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## MANUAL CHAPTER 2602

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### DECOMMISSIONING OVERSIGHT AND INSPECTION PROGRAM FOR FUEL CYCLE FACILITIES AND MATERIALS LICENSEES

#### 2602-01 PURPOSE

To establish policies and guidance for the decommissioning oversight and inspection program for the **Office of Federal and State Materials and Environmental Management Programs (FSME)** for NRC licensed fuel cycle and materials facilities and non-licensed materials facilities.<sup>1</sup>

#### 2602-02 OBJECTIVES

02.01 To provide general guidance for the coordination and regulatory oversight of NRC licensed fuel cycle and materials facilities undergoing decommissioning.

02.02 To provide general guidance for planning and conducting inspections of NRC licensed fuel cycle and materials facilities undergoing decommissioning.

02.03 To obtain information through direct observation and verification of licensee activities to determine whether the facility or site is being decommissioned safely, that radioactive material is safely stored onsite prior to removal from the site, and that decommissioning activities are in conformance with applicable regulatory requirements, licensee and non-licensee commitments, and management controls.

02.04 To ensure that the programs and techniques for license termination activities are adequate and in accordance with regulatory requirements. These programs include in part and as necessary, management and organization effectiveness; self-assessment, auditing and corrective actions; maintenance and surveillance; radiation protection; radioactivity measurements; and effluent controls.

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

02.06 To provide for effective allocation of resources for the inspection of NRC licensed fuel cycle and materials facilities undergoing decommissioning.

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<sup>1</sup> Throughout this manual chapter, unless stated otherwise, any reference to a licensee or licensed facility also applies to all non-licensed (and/or formerly licensed) materials facilities at which the decommissioning is being conducted under NRC oversight.

To meet these objectives, and assist individuals involved in decommissioning nuclear facilities, NRC staff has developed NUREG-1757, Consolidated Decommissioning Guidance, Volumes 1-3, which summarize the regulations, policies, and procedures that the NRC staff shall use during the decommissioning of NRC licensed fuel cycle and materials facilities. This manual chapter summarizes the basic framework for the inspection of these decommissioning facilities, while NUREG-1757 provides the framework for the overall regulatory oversight process used to ensure an adequate and consistent decommissioning of the decommissioning facilities.

## 2602-03 APPLICABILITY

This manual chapter applies to all NRC licensees under 10 CFR Parts 30, 40, 70 and 72 undergoing decommissioning. The principal regulations and policy governing such decommissioning are: (1) General Requirements for Decommissioning Nuclear Facilities, Final Rule, 53 FR 24018, June 27, 1988, which incorporated changes into 10 CFR Sections 30.4, 30.35, 30.36, 40.4, 40.36, 40.42, 70.4, 70.25, 70.38, 72.3, 72.18, and 72.38; (2) Timeliness in Decommissioning of Materials Facilities, Final Rule, 59 FR 36026, July 15, 1994, which incorporated changes into 10 CFR Sections 30.4, 30.36, 40.4, 40.42, 70.4, 70.38, 72.3, and 72.54; and (3) License Termination Rule, Final Rule, 62 FR 39058, July 21, 1997, which incorporated the final rule on “Radiological Criteria for License Termination” as Subpart E to 10 CFR Part 20. Various guidance documents are referenced in this inspection program and should be utilized by NRC inspection staff for applicability to each site undergoing decommissioning.

## 2602-04 DEFINITIONS

04.01 ALARA. Acronym for “as low as is reasonably achievable,” which means making every reasonable effort to maintain exposures to radiation as far below the dose limits as is practical, consistent with the purpose for which the licensed activity is undertaken, and taking into account the state of technology, the economics of improvements in relation to the state of technology, the economics of improvements in relation to the benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest (see 10 CFR 20.1003).

04.02 Complex Materials Site. A site or facility where the complexity of the decommissioning will require more than minimal technical and administrative support from the headquarters program office. It is expected that these sites will take more than a year to complete the decommissioning process. Examples of complex materials sites include: sites with ground water contamination; sites containing significant soil contamination; sites in which the owners are in bankruptcy; any site where a decommissioning plan is required; all fuel cycle facilities undergoing decommissioning; and sites where there is significant public and/or Congressional interest.

04.03 Confirmatory Survey. A survey conducted by NRC, or its contractor, to verify the results of the licensee's final status survey. Typically, confirmatory surveys consist of measurements at a small percentage of the locations previously surveyed by the licensee, to determine whether the licensee's results are valid and reproducible.

04.04 Decommissioning. The process of removing a facility or site safely from service and reducing residual radioactivity to a level that permits (1) the release of the property for unrestricted use or (2) release of the property under restricted conditions. For licensed facilities or sites, decommissioning includes termination of the license or amending the license to remove the facility or site as a location of use from the license. For non-licensed sites, decommissioning includes documenting in correspondence to the site owner that the facility or site is released for unrestricted use.

