
INSPECTION PROCEDURE 84900

LOW-LEVEL RADIOACTIVE WASTE STORAGE

Effective Date: 12/30/2022

PROGRAM APPLICABILITY: IMCs 2600, 2602, and 2800

84900-01 INSPECTION OBJECTIVES

To determine whether fuel cycle and materials licensees that store low-level radioactive waste (LLRW) are doing so safely and in accordance with the U.S. Nuclear Regulatory Commission (NRC) requirements.

84900-02 INSPECTION REQUIREMENTS

02.01 Management Controls and Surveys

Determine whether the procedures for storage, inspection, and repackaging of LLRW are clear and available to all who need to use them, and that they have been approved by management. Confirm that inspections and surveys of stored LLRW have been performed at the required frequency and properly documented, and that the licensee has conducted and properly documented all required subsurface surveys and effluent sampling, as appropriate. Review the results of licensee inspections and surveys of LLRW in storage, focusing on licensee follow-up actions to problems identified. Check the licensee's records on LLRW storage, determine whether the records provide accountability and determine how long LLRW has been in storage. Confirm that the licensee is within authorized possession limits. Confirm that any required checks of fire protection systems have been performed.

02.02 Adequacy of Storage Area

Confirm that LLRW is stored either in a restricted area or in accordance with the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, Subpart I, "Storage and Control of Licensed Material," and is secured against unauthorized removal. Check that waste containers are visible to allow routine inspection and that they are readily accessible to licensee personnel. Confirm that the placement or stacking of containers is stable and that containers are not deformed under load, or likely to fall. Determine that "As Low As is Reasonably Achievable (ALARA)" considerations are used in the placement of the higher activity waste containers in the storage area. Check that the storage area is posted in accordance with 10 CFR Part 20, "Standards for Protection Against Radiation," requirements.

Confirm that the containers are protected from reasonably expected environmental conditions, including fire and flooding, and that the storage location is not subject to extremes of temperature or humidity (i.e., near a boiler room, laundry area, etc.). Check

ventilation of the storage area to determine if it is sufficient to prevent build-up of any gases produced by waste decomposition.

02.03 Package Integrity and Labeling

Examine a representative number of packages for signs of swelling, leakage, deformation or deterioration (i.e., rusting or other corrosion which may lead to breach).

Check to determine that the licensee's packages are clearly and properly labeled in accordance with 10 CFR 20.1904, "Labeling Containers," and 20.1905, "Exemptions to Labeling Requirements," and that LLRW is transferred or disposed in accordance with 10 CFR Part 20, Subpart K, "Waste Disposal."

84900-03 INSPECTION GUIDANCE

General Guidance

The requirements of this procedure are separate from, and in addition to, those of Inspection Procedure (IP) 84850, "Radioactive Waste Management - Inspection of Waste Generator Requirements of 10 CFR Part 20 and 10 CFR Part 61," which addresses the establishment and maintenance of procedures and quality assurance with respect to the waste form, classification, stabilization and manifest requirements of 10 CFR Part 20 and 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste."

Some licensees have LLRW storage facilities. Depending on the specific situation of a State or Compact, LLRW may be in storage for several months to several years. In general, extensive inspection efforts are not warranted because the safety hazard of LLRW storage facilities especially for dry LLRW storage is generally low. The inspection effort, therefore, should be geared toward assuring that licensees who are storing LLRW are in compliance with possession limits and license conditions, and do not develop an "out-of-sight, out-of-mind" attitude. This is done by examining the licensee's records to ensure that the required surveys, inspections, and accountability checks are being done and then following up with a physical examination of the storage area and waste containers/packages.

For inspections of a licensee possessing quantities above the aggregated category 1 or 2 quantities of radioactive material, the inspector should also use IP 87137, "10 CFR Part 37 Materials Security Programs," which contains the requirements and guidance for security inspections for licensees possessing category 1 and 2 quantities of radioactive material in specific areas such as security, transportation, and training.

Specific Guidance

03.01 Management Controls and Surveys

Review the license file and identify any license conditions and approvals for LLRW storage. Determine where LLRW is being stored. Review how long the LLRW has been stored (with respect to its general physical condition) and examine the licensee's accountability and security procedures for the waste. Determine whether the licensee is within the authorized possession limits. Review the licensee's procedures for safe placement, inspection and repackaging of LLRW in storage. Determine whether or not the licensee has conducted and properly documented:

- a. Inspections of LLRW packages to assure they maintain integrity.
- b. Radiation surveys of individual packages and the storage area, including the subsurface.
- c. Any required effluent sampling.
- d. Plans for curtailment or modification of activities that generate LLRW (IN 89-13).
- e. Plans and strategies for disposition of various waste streams (NUREG-1556, "Consolidated Guidance About Materials Licenses.")
- f. If applicable, implementation of 10 CFR Part 37, "Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material," security requirements for licensees possessing Category 1 and Category 2 quantities of radioactive material.
- g. Qualifications of persons responsible for management of stored waste (if different from qualifications for other radioactive material management). Review the licensee's records for waste placed in storage and determine whether they are adequate to account for the LLRW stored.

