

ATTACHMENT 71124.08

INSPECTION AREA: Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

CORNERSTONE: Public Radiation Safety 80%
Occupational Radiation Safety 20%

EFFECTIVE DATE: January 1, 2010

INSPECTION BASES: The regulatory requirements in Criterion 60, "Control of Releases of Radioactive Materials to the Environment," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and the requirements of 10 CFR Parts 20, 61, and 71 and U.S. Department of Transportation regulations in 49 CFR Parts 170 through 189, ensure adequate protection for members of the public from the processing, handling, storage, and transportation of radioactive materials. This inspection area verifies aspects of the Public Radiation Safety Cornerstone for which there are no performance indicators for unplanned public exposure during transportation of radioactive material.

LEVEL OF EFFORT: Inspect Biennially

71124.08-01 INSPECTION OBJECTIVES

01.01 To verify the effectiveness of the licensee's programs for processing, handling, storage, and transportation of radioactive material.

71124.08-02 INSPECTION REQUIREMENTS

02.01 Inspection Planning. Whenever possible, coordinate the inspection schedule with the licensee to coincide with risk-significant activities so that licensee performance can be directly observed.

- a. Review the solid radioactive waste system description in the final safety analysis report (FSAR), the Process Control Program (PCP), and the recent radiological

effluent release report for information on the types, amounts, and processing of radioactive waste disposed.

- b. Review the scope of any quality assurance (QA) audit in this area since the last inspection to gain insights into the licensee's performance and inform the "smart sampling" inspection planning.

02.02 Radioactive Material Storage.

- a. Select one to three areas where containers of radioactive waste are stored, and verify that the containers are labeled in accordance with 10 CFR 20.1904, "Labeling Containers," or controlled in accordance with 10 CFR 20.1905, "Exemptions to Labeling Requirements," as appropriate. Do not duplicate inspection effort performed under Inspection Procedure 71124.01.
- b. Verify that the radioactive materials storage areas are controlled and posted in accordance with the requirements of 10 CFR Part 20, "Standards for Protection against Radiation." For materials stored or used in the controlled or unrestricted areas, verify that they are secured against unauthorized removal and controlled in accordance with 10 CFR 20.1801, "Security of Stored Material," and 20 CFR 1802, "Control of Material Not in Storage," as appropriate.
- c. Verify that the licensee has established a process for monitoring the impact of long-term storage (e.g., buildup of any gases produced by waste decomposition, chemical reactions, container deformation, loss of container integrity, or re-release of free-flowing water) sufficient to identify potential unmonitored, unplanned releases or nonconformance with waste disposal requirements.
- d. Select 5 to 10 containers of stored radioactive materials, and verify that there are no signs of swelling, leakage, and deformation.

Note: The inspector should exercise caution in that some of these containers may exhibit elevated dose rates and some containers may not be accessible. Container conditions can be verified by review of licensee programs or by direct observation, consistent with as low as reasonably achievable (ALARA) principles.

02.03 Radioactive Waste System Walkdown.

- a. Select one to three liquid or solid radioactive waste processing systems. Walk down accessible portions of systems to verify and assess that the current system configuration and operation agree with the descriptions in the FSAR, offsite dose calculation manual, and PCP.
- b. Select radioactive waste processing equipment that is not operational and/or is abandoned in place, and verify that the licensee has established administrative and/or physical controls (i.e., drainage and isolation of the system from other systems) to ensure that the equipment will not contribute to an unmonitored release

path and/or affect operating systems or be a source of unnecessary personnel exposure. Verify that the licensee has reviewed the safety significance of systems and equipment abandoned in place in accordance with 10 CFR 50.59, "Changes, Tests, and Experiments."

- c. Review the adequacy of any changes made to the radioactive waste processing systems since the last inspection. Verify that changes from what is described in the FSAR were reviewed and documented in accordance with 10 CFR 50.59, as appropriate. Review the impact, if any, on radiation doses to members of the public.
- d. Select one to three processes for transferring radioactive waste resin and/or sludge discharges into shipping/disposal containers. Verify (for the selected processes) that the waste stream mixing, sampling procedures, and methodology for waste concentration averaging are consistent with the PCP, and provide representative samples of the waste product for the purposes of waste classification as described in 10 CFR 61.55, "Waste Classification."
- e. For those systems that provide tank recirculation, verify that the tank recirculation procedure provides sufficient mixing (generally a minimum of three volumes is provided).
- f. Verify that the licensee's PCP correctly describes the current methods and procedures for dewatering and waste stabilization (e.g., removal of freestanding liquid).

02.04 Waste Characterization and Classification.

- a. Select two to three radioactive waste streams (e.g., dry active waste, ion exchange resins, mechanical filters, sludges, and activated materials), and verify that the licensee's radiochemical sample analysis results (i.e., "10 CFR Part 61" analysis) are sufficient to support radioactive waste characterization as required by 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste." Verify that the licensee's use of scaling factors and calculations to account for difficult-to-measure radionuclides is technically sound and based on current 10 CFR Part 61 analysis.
- b. For the waste streams selected above, verify that changes to plant operational parameters are taken into account to (1) maintain the validity of the waste stream composition data between the annual or biennial sample analysis update, and (2) verify that waste shipments continue to meet the requirements of 10 CFR Part 61. For example, the shipping staff may monitor reactor coolant radiochemistry to ensure the stability of the waste stream analyses. Changes in reactor coolant chemistry (e.g., fuel integrity or corrosion film morphology) can result in changes to the waste stream compositions.