04.05 Decommissioning Plan (DP). A detailed description of the activities that the licensee intends to use to assess the radiological status of its facility, to remove radioactivity attributable to licensed operations at its facility to levels that permit release of the site in accordance with NRC's regulations and termination of the license, and to demonstrate that the facility meets NRC's requirements for release.

04.06 Final Status Survey (FSS). Measurements and sampling to determine the radiological conditions of a site or facility, following completion of decontamination activities (if any) and in preparation for release of the site or facility.

04.07 Master Inspection Plan. A site-specific plan of inspection activities that ensures the inspection program is properly focused and facilitates the efficient allocation of inspection resources.

04.08 Significant Decommissioning Activity. Any decommissioning activity that the NRC feels compelled to observe and evaluate to ensure the protection of workers, ensure the protection of public health and safety or the safety of the environment, ensure the secure use and management of radioactive materials, or ensure openness in the regulatory process.

## 2602-05 RESPONSIBILITIES AND AUTHORITIES

05.01 Director, Office of Federal and State Materials and Environmental Management Programs. Provides overall direction for the decommissioning fuel cycle and materials inspection program.

05.02 Deputy Director, Decommissioning and Uranium Recovery Licensing Directorate. Coordinates, develops, and implements decommissioning fuel cycle and materials inspection requirements and policies.

05.03 Regional Administrator. In concert with headquarters, directs the implementation of the inspection program for decommissioning fuel cycle and materials facilities and sites. 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. Applies inspection resources, as necessary, to deal with issues and problems that arise at specific facilities undergoing decommissioning.

05.04 All NRC personnel implementing the decommissioning oversight and inspection program for fuel cycle and materials facilities undergoing decommissioning shall use the guidance identified in this manual chapter and NUREG-1757. This includes formerly licensed sites where the license was terminated, and sites involving source, special nuclear, or byproduct material subject to NRC regulation for which a license was never issued. Significant deviations from this guidance shall be employed only after review and approval by the appropriate NRC management.

05.05 The responsibility for managing inspection activities and conducting inspections resides with the regional office in which the decommissioning facility or site is located. Regional management is responsible for developing the inspection program for each decommissioning facility or site under its jurisdiction. The Division of Waste Management and Environmental Protection (DWMEP), in the **Office of Federal and State Materials and Environmental Management Programs**, will provide overall program direction to the regional offices for decommissioning facilities. The Division of Waste Management and Environmental Protection will provide oversight guidance to the regions to ensure that decommissioning activities are being conducted in a consistent and adequate manner to achieve the NRC Strategic Plan.

## 2602-06 DECOMMISSIONING PROGRAM OVERSIGHT

06.01 Timing of Decommissioning. NRC regulations at 10 CFR 30.36(d), 40.42(d), 70.38(d), and 72.54(d) describe the conditions under which a licensed facility would be required to commence decommissioning operations. Collectively, these are known as the Timeliness Rule. In short, any separate building or area that has not been used for two years must be promptly remediated if the remediation activities are allowed by the existing license. If the remediation activities are not currently allowed under an existing license, the licensee must develop a Decommissioning Plan (DP) and submit a request for a license amendment within one year. The decommissioning process is to be completed within two years, unless an alternative schedule is approved. Section 5 of the NUREG-1757 Vol. 1, **Rev 2**, provides guidance on how to determine if decommissioning is needed and the actions necessary to achieve it.

06.02 Radiological Criteria for Decommissioning. On July 21, 1997, NRC published the final rule on "Radiological Criteria for License Termination" (the License Termination Rule) as Subpart E to 10 CFR Part 20 (62 FR 39058). The License Termination Rule (LTR) establishes criteria for license termination. The criterion for termination with unrestricted release is residual radioactivity, which is distinguishable from background, results in a total effective dose equivalent (TEDE) to an average member of a critical group that does not exceed 0.25 millisievert per year (mSv/y) (25 mrem/y). In addition, the residual radioactivity has been reduced to levels that are as low as is reasonably achievable (ALARA). For license termination with restrictions on future land use, the LTR establishes criteria of 1.0 mSv/y (100 mrem/y) or 5.0 mSv/y (500 mrem/y) under certain conditions.

06.03 Decommissioning Records Management. NRC regulations prescribe recordkeeping responsibilities for NRC licensees. During licensed operations NRC requires licensees to maintain records important to safe and effective decommissioning. For licensees who must submit a DP, these records should subsequently be used to develop the site description specific portion of the DP. Following decommissioning and before license termination, additional NRC regulations prescribe the disposition of these records, in most cases to NRC. Finally, NRC staff is responsible for maintaining decommissioning records following license termination. NRC staff should refer to Section 3 of NUREG-1757 Vol. 3 for information on recordkeeping requirements for decommissioning facilities.

