSRs
- 83750 Occupational Radiation Exposure
- 83801 Inspection of Final Surveys at PSRs
- 84750 RadWaste Treatment, and Effluent & Environ Monitoring
- 86750 Solid RadWaste Management & Transportation of RadMat
using TI 2515/133, "Implementation of Revised
49 CFR Parts 100-179 and 10 CFR Part 71"

II. Recommended Average Annual Inspection Hours per Decommissioning Status

Inspection Procedure	Inspection Requirement	1 ¹	2 ²	3 ³	4 ⁴	5 ⁵	6 ⁶
36801	02.01	16	16	0	3	3	0
	02.02	14	14	0	3	0	0
	02.03	10	10	0	2	0	0
	02.04	8	0	0	0	0	0
	02.05	4	0	0	0	0	0
37801	02.01	12	12	12	2	0	0
	02.02	12	12	0	2	2	0
	02.03	8	8	0	2	0	0
40801	02.01	4	4	4	4	4	0
	02.02	14	14	14	4	4	0
	02.03	24	24	24	6	6	0
	02.04	16	16	16	4	4	0
	02.05	6	6	6	3	3	0
71801	02.01	8	0	0	0	0	0
	02.02	8	8	8	1	0	0
	02.03	10	10	10	0	0	0
	02.04	6	6	6	0	0	0
62801	02.01	28	28	28	0	0	0
	02.02	28	0	0	0	0	0

¹ Post-Operation Transition Phase

² Facility undergoing active decommissioning with spent fuel in the spent fuel pool.

³ Facility undergoing active decommissioning with no spent fuel in the spent fuel pool.

⁴ Facility in SAFSTOR with spent fuel in the spent fuel pool.

⁵ Facility in SAFSTOR with no spent fuel in the spent fuel pool.

⁶ Facility in the process of final surveys with no spent fuel in the spent fuel pool.

71714	all	12	0	0	0	0	0	
817XX	-	24	24	12	12	12	4	
60801	02.01	5	5	0	5	0	0	
	02.02	5	5	0	5	0	0	
	02.03	5	0	0	0	0	0	
	02.04	5	0	0	0	0	0	
	02.05	5	5	0	5	0	0	
83750	02.01	6	6	6	6	6	6	
	02.02	4	4	2	2	2	2	
	02.03	8	8	8	6	4	4	
	02.04	4	0	0	0	0	0	
	02.05	6	0	0	0	0	0	
	02.06	4	0	0	0	0	0	
	02.07	3	3	3	2	2	3	
	02.08	3	3	3	2	2	3	
	02.09	8	8	8	6	4	4	
	02.10	8	8	8	0	0	4	
	02.11	2	0	0	0	0	0	
	02.12	8	8	8	4	4	4	
83801	02.01	0	4	4	0	0	0	
	02.02	0	20	20	5	5	20	
	02.03	0	10	10	5	5	30	
	02.04	0	28	28	10	10	40	
	02.05	0	0	0	0	0	0	
	02.06	0	16	16	1	1	6	
84750	02.01	4	4	4	2	2	2	
	02.02	2	2	2	2	2	2	
	02.03	6	6	6	4	2	1	
	02.04	2	0	0	0	0	1	
	02.05	8	0	8	0	0	0	

		02.06	2	2	2	2	2	1
		02.07	2	0	0	0	0	0
		02.08	2	2	2	2	1	1
		02.09	4	0	0	0	0	0
		02.10	2	0	0	0	0	0
		02.11	2	0	0	0	0	0
		02.12	2	0	0	0	0	0
		02.13	2	2	2	2	2	1
	86750	02.01	20	20	20	4	2	4
		02.02	6	6	6	3	1	2
		02.03	6	6	6	2	0	0
		02.04	20	20	20	10	5	10
		02.05	20	20	20	10	5	10
	Total Hours	-	473	443	362	155	107	165

END

APPENDIX B

Discretionary Procedures for Decommissioning Power Reactors

IP Number INSPECTION PROCEDURE TITLE

PLANT OPERATIONS

42700 Plant Procedures

60705 Preparation for Reactor Fuel Handling

60710 Fuel Handling Activities

71707 Operational Safety Verification

86700 Spent Fuel Pool Activities

93702 Prompt Onsite Response To Events At Operating Power Reactors

RADIOLOGICAL CONTROLS

80721 Radiological Environmental Monitoring

83722 Radiation Protection, Plant Chemistry and Radwaste: Organization and Management Controls

83723 Training and Qualifications: General Employee Training, Radiation Safety, Plant Chemistry, Radwaste and Transportation

83724 External Occupational Exposure Control and Personal Dosimetry

83725 Internal Exposure Control and Assessment

83726 Control of Radioactive Materials and Contamination, Surveys and Monitoring

83727 Facilities and Equipment

83728 Maintaining Occupational Exposures ALARA

83729 Occupational Radiation Exposure During Extended Outages

84850 Radioactive Waste Management-Inspection of Waste Generator Requirements of 10 CFR Part 20 and 10 CFR Part 61

86740 Inspection of Transportation Activities

MAINTENANCE AND SURVEILLANCE

61726 Surveillance Observation

62706 Maintenance Rule

SECURITY

81502 Fitness For Duty

85102 Material Control and Accounting - Reactors

ENGINEERING/TECHNICAL SUPPORT

37001 Facility Modifications

37700 Design Changes and Modifications

41500 Training and Qualification Effectiveness

SAFETY ASSESSMENT/QUALITY VERIFICATION

35701 Quality Assurance - Annual Review

36800 Organization

39701 Records Program

40500 Evaluation of Licensee Self-Assessment Capability

90712 In-office Review of Written Reports of Non-routine Events At Power Reactor Facilities

90713 In-Office Review of Periodic and Special Reports

90714 Non-routine Reporting Program

92700 Onsite Follow-up of Written Reports of Non-routine Events At Power Reactor Facilities

92701 Follow-up

92702 Follow-up On Corrective Actions For Violations and Deviations

MEETINGS AND OTHER

93001 OSHA Interface Activities

88XXX Emergency Preparedness

64704 Fire Protection Program

|

END