



Office of Nuclear Material Safety and Safeguards

Procedure Approval

***Reviewing the Non-Common Performance Indicator,
Low-Level Radioactive Waste Disposal Program
Interim State Agreements (SA) Procedure SA-109***

Issue Date:

Review Date:

Michael C. Layton
Director, NMSS/MSST

Date:

Paul Michalak
Branch Chief, NMSS/MSST/SALB

Date:

Duncan White
Procedure Contact

Date:

Terry Derstine
Organization of Agreement States, Chair

Date:

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NOTE

Any changes to the procedure will be the responsibility of the NMSS Procedure Contact. Copies of NMSS procedures are available through the NRC Web site at <https://scp.nrc.gov>

I. INTRODUCTION

This document describes the procedure for conducting reviews of the Non-Common Performance Indicator, Low-Level Radioactive Waste Disposal Program in accordance with the NRC Management Directive (MD) 5.6, *Integrated Materials Performance Evaluation Program (IMPEP)*.

II. OBJECTIVES

The objective is to determine if an Agreement State's regulatory oversight of LLRW disposal programs within their State is adequate to protect public health, safety, security, and the environment. Five subelements are reviewed to make this determination: (1) Technical Staffing and Training; (2) Status of the LLRW Disposal Inspection Program; (3) Technical Quality of Inspections; (4) Technical Quality of Licensing Actions; and (5) Technical Quality of Incident and Allegation Activities.

1. To confirm that qualified and trained technical staff are available to license, regulate, inspect, and assess the operation and performance of the LLRW disposal facility. The evaluation of staffing and training performance is reviewed according to SA-103, *Reviewing the Common Performance Indicator, Technical Staffing and Training*, IMC 1248, "Formal Qualifications Program for Federal and State Material and Environmental Management Programs," and this procedure.
2. To confirm that the LLRW disposal facility is inspected at prescribed frequencies as stated in IMC 2401, "Near-Surface Low-Level Radioactive Waste Disposal Facility Inspection Program," and to verify that statistical data on the status of the inspection program is maintained and can be retrieved, as generally assessed according to SA-101, *Reviewing the Common Performance Indicator, Status of Materials Inspection Program*, and this procedure.
3. To confirm that the technical quality of LLRW disposal inspections is adequate, as generally assessed according to SA-102, *Reviewing the Common Performance Indicator, Technical Quality of Inspections*, and this procedure.
4. To confirm that the technical quality of licensing actions is adequate, as generally assessed according to SA-104, *Reviewing the Common Performance Indicator, Technical Quality of Licensing Actions*, and this procedure.
5. To confirm that the response to incidents and allegations is adequate, as generally assessed according to SA-105, *Reviewing the Common Performance Indicator, Technical Quality of Incident and Allegation Activities*, and this procedure.

III. BACKGROUND

For the purposes of this procedure, the evaluation of the Agreement State program for the regulation of a LLRW disposal facility is best accomplished by considering the facility at one of two phases: operations or closure. The operations phase would be those time periods where the facility is undergoing pre-operations (e.g., initial licensing, construction), operations (e.g., waste receipt and disposal), through preparation for site closure. During this phase, the licensee (or operator) has an active presence at the site and the facility actively operates under a license and is subject to regulation by the Agreement State Program. The terms "facility" and "site" may be used interchangeably in this procedure.

The closure phase refers to the time period when the facility has entered the post-closure period (see 10 CFR 61.29) and then the institutional control period. During these periods activities at the site are reduced and generally limited to

observation, monitoring and maintenance and repair, first by the licensee (post-closure) and then the facility owner (institutional control). During the 5-year post-closure period (active maintenance period), the activities at the site are described by/specified in the licensee's site closure plan.

IV. ROLES AND RESPONSIBILITIES

A. Team Leader

1. In coordination with the IMPEP Program Manager, the Team Leader determines which team member is assigned lead review responsibility and assigns other team members to provide support, as necessary.
2. Assists in developing a plan to conduct further review or to identify root causes for any potential health, safety, security, or environmental protection issues identified by the review.
3. Communicates the team's findings to program management and ensures that the team's findings are in alignment with MD 5.6.

B. Reviewer

1. Familiarizes oneself with Inspection Manual Chapter (IMC) 2401, *Near-Surface Low-Level Radioactive Waste Disposal Facility Inspection Program*. *Additional references are available in Appendix A.*
2. Conducts inspector accompaniments (unless they are conducted by an alternate team member) before the on-site portion of the review.
3. Reviews each subelement in accordance with this procedure.
4. Informs the Team Leader of their findings throughout the review.
5. Presents the results of the team's review to the Agreement State Program at the staff exit meeting.
6. Completes their portion of the IMPEP report for the Low-Level Radioactive Waste Disposal Program performance indicator.
7. Attends the Management Review Board meeting and discusses the team's findings (this can be done either in-person or via teleconference).

V. GUIDANCE

A. Scope

1. This procedure applies to the review of the LLRW disposal program. In particular, the procedure applies to activities involving licensing, management, operation, inspection, closure, and/or post-closure of radioactive waste disposal under NRC's 10 CFR Part 61 and/or equivalent Agreement State regulations.
2. The regulation of radioactive materials, waste disposal, and/or waste processing facilities that do not fall under the NRC's 10 CFR Part 61 and/or equivalent Agreement State regulations should be reviewed

under the appropriate IMPEP common performance indicators. Radioactive waste processors are service provider licensees and are issued a 10 CFR Part 30 license.