06.04 The National Environmental Policy Act of 1969. The National Environmental Policy Act (NEPA) of 1969 requires Federal Agencies, as part of their decision-making process, to consider the environmental impacts of actions under their jurisdiction. Both the Council on Environmental Quality (CEQ) and NRC have promulgated regulations to implement NEPA requirements. The CEQ regulations are contained in 40 CFR Parts 1500 to 1508, and NRC requirements are provided in 10 CFR Part 51. The NEPA review (also referred to as the environmental review) process for decommissioning is initiated by a licensee's request for a license amendment **to incorporate a decommissioning plan into the license and authorize decommissioning of the site**. NRC staff should refer to Section 15.7 of NUREG-1757 Vol. 1, **Rev 2** and NUREG-1748, Environmental Review Guidance for Licensing Actions Associated with NMSS Programs, for information on the appropriate procedures to follow to comply with NEPA.

06.05 Decommissioning Groups. Activities to decommission a site depend on the type of operations conducted by the licensee and the residual radioactivity present. Generally, the staff will evaluate the decommissioning of nuclear facilities using one of seven review processes (referred to as "Groups"). Typically, Groups 1 and 2 will not require a DP and will be able to demonstrate compliance with 10 CFR Part 20.1402. Group 3 sites **may** require an abbreviated DP, without a site-specific dose modeling analysis. Groups 4 through 7 sites and all Part 72 licensees are required to submit a DP with site-specific dose modeling in accordance with NRC regulations in 10 CFR 30.36(g)(1), 40.42(g)(1), 70.38(g)(1), or 72.54(d). Although it is anticipated that most licensees will fall under the decommissioning types as outlined, it should be expected that the actions may not always be appropriate for each licensee. The intent is to present the generally appropriate actions to be taken by NRC staff, recognizing that the unique nature of some facilities may require site-specific modifications to the procedures. The staff shall ensure that any departure from these established procedures is reviewed and approved by NRC management and documented in writing prior to their implementation. NUREG-1757 Vol. 1, **Rev 2**, Sections 7 through 14, contain guidance for the determination of the appropriate decommissioning review process and the actions and oversight required by **each** group.

06.06 Decommissioning Plans. The objective of the DP is to describe the activities and procedures that a licensee intends to undertake to remove residual radioactive material attributable to licensed activities at the facility to levels that meet NRC criteria in sufficient detail to allow NRC staff to determine whether decontamination of the facility can be accomplished safely. To the extent that licensed material is mingled with elevated (i.e., above background levels) naturally occurring radioactive material (NORM) the elevated NORM is also remediated in decommissioning. NRC regulations at 10 CFR Parts 30, 40,

70, and 72 require that certain information be provided by licensees in the DP. NUREG-1757 Vol. 1, **Rev 2**, Sections 16 through 18 provide a description of the contents of specific DP modules, as well as evaluation and acceptance criteria for use in reviewing DPs and other information submitted by licensees to demonstrate that the facility is suitable for release in accordance with NRC requirements.

- a. Site Characterization. NRC requirements for decommissioning under 10 CFR 30.36(f)(4), 40.42(f)(4), 70.38(f)(4), and 72.54(f)(1), require that proposed DPs include "... a description of the conditions of the site or separate building or outdoor area sufficient to evaluate the acceptability of the plan." Licensees can develop this information using institutional knowledge about radioactive material use at their facility, by performing a site characterization survey, or by a combination of these methods. Some licensees may require heightened attention by NRC staff during characterization planning. For these licensees it may be appropriate for NRC staff to meet with the licensee prior to, or during, site characterization. NRC staff should refer to NUREG-1757 Vol. 2, **Rev 1**, for additional discussion of site characterization.
- b. Financial Assurance for Decommissioning. NRC regulations at 10 CFR 30.35, 40.36, 70.25, and 72.30 specify the requirements for certain licensees to provide financial assurance for decommissioning. The requirement to provide financial assurance is based on the authorized possession limits specified in the NRC license. In general, above a threshold quantity of radioactive material, the licensee must provide increasing amounts of financial assurance as its authorized possession limit increases. Financial assurance may be provided in certain proscribed amounts where the authorized possession limit falls within specified bounds. NRC staff should refer to Section 4 of NUREG-1757 Vol. 3 for additional discussion of financial assurance.
- c. Final Status Survey Plans. Licensees wishing to terminate their licenses must demonstrate to NRC that residual radioactive material at their facility attributable to past licensed operations does not exceed NRC criteria for release of the facility. NRC regulations at 10 CFR 30.36(f)(4), 40.42(f)(4), 70.38(f)(4) and 72.54(f)(4) require that all DPs contain a description of the planned final radiation survey to demonstrate that the facility meets NRC's criteria for release and termination of the license. In addition, NRC regulations at 10 CFR 30.36(l), 40.42(l), 70.38(l) and 72.54(k) describe the information that must be submitted to NRC to support a demonstration that a licensed facility is suitable for release from regulatory control.