03.02 Adequacy of Storage Area

Inspect the storage area(s) to assure its adequacy with respect to:

- a. Access control and security.
- b. Access to, and housekeeping around, waste packages. Adequate lighting should be provided to permit identification of unsafe radiological and non-radiological conditions.
- c. Stable placement of waste or waste packages.
- d. Protection from environmental elements, fire and flooding, avoidance of temperature/humidity extremes, and ventilation considerations. Inspection should include, as appropriate, the verification of presence of fire/smoke detection alarms and/or suppression equipment.
- e. Adequacy of materials (packaging, packing material, sorbents etc.) and equipment (scaffolding, shelving, forklifts, cranes, etc.) necessary for waste storage operations.
- f. Adequacy of electrical and mechanical systems necessary for storage operations.
- g. Effluent management (prevention, detention, collection, and processing).
- h. Posting and labeling.

03.03 Adequacy of Storage Area Infrastructure/Environment

Note the relationship of LLRW storage to other activities both related and unrelated to LLRW storage. These may include both licensed and unlicensed activities and/or facilities that may impact the adequacy of certain structures to accommodate stored LLRW (e.g., storage of LLRW in outbuildings near other, unrelated facilities that are controlled by someone other than the licensee). Storage structures are likely to vary and include permanent buildings, outbuildings, sheds, shipping container, etc. The adequacy

of storage structures to accommodate long-term storage of LLRW can depend significantly on the surrounding activities and environment.

03.04 Package Integrity and Labeling

Examine several waste packages to determine whether the packages are adequate for the expected term of storage. Determine whether the type of packaging maintains its package integrity and that the packages are properly labeled. Examine integrity of package handling considerations such as slings, hooks, and pallets. Visually inspect for evidence of incipient package deterioration and evidence of fading or marring of marking and labels.

84900-04 RESOURCE ESTIMATE

An inspection performed using this IP is estimated to require 2-16 hours of inspector resources. This estimate is only for the direct inspection effort and does not include preparation for and documentation of the inspection.

84900-05 PROCEDURE COMPLETION

This IP is considered complete when the inspector has sufficiently reviewed the licensee's performance under this IP and the objectives of this procedure have been met.

84900-06 REFERENCES

IP 84850, "Radioactive Waste Management – Inspection of Waste Generator Requirements of 10 CFR Part 20 and 10 CFR Part 61."

IP 87137, "10 CFR Part 37 Materials Security Programs."

NRC Information Notice No. 89-13, "Alternative Waste Management Procedures in Case of Denial of Access to Low-Level Waste Disposal Sites." February 8, 1989.

NRC Information Notice No. 93-50, "Extended Storage of Sealed Sources." July 9, 1993.

NRC Regulatory Issue Summary (RIS) 2008-12, "Considerations for Extended Interim Storage of Low-Level Radioactive Waste by Fuel Cycle and Materials Licensees." May 9, 2008.

NRC RIS 2011-09, "Available Resources Associated with Extended Interim Storage of Low-Level Radioactive Waste." August 16, 2011.

NUREG-1556, "Consolidated Guidance About Materials Licenses," November 2015 et seq.

NUREG-1757, Revision 2, "Consolidated Decommissioning Guidance," Volume 1, "Decommissioning Process for Materials Licensees." September 2006.

END

ATTACHMENTS

Attachment 1: Revision History for IP 84900

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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) |
|----------------------------|---|---|--|---|
| N/A | 12/22/08 CN 08-037 | Completed 4 year historical search and found no commitments. Added references related to Increased Control Order and Fingerprinting and Criminal History Order and qualifications of waste storage personnel. Added several additional factors related to adequacy of storage area, storage infrastructure, and storage environs; Added additional package handling considerations. Deleted "Resource" discussion. | None | ML081980823 |
| N/A | ML22010A148 12/15/22 CN 22-026 | Clarified objectives. Added applicability to Program 2602. Replaced references to Increased Control Order and Fingerprinting and Criminal History Order with 10 CFR Part37. Added reference to subsurface surveys (2011 Decommissioning Planning Rule). | none | ML22327A272 ML22327A276 |