
INSPECTION PROCEDURE 87300

GROUNDWATER MONITORING AND REMEDIATION AT DECOMMISSIONING FUEL CYCLE AND COMPLEX MATERIALS FACILITIES

Effective Date: 12/30/2022

PROGRAM APPLICABILITY: IMC 2602

87300-01 INSPECTION OBJECTIVES

- 01.01 To determine if licensed decommissioning activities are being conducted in accordance with U.S. Nuclear Regulatory Commission (NRC) requirements.
- 01.02 To determine if groundwater monitoring and remediation at decommissioning fuel cycle and complex materials facilities is adequate.

87300-02 INSPECTION REQUIREMENTS

Conduct performance-based inspection with an emphasis on risk-significant activities that have an impact on safety and the environment. As described in IMC 2602, risk modules (RMs) are program areas that have been determined to be important to reducing risks at decommissioning materials facilities. RMs help focus inspection efforts on those site activities that are most likely to impact health and safety of occupational workers, the public, and/or the environment. Inspection time and effort should be concentrated on the RMs described in the following paragraphs.

02.01 Observation of Decommissioning Activities (RM-01)

Observe one or more ongoing or completed groundwater monitoring and remediation activities.

02.02 Occupational Radiation Protection (RM-02)

By both review of records and by observation, assess trends in radiation protection program performance related to ongoing or completed groundwater monitoring and remediation activities.

02.03 Security and Control of Radioactive Material (RM-03)

Observe the licensee's security and control of radioactive material.

02.04 Waste Generation, Storage, and Transportation (RM-04)

Where groundwater remediation involves use of treatment technologies that separate and remove radioactive contaminants, such as ion exchange, verify the licensee stores and transfers radioactive waste in accordance with NRC requirements. In addition,

observe packaging, storage, loading, and transportation, and review a selection of transportation records.

87300-03 INSPECTION GUIDANCE

03.01 Observation of Decommissioning Activities (RM-01)

During preparation for the inspection and during the entrance briefing, identify one or more groundwater remediation and monitoring activities that are ongoing at the site. When selecting from multiple activities, prioritize activities involving higher radiological risk. This includes areas with higher inventories of radioactive material; areas with loose or soluble chemical forms of radioactive material; areas with hard-to-detect radionuclides (e.g., alpha-emitting radionuclides or low-energy beta-emitting radionuclides); and decommissioning activities using novel or unconventional technologies.

03.02 Occupational Radiation Protection (RM-02)

Relying on both observations and review of licensee records:

- a. Observe routine contamination control surveys in restricted and controlled areas, such as around wellheads and treatment facilities.
- b. Observe whether restricted areas are correctly posted, such as radiation areas and airborne radioactivity areas. If groundwater contamination has migrated outside the site boundaries, any sampling or monitoring wells in the plume outside the site boundary should also be assessed for access control and postings.
- c. Observe workers' use of groundwater measuring and sampling equipment. Ensure that the licensee's staff demonstrates knowledge and understanding of well sampling equipment.
- d. Review records such as equipment release records and routine contamination surveys.
- e. Review radiation work permits as needed to supplement the inspection effort. The goal of this review is to ensure that radiological controls have been established and implemented for non-routine work activities.
- f. Assess training and qualification of the licensee's employees through interviews and observation, to determine how well employees understand their work activities and to ascertain whether licensee staff are qualified to implement the NRC-approved decommissioning plan.

The inspector may rotate these activities during future inspections.

03.03 Security and Control of Radioactive Material (RM-03)

Confirm that the licensee has maintained security and control of licensed material. Verify that the posting requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) 20.1902, "Posting Requirements," are met for any licensed material. Containers of licensed materials (e.g., sample containers and solid waste) shall be labeled in accordance with 10 CFR 20.1904, "Labeling Containers," and §20.1905,

“Exemptions to Labeling Requirements.” Licensed materials in buildings shall be secured and controlled by the licensee in such a manner as to prevent unauthorized access to radioactive material. For situations where the groundwater plume has migrated to locations outside restricted area, assess the security and controls in place to protect the public. If a licensee is in possession of quantities above the aggregated category 1 or 2 quantities of radioactive material, the inspector should also use Inspection Procedure (IP) 87137, “10 CFR Part 37 Materials Security Program”

The requirements in 10 CFR Part 20, Subpart I, “Storage and Control of Licensed Material,” apply to licensed material in storage (§20.1801, “Security of Stored Material,”) and not in storage (§20.1802, “Control of Material not in Storage.”) In most instances, security and control of licensed material is maintained using the same facilities and administrative procedures the licensee used before decommissioning. Access control includes signs, ropes, physical boundaries, and other barriers used to control access to radioactive material.

In some situations, the only way to prevent unauthorized access is to lock all access points to the material. However, mechanisms needed to prevent access are usually dependent upon the situation at the licensee's facility, such as the physical layout of the facility and the movement patterns of people within that facility. Other possibilities for securing against unauthorized removal include having a person present who could prevent such removal of material. The need to lock access to the licensed material must be determined on a case-by-case basis, after reviewing the details of the licensee's decommissioning program.

Access to buildings, rooms, or indoor and outdoor areas where contaminated materials are present shall be limited only to individuals having the licensee's permission for access.

03.04 Waste Generation, Storage, and Transportation (RM-04)

Groundwater monitoring and remediation produces several liquid and solid wastes. The inspector should review the licensee's management of groundwater sampling wastes (e.g., contaminated well purge water); impoundments, liquid effluent from groundwater treatment systems, and solid wastes produced, stored, packaged, and transported as a result of groundwater remediation activities. See Inspection Procedure (IP) 86740, “Inspection of Transportation Activities,” for procedures related to radioactive material packaging and transportation.

87300-04 RESOURCE ESTIMATE

The direct onsite inspection hours required to complete this inspection are dependent upon: (1) the licensee's decommissioning activities being inspected; (2) the standard materials health and safety inspection areas covered in the inspection; (3) the overall complexity of decommissioning the facility; (4) if the groundwater contamination has migrated out of the restricted area and (5) the duration of the licensee's decommissioning program. For facilities needing a significant decommissioning effort, it is estimated that approximately 10 to 40 inspection hours will be needed to complete each inspection of a key decommissioning activity or standard health and safety area from the operational program.

87300-05 PROCEDURE COMPLETION

This IP is complete when the inspection staff observe the activities, interview site staff, and review records as needed to satisfy the objectives of this IP. This IP should be completed as needed during a decommissioning project, based on site activities, and as described in the inspection schedule.

87300-06 REFERENCES

IMC 2602, "Decommissioning Inspection Program for Fuel Cycle Facilities and Materials Licensees." December 2022.

Applicable portions of the following NRC documents should be used for guidance:

NUREG-1575, Revision 1, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)." August 2000.

NUREG-1727, "NMSS Decommissioning Standard Review Plan." September 2000 (Appendix D, ALARA).

NUREG-1757, Volumes 1- 3, "Consolidated Decommissioning Guidance."

END

ATTACHMENTS

Attachment 1: Revision History for IP 87300

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Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public Information)
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