**06.07** License Termination. The final action required by the licensee after it has completed remediation and adequately demonstrated that the facility is suitable for release in accordance with NRC's requirements is the submission of NRC Form 314. If the licensee has satisfied all of the conditions for remediating its site, NRC staff terminates the license for the site. For sites with non-radiological contamination, NRC should inform the State agency that may have jurisdiction over any hazardous chemical contamination and

the U.S. Environmental Protection Agency (EPA) about the intent to terminate the license. In addition, the termination is intended as a final agency action and should include appropriate language in the termination letter to reflect this intent.

**06.08 Restricted Use and Alternate Criteria.** NRC staff will review the information supplied by the licensee to determine if the description of the activities undertaken by the licensee is adequate to allow the staff to conclude that the licensee has complied with the applicable requirements of 10 CFR 20.1403, or 10 CFR 20.1404 for those licensees who intend to request termination of their radioactive materials licenses using either the restricted use or alternate criteria provisions of Subpart E. The basic requirement for license termination under restricted conditions is that the licensee provides institutional controls that limit the calculated dose to 0.25 mSv/y (25 mrem/y). Further, the licensee must reduce residual radioactivity so that if these controls fail, the calculated dose would not exceed 1 mSv/y (100 mrem/y). In rare instances, the calculated dose may exceed 1 mSv/y (100 mrem/y), but it may not exceed 5 mSv/y (500 mrem/y). Additional institutional controls would be established to meet regulatory requirements. In the unlikely event that a licensee is not able to reduce residual radioactivity to a level that limits the calculated dose such that it is not in excess of 0.25 mSv/y (25 mrem/y) with restrictions in place, the licensee may request permission from the Commission to use alternate criteria. NRC staff should refer to NUREG-1757 Section 17.7 for guidance on restricted use and alternate criteria.

**06.09 Partial Site Decommissioning.** A licensee who has submitted a DP that has not yet been approved or a licensee who has an approved DP may opt to release a portion of its site early. For the case of partial site release, the licensee must submit a request for a license amendment to the extent that the actions are not described in the DP. A site enters into partial site decommissioning in one of two ways: the licensee requests a portion of its facility be removed from the license, or; a licensed facility is required per 10 CFR 30.36(d)(1-4), 40.42(d)(1-4), 70.38(d)(1-4), and 72.54(d)(1-3) to begin decommissioning at a portion of its facility.

**06.10 Memorandum of Understanding with the Environmental Protection Agency.** In 2002 the NRC and the EPA signed a Memorandum of Understanding (MOU) to facilitate cooperation in the decommissioning of NRC-licensed sites. Under the MOU, NRC staff will consult with EPA staff if the proposed Derived Concentration Levels in the DP or the final residual radioactivity at the site, as evidenced by the FSSR exceed trigger levels in the MOU, if groundwater at the site will exceed the EPA's Maximum Concentration Levels (MCLs) or if the licensee requests license termination pursuant to the restricted use provisions of 10 CFR 20, Subpart E.

## 2602-07 DECOMMISSIONING INSPECTION PROGRAM

**07.01 Program Discussion.** The decommissioning fuel cycle and material inspection program covers a diverse range of decommissioning activities. The level of complexity varies from complex sites requiring remediation of ground water contamination to the less complex sites only requiring verification a radiological laboratory meets the unrestricted release criteria prior to license termination. It is anticipated that fuel cycle facilities will require a defined, substantial decommissioning effort, requiring the submittal of a

decommissioning plan. In contrast, most of the non-fuel cycle materials licensees have facilities which, for the most part, will not require submittal of a formal decommissioning plan for NRC review and approval and will not be a major effort. Because of this wide range of decommissioning activities and safety considerations, this manual chapter promulgates inspection program requirements and guidance necessary to provide reasonable assurance that NRC regulatory oversight contributes to public health and safety for a broad array of decommissioning activities. This inspection program focuses on ensuring that:

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

The management of decommissioning sites will be shared between the regions and the headquarters program office. Normally, DWMEP will project manage the complex materials decommissioning sites, and non-complex materials decommissioning sites will be managed in the regional offices.