- c. Verify that the licensee has established and maintains an adequate QA program to ensure compliance with the waste classification and characterization requirements of 10 CFR 61.55 and 10 CFR 61.56, "Waste Characteristics."

02.05 Shipment Preparation.

- a. Observe shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and licensee verification of shipment readiness. Verify that the requirements of any applicable transport cask certificate of compliance (CoC) have been met. Verify that the receiving licensee is authorized to receive the shipment packages. If applicable, verify that the licensee's procedures for cask loading and closure procedures are consistent with the vendor's current approved procedures.
- b. Observe radiation workers during the conduct of radioactive waste processing and radioactive material shipment preparation and receipt activities. Determine if the shippers are knowledgeable of the shipping regulations and whether shipping personnel demonstrate adequate skills to accomplish the package preparation requirements for public transport with respect to the licensee's response to NRC Bulletin 79-19, "Packaging of Low-Level Radioactive Waste for Transport and Burial," dated August 10, 1979, and 49 CFR Part 172, "Hazardous Materials Table, Special Provisions, Hazardous Materials Communication, Emergency Response Information, Training Requirements, and Security Plans," Subpart H, "Training." If direct observation is limited, review the technical instructions presented to workers during routine training. Verify that the licensee's training program provides training to personnel responsible for the conduct of radioactive waste processing and radioactive material shipment preparation activities.

02.06 Shipping Records. Select three to five nonexcepted package shipment (LSA I, II, III; SCO I, II; Type A or Type B) records. As a minimum, verify that the shipping documents indicate the proper shipper name; emergency response information and a 24-hour contact telephone number; accurate curie content and volume of material; and appropriate waste classification, transport index, and UN number. Verify that the shipment placarding is consistent with the information in the shipping documentation.

02.07 Identification and Resolution of Problems.

- a. Verify that problems associated with radioactive waste processing, handling, storage, and transportation, are being identified by the licensee at an appropriate threshold, are properly characterized, and are properly addressed for resolution in the licensee corrective action program. See Inspection Procedure 71152, "Identification and Resolution of Problems," for additional guidance. (optional) In addition to the above, verify the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involve radioactive waste processing, handling, storage, and transportation.

- b. Review results of selected audits performed since the last inspection of this program and evaluate the adequacy of the licensee's corrective actions for issues identified during those audits.

71124.08-03 INSPECTION GUIDANCE

03.01 Inspection Planning.

- a. No guidance provided.
- b. No guidance provided.
- c. No guidance provided.

03.02 Radioactive Material Storage.

- a. No guidance provided.
- b. No guidance provided.
- c. See Information Notice 90-50, "Minimization of Methane Gas in Plant Systems and Radwaste Shipping Containers," dated August 8, 1990.
- d. No guidance provided.

03.03 Radioactive Waste System Walkdown.

- a. No guidance provided.
- c. No guidance provided.
- d. See NRC, "Revised Staff Technical Position on Waste Form (SP-91-13)," dated January 30, 1991, and NRC, "Final Waste Classification and Waste Form Technical Position Papers," dated May 11, 1983.
- e. See NRC, "Issuance of Final Branch Technical Position on Concentration Averaging and Encapsulation," dated January 17, 1995.
- f. No guidance provided.

03.04 Waste Characterization and Classification.

- a. Guidance on meeting the requirements of 10 CFR 61.55 and 10 CFR 61.56, as well as Appendix G, "Control of Exposure From External Sources in Restricted Areas," to 10 CFR Part 20 is provided in the Branch Technical Position, "Waste Form Technical Position"; IE Information Notice 86-20, "Low-Level Radioactive Waste

Scaling Factors, 10 CFR Part 61,” dated March 28, 1986; Technical Position on Concentration Averaging; and NUREG-1608, “Categorizing and Transporting Low Specific Activity Materials and Surface Contaminated Objects,” issued July 1998.

b. No guidance provided.

c. No guidance provided.

03.05 Shipment Preparation.

a. Guidance on shipping preparation is provided in NUREG-1660, “U.S.-Specific Schedules for Transport of Specified Types of Radioactive Material Consignments,” issued January 1990.

b. No guidance provided.

03.06 Shipping Records. Guidance on the content of shipping records is provided in NUREG-1660. The inspector should focus on those waste stream products that represent the most risk-significant waste shipments.

03.07 Identification and Resolution of Problems. No guidance provided.

71124.08-04 RESOURCE ESTIMATE

For planning purposes, it is estimated to take 34 hours, on average (with a range of 30 to 38 hours), to perform the requirements of this attachment.

71124.08-05 COMPLETION STATUS

Inspection of the minimum sample size will constitute completion of this procedure in the RPS. The minimum sample size for this attachment is one (1), defined as the sum of all the inspection requirements. Therefore, all the inspection requirements of the procedure should be completed. If some of the requirements cannot be performed because of a lack of samples, the procedure should be closed with comment.

END

Revision History for
IP 71124.08

Commitment Tracking Number	Issue Date	Description of Change	Training Needed	Training Completion Date	Comment Resolution Accession Number
N/A	12/02/09 CN 09-030	<p>Conducted four year search for commitments and found none.</p> <p>This new procedure is being issued as a result of the 2009 ROP IP Realignment. It supersedes inspection requirements in IP 71121 and 71122.</p>	YES	09/09/2009	ML092810433