**07.02 Timing and Frequency of Inspections.** The decommissioning inspection program is formally initiated when the licensee is required to begin decommissioning under NRC regulations. The inspection program continues until the site, including all buildings and other structures and outdoor areas, are remediated in accordance with NRC requirements and the appropriate licensing action is completed, which could be license termination or amendment, or documentation the site is being released for unrestricted use if it is a non-licensed entity.

The frequency of inspections will vary depending on the decommissioning activities taking place. In determining the inspection frequency, the region should factor in the radiological history of the licensee, the licensee's past performance, the licensee's planned schedule of activities, the potential for the decommissioning activities to affect the health and safety of workers and the public, and the level of public interest. Inspections should be scheduled to allow the inspector to observe, at a minimum, all significant decommissioning activities. Inspection of significant activities can include activities such as: observing the removal or dismantlement of equipment that possess a high source term; conducting confirmatory measurements that coincide with the licensee's surveying activities, particularly for situations where no other reasonable opportunity will exist; verifying licensee compliance with license commitments, decommissioning plans, regulatory requirements, or procedures; following up on previously identified violations or other identified weaknesses; evaluating performance following a significant change in the licensee or contractor work force; a

routine inspection prior to an upcoming public meeting or; a special inspection to address public concerns. It is expected that once a region has developed an acceptable level of confidence in a licensee's performance, the frequency of inspections would be reduced. Periodically verifying continued good performance and compliance with regulatory requirements and commitments is acceptable and expected. However, the inspector should not repeatedly review the same area when no procedural or program changes have occurred, or no performance problems have been noted.

Some sites have separate buildings and outdoor areas where licensed activities have ceased and are being decommissioned, while licensed activities continue to be conducted at other site locations. In these cases, inspections of the locations being decommissioned can be coordinated with inspections of routine operations or be performed independent of operations at the discretion of the inspection staff.

Although inspections are expected to be conducted at sites that are being actively remediated, there are times when inspections or site visits are warranted even though there is little to no site remediation taking place. For example, when a significant amount of public, State and/or Congressional interest exists, inspections and visits may be warranted to ensure that regional staff and management have first hand knowledge of the condition of a site as well as familiarization with licensee personnel. In other cases, no inspection activities may be needed. For example, a formal inspection is normally not necessary for a license termination for a medical practitioner licensed to use a sealed source, where the decommissioning effort is essentially the removal of the source from the licensee's facility. In addition, if no decommissioning activities are being conducted at the site, such as if the site owner is developing a decommissioning plan, an inspection is not warranted. The minimum inspection frequency for a site in a standby or possession-only status with no ongoing remediation activities will be determined by DWMEP management on a case-by-case basis and in conjunction with Regional office management prior to the Regional staff performing the inspections. For sites where major decommissioning activities are occurring such as the active remediation of structures, soils, or groundwater, inspections shall be scheduled to conform to significant decommissioning activities. Because of the nature and variance of decommissioning activities it is not efficient or effective to establish minimum inspection frequencies applicable to every situation. For major decommissioning efforts that involve large quantities of contaminated soil, groundwater contamination, onsite disposal, extensive surface contamination, dismantlement of major buildings and structures, or the potential for significant worker or public exposures, at least one inspection should be conducted while the site is being characterized. For such major efforts, the inspection schedule should also include an inspection during remediation of key buildings, equipment, and outdoor areas, and during and after the licensee's final survey. In general, inspections may be conducted more frequently if necessary to verify that work and public exposures are maintained ALARA.

07.03 Master Inspection Plan. At the onset of the decommissioning of a complex materials site, a Master Inspection Plan (MIP) should be developed. The purpose of the MIP is to ensure that the inspection program is properly focused and that sufficient resources are available to conduct the inspections when necessary. The MIP should be based on the expected schedule of licensee activities, and should include inspections of all significant decommissioning activities. The regional lead inspector is responsible for

developing the MIP, and he or she shall obtain the agreement of the cognizant DWMEP Project Manager (PM) for those complex sites being project managed by DWMEP before conducting the inspection. The inspection schedule provided in the MIP should be reviewed every 6-12 months and modified as needed to reflect changes in licensee schedules.

The MIP should provide the inspections that are planned, the activity or program area being inspected, the procedure(s) that will be used to conduct the inspections, and the approximate time frame for when the inspection is expected to occur.

Some factors that should be considered while developing and implementing a master inspection plan include: unique or challenging decommissioning approaches and procedures or hydrological conditions (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); licensee performance; staffing plans; public interest; transportation of radioactive waste; effectiveness of management oversight and contractor control; decommissioning funding, and; the timing and scheduling of significant decommissioning activities.

07.04 Periodic Management Visits to Meet with Licensee Representatives. For significant decommissioning projects, NRC headquarters and regional management should consider visiting the facility to understand the licensee's plans to decommission their facility. Licensee programs for the control and handling of radioactive materials, licensee staffing, public interest, experience and expertise, and the master inspection plan, are possible topics of discussion.

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. The intent of these visits is 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.

In addition, it may also be beneficial to conduct periodic conference calls between the PM, Region and licensee. Conducting calls on a weekly, bi-weekly or monthly schedule helps the NRC keep abreast of site activities and aids in development of an effective inspection schedule and site visits. These calls also help licensees keep informed about current NRC regulatory activities and licensing actions related to the decommissioning project

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 ensure openness in the NRC's decommissioning program is

expected to vary widely depending on the situation at each decommissioning site. 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.

07.05 Extent of Licensee Decommissioning Activities. When a licensee is able to use existing approved procedures to perform decommissioning activities, the inspector should be able to perform inspections using the same routine inspection procedures that were used during operational inspections. In these cases, a closeout inspection using Inspection Procedure (IP) 83890 can be used when license termination is requested. A few of the non-fuel cycle facilities, however, such as manufacturers of radiochemicals and certain research and development institutions, will typically require significant decommissioning efforts by the licensees and significant inspection activities by NRC inspection staffs. For these decommissionings, activities should be inspected using IP 87104, and supplemented with other procedures as necessary. Section 07.14 lists specific existing inspection procedures applicable to decommissioning.

07.06 Security and Control of Contaminated Material. Inspections conducted throughout decommissioning shall continue to assess licensee security and control of contaminated material. Inspections shall verify that contaminated material at licensed and unlicensed sites undergoing decommissioning is secured and controlled in accordance with 10 CFR 20.1801, and posted in accordance with 10 CFR 20.1902. Containers of contaminated materials shall be labeled in accordance with 10 CFR 20.1904 and 20.1905. Contaminated materials in buildings shall be secured and controlled by locking buildings, rooms, or areas. Contaminated materials in outside areas shall be secured and controlled by fencing or soil covers. Eight foot cyclone-type fencing is generally acceptable. Other fencing types, such as barbed wire fences, may be sufficient in low population, rural areas. Three to four foot thick soil covers over contaminated soil, slag, or tailing piles are also generally acceptable. Access to buildings, rooms, or indoor and outdoor areas having contaminated materials shall be limited only to individuals having the licensee's or responsible party's permission for access.

Normally, decommissioning activities will not involve materials subject to safeguards requirements. On decommissioning sites that do involve materials subject to safeguards requirements, safeguards inspections should be coordinated with decommissioning inspections on an as needed basis.

07.07 Inspection Coordination. Prior to performing inspections at a site undergoing decommissioning, the regional inspector should coordinate inspection activities, as appropriate, with the following personnel and organizations:

- a. For sites that are project managed by DWMEP, inform the cognizant DWMEP Project Manager (PM) who has responsibility for the site of the inspection. Offer the PM an opportunity to accompany the inspector during inspection.
- b. For sites that are project managed by the regional office, coordinate with the regional lead inspector (or PM) who has responsibility for the site. If the inspector conducting the inspection is also the lead inspector (or PM), coordinate the

inspection with regional management for overall content and scheduling considerations.

- c. Contact the licensee and discuss inspection plans (unless the inspection is unannounced).
- d. For sites with an NRC-approved decommissioning plan, where the environmental assessment for the decommissioning plan identifies Federal, State and other organizations interested in or affected by site activities, contacts should be made in accordance with established procedures at each site.
- e. Coordinate with the EPA or the appropriate State agency if the decommissioning involves hazardous wastes.
- f. Coordinate requests for technical assistance for survey work to be performed by an NRC contractor through DWMEP. It is recommended that the need for contractor support be determined early in the decommissioning process to assist in resource planning.

07.08 Scope of Inspections - General. It is recommended that all significant activities of a particular site undergoing decommissioning, including prior to, during, and after remediation, be identified and inspected. Major efforts in the inspection program should be focused on those activities where either data or experience indicates that potential problems may exist. In most cases, field sampling and independent measurements performed by inspection staff should be consistent with that performed during routine surveys associated with the use of licensed materials during operations at the site.

Inspectors should review environmental data related to airborne and liquid effluent releases and groundwater sampling for compliance with NRC standards and requirements. Airborne and liquid effluents should meet 10 CFR Part 20 requirements. Groundwater monitoring should be performed at sites with substantial volumes of contaminated soils, known groundwater impacts, or onsite disposal areas. If groundwater concentrations exceed the EPA National Primary Drinking Water Regulations (40 CFR Part 141), NRC hydrological staff should be consulted to evaluate the significance of the groundwater contamination and the need for further groundwater monitoring programs.

07.09 Scope of Inspections Prior to Dismantlement. During the typical decommissioning effort, there are planning and preparation activities that occur prior to dismantlement and demolition that may require inspection. Inspections may be conducted to: ensure proper implementation of NRC-approved site characterization plans; audit the Special Nuclear Material (SNM) inventory cleanout (for SNM licensees); and ensure adequate management and security controls for the duration of the decommissioning effort. In addition, the inspector should review the license for any new conditions that may have been added for decommissioning.

07.10 Scope of Inspections During Remediation and Dismantlement. The remediation of structures, soil, sediment, surface waters and groundwater, the dismantlement of buildings and other structures, and the disposal of waste constitute the majority of a typical

decommissioning effort for sites with widespread contamination. Inspections shall be conducted against NRC regulations, approved decommissioning plans, and license conditions for key decommissioning activities that are important for health and safety. These activities may include: physical security; criticality safety; essential systems and services; radiation protection for workers; material control and accountability, if applicable; environmental programs related to possible offsite releases of radioactive materials; fire protection; onsite waste management prior to offsite disposition; transportation of radioactive wastes for disposal; **corrective action program; in-process confirmatory surveys** and implementation of a licensee quality assurance program carried on throughout the decommissioning process.

07.11 Scope of Inspections After Remediation. Decommissioning activities after remediation of the site include a licensee-conducted final status survey and in some cases, an NRC confirmatory survey.

- a. Licensee Final Survey. As part of the decommissioning plan, the licensee will prepare a final survey plan. The purpose of the final survey will be to demonstrate compliance with the NRC decommissioning criteria. The final survey should include the licensed premises and offsite areas that were or may have been contaminated by the licensee's operations. Although the formal NRC review and acceptance of a licensee's final survey plan and report is performed by the NRC licensing Project Manager (or other equivalent staff), it is recommended that inspectors have adequate familiarity with these licensee documents to facilitate planning and executing inspections. As necessary to ensure confidence in the licensee's survey results, the inspection may include independent NRC analysis of the licensee's samples.

A final survey and report may not be required if a licensee can demonstrate the absence of radioactive contamination in some other manner, such as documentation that the licensee used only sealed sources that never showed evidence of leakage.

In most cases where a licensee is only decommissioning a few rooms or laboratories, the final status survey consists of conducting 100 percent scans of the floors, walls, tabletops, and equipment, and the collection of wipe samples. Typically, a confirmatory survey is not required in these cases. However, depending on the adequacy of the surveys conducted, the quality of the final status survey report, the licensee's history of use, the isotopes used, the form of the isotopes, whether there were documented past spills, the potential for contamination in drains, or any other issue, the inspector must determine whether an NRC confirmatory inspection would be appropriate. If an inspection can be conducted during the licensee's final status survey (during which side-by-side surveys can be conducted) the need for a confirmatory inspection would in most cases be eliminated. However, many licensees have completed the final status survey prior to informing the NRC of the desire to release the areas for unrestricted use, so this is not possible.

- b. Confirmatory Surveys. The purpose of the NRC confirmatory survey is to perform an audit of the licensee's final survey results to independently confirm that the licensee's final survey report is accurate and representative of site conditions. In most cases a comprehensive confirmatory survey will be performed following the decommissioning of a complex material site. However, based on the frequency, types, and results of in-process inspections, Regional management may decide that a confirmatory inspection is not necessary. Examples where a confirmatory survey would almost always be conducted would be: (1) an in-process inspection of the licensee's final survey program identifies multiple weaknesses; (2) repetitive violations are identified during the decommissioning process; (3) significant public or Congressional interest exists; or (4) in-process inspections were not conducted.

NRC confirmatory surveys should not be used to demonstrate, for the licensee, compliance with NRC residual contamination standards. The licensee always retains responsibility for compliance. The licensee's final survey plan and report should be adequate to demonstrate the condition of the site before any confirmatory survey is conducted by NRC or its contractor. Licensee surveys and NRC confirmatory surveys may be conducted in phases as decommissioning proceeds.

Prior to arranging a confirmatory survey, the inspector should review the documentation of decommissioning activities and the results of the licensee's final radiological survey. Any questions or concerns that the inspector might have concerning the survey should be communicated to the licensee (through the DWMEP PM where appropriate) for substantiation or clarification. When such issues are resolved to the inspection staff's satisfaction, a written confirmatory survey plan should be prepared, and the survey conducted at the earliest possible date. Unresolved issues related to the adequacy of the licensee's final survey report should be communicated to DWMEP staff before conducting a confirmatory survey.

Confirmatory surveys may be performed by regional staff or by technical assistance contract support. In most cases, contractor support will not be necessary. The use of a contractor may be justified if one of the following conditions exist: (1) the licensee's final survey involves unique or complex technical issues, (2) the confirmatory survey is expected to require significant resources to complete field surveys and sampling, or (3) the confirmatory survey is a very high priority that cannot be completed by NRC staff in a timely manner. In addition to the three conditions listed above, there may be other site-specific considerations that justify the use of a contractor. Contractual support should be coordinated through DWMEP. Inspectors should be onsite for at least part of the confirmatory surveys performed by contractors. . Coordination with contractors should be initiated at the earliest time to develop high quality plans for the confirmatory surveys. Regional staff shall contact the HQ staff manager responsible for the contract to arrange the confirmatory survey

- c. Multi-Agency Radiation Survey and Site Investigation Manual. For most sites that are undergoing significant decommissioning activities, particularly at those sites

where a decommissioning plan has been approved, the final status survey is performed using the guidance provided in NUREG-1575, (Rev 1) Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). MARSSIM provides a standardized approach for planning, conducting, evaluating, and documenting radiological surveys to demonstrate compliance with regulatory requirements. Because MARSSIM uses a statistically derived decision making process to assess and interpret the adequacy of the survey and sample results, under certain conditions, a confirmatory survey may not be necessary. However, this increases the need for the inspector to verify the adequacy of the licensee's survey and sampling program. This is done by evaluating the licensee's survey, sampling and counting procedures, as well as the adequacy of the analytical laboratory counting the samples. Inspections should also be conducted when the licensee is conducting surveys and collecting samples so that side-by-side surveys can be performed, split samples can be collected, and the licensee's survey and sampling technique's can be observed and evaluated. The goal is to verify that the final status survey demonstrates compliance with the License Termination Rule.

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

The inspection starts with the planning of inspections in the master inspection plan, as described in Section 07.03. Implementation of the MIP 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, license file, decommissioning plan, past inspection reports, allegations, and other pertinent information).
- 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.
- 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.
- 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. 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 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.
- f. Upon return to the regional office, the appropriate supervisory personnel should be briefed on the inspection findings and conclusions.
- g. Inspection findings, open items, follow-up items, and conclusions shall be documented in accordance with Manual Chapter 0610 and other relevant regional 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 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.

07.13 Documentation of Inspections. The inspection staff shall fully document, in the form of either a written report or NRC Form 591M, all visits to and inspections of each site undergoing decommissioning. Inspectors should be certain to document the results of the inspection activities related to the security and control of radioactive materials and reviews of environmental data (airborne and liquid effluent releases and groundwater sampling data).

07.14 IMCs and IPs for the Decommissioning Program. The NRC Inspection Manual Chapters (IMCs) and **Inspection Procedures** (IPs) listed below are applicable and

are recommended for inspections at sites undergoing decommissioning. These documents should be used as guidelines for inspectors in determining the inspection requirements for decommissioning and radiological safety aspects of various types of licensee activities. The core decommissioning IPs are annotated with an (\*). The other listed procedures are used on an “as needed” basis.

<u>Document Number</u>	<u>Title</u>
IMC 0610	“Nuclear Material Safety and Safeguards Inspection Reports.”
IMC 2800	“Materials Inspection Program.”
IP 83822	“Radiation Protection.”
IP 83890*	“Closeout Inspection and Survey.”
IP 84850	“Radioactive Waste Management - Inspection of Waste Generator Requirements of 10 CFR Part 20 and 10 CFR Part 61.”
IP 84900	“Low-Level Radioactive Waste Storage.”
IP 86740	“Inspection of Transportation Activities.”
IP 87103	“Inspection of Materials Licensees Involved in an Accident Incident or Bankruptcy Filing.”
IP 87104*	“Decommissioning Inspection Procedure for Materials Licensees.”
IP 88005	“Management Organization and Controls.”
IP 88015	“Headquarters Nuclear Criticality Safety Program.”
IP 88025	“Maintenance and Surveillance Testing.”
IP 88045	“Environmental Protection.”
IP 88050	“Emergency Preparedness.”
IP 88055	“Fire Protection.”
IP 93001	“OSHA Interface Activities.”

In addition to the procedures described above, inspection staffs should also use other existing parts of the NRC Inspection Manual that are routinely used on typical inspections and which are included in IMC 2600 and IMC 2800. For example, these may include: IP 90712, on in-office reviews of events; and IPs 92701, 92702, and 92703, on follow-up on inspection problems and licensee violations.

END

ATTACHMENT 1  
Revision History for IMC 2602

Commitment Tracking Number	Issue Date	Description of Change	Training Needed	Training Completion Date	Comment Resolution Accession Number
N/A	07/29/08 CN 08-021	Conducted 4 year historical search for commitments. Found none Coordinated with Regions – no comments on final	None	N/A	N/A