3. The review of program elements (including regulations) required for compatibility are not in the scope of this indicator but are addressed by another non-common performance indicator (add LROPE).
4. The scope of the review of the LLRW disposal program should consider the phase(s) within the review period.
5. This procedure evaluates the Agreement State's performance over the period since the last IMPEP review. This time frame is defined as the review period.
6. The review guidelines below are examples of evaluation elements and are not requirements.

B. Preparation

1. Read MD 5.6, IMC 2401, and be familiar with the applicable IMPEP SA procedures, the basic regulatory guides involving LLRW disposal siting, licensing, environmental impacts, performance assessment, waste characterization, and waste averaging. Review the list of reference documents in Appendix A. These pertinent reference documents will be dependent on the LLRW disposal facility status.
2. Coordinate with the Team Leader, and the appropriate Agreement State personnel to accompany State inspectors during an inspection of the LLRW disposal facility before the on-site portion of the IMPEP review.
3. Request a copy of the current radioactive materials license, the last inspection report, a map of the LLRW disposal facility and disposal trenches, and related Agreement State procedures from the Agreement State Program prior to the on-site review.
4. Request the following documentation from the Team Leader prior to the on-site review:
 - a. Obtain a copy of the periodic meeting summaries for the review period to determine any new issues associated with the LLRW disposal program.
 - b. Obtain a copy of the last IMPEP report and identify any open issues or recommendations for this indicator.
5. Request a list of allegations related to the LLRW disposal program from the Regional State Agreements Officer (RSAO) prior to the on-site review.
6. Obtain a list of incidents related to the LLRW disposal program. A list of incidents can be found in Nuclear Materials Event Database (NMED). [NOTE: A password is required to access the NMED homepage at <https://nmed.inl.gov>. A password can be obtained by an e-mail request to NMED@inl.gov or to the NRC's NMED Project Manager at NMEDNRC@nrc.gov.]
7. Review the responses generated by the Agreement State Program, relevant to LLRW disposal questions in the IMPEP questionnaire.

C. Evaluation Process

1. The principal reviewer should refer to Part III *Evaluation Criteria*, of MD 5.6 for specific evaluation criteria. As noted in MD 5.6, the criteria for a satisfactory program is as follows:
 - a. The LLRW disposal program meets the "satisfactory" finding for the common performance indicators, Technical Staffing and Training, Status of Materials Inspection Program, Technical Quality of

Inspections, Technical Quality of Licensing Actions, and Technical Quality of Incident and Allegation Activities as described in Sections III.B.1, III.C.1, III.D.1, III.E.1, and III.F.1 of the handbook in MD 5.6.

- b. The LLRW disposal licensees are inspected at prescribed frequencies in accordance with IMC 2401 or compatible Agreement State procedure for a LLRW disposal facility. Any deviations from these schedules are coordinated and documented. IMC 2401 describes the specific radiological safety inspection program for near surface LLRW disposal facilities and defines specific inspection requirements.
 - c. Agreement State Program procedures are compatible with this procedure and are implemented and followed.
2. In applying the criteria, the reviewer(s) should consider the current phase of the life cycle of the LLRW disposal facility during the review period.
 3. The reviewer should evaluate any open issues or recommendations for closure and/or modification.
 4. The reviewer(s) will evaluate each subelement for this non-common performance indicator as outlined in this procedure and the respective IMPEP performance indicator procedures (SA-101, SA-102, SA-103, SA-104, or SA-105).
 5. Appendix B contains examples to assist the reviewer in identifying less than fully satisfactory findings of a program performance.

D. Reviewer Actions by Subelement During the Operations Phase

The reviewer(s) should evaluate the current phase(s) of the program activity and should consider that the primary purpose is to verify if the LLRW disposal facilities are operated and managed throughout their entire life cycle in a manner that provides protection from radioactivity to employees, members of the public, and the environment. The following describe reviewer actions in accordance with each subelement for a LLRW disposal facility in the operations phase.

1. Technical Staffing and Training (see SA-103)

The reviewer(s) should ensure that all technical staff involved in the LLRW disposal program have completed training in accordance with Appendix E of IMC 1248.

- a. Based on the LLRW disposal facility activities, the reviewer(s) should ensure there are staff (or access to staff in other divisions/departments/agencies, or to consultants) available with expertise, as needed, in materials licensing and/or inspection; health physics and radiation protection; radioactive materials' transportation and inspection; civil (geotechnical) and mechanical engineering; geology/geochemistry, surface water and ground water hydrology; chemical safety; and environmental science. The principal reviewer should conduct interviews with staff to evaluate qualifications and potential needs.
- b. The reviewer(s) should ensure the LLRW disposal program has a plan and schedule for development and implementation of a training program for the staff. The reviewer(s) should ensure records of staff training and qualification records include refresher training (e.g., radiation protection, transportation, treatment, storage, and disposal of radioactive waste, as well as environmental monitoring aspects).
- c. The reviewer(s) should ensure technical staff, conducting performance assessment reviews, receive training in risk and performance assessment, and are made aware of NUREG-2175, *Guidance for Conducting Technical Analyses for 10 CFR Part 61* and NUREG-1573, *A Performance Assessment Methodology for Low-Level Radioactive Waste Disposal Facilities: Recommendations of NRC's Performance Assessment Working Group*. The reviewer(s) should ensure technical staff are aware of

NRC's risk informed performance-based approaches and probabilistic risk assessment methods. The Agreement State Program may utilize other divisions/departments/agencies, or consultants for performing this work.

2. Status of the LLRW Disposal Inspection Program (see SA-101)

- a. Inspections may include the following:
- site security and site boundaries;
 - inspection of trenches and disposal cells;
 - waste shipments;
 - waste manifest;
 - waste characteristics and volumes;
 - shipment vehicle surveys and records;
 - release surveys for equipment, structures, and vehicles;
 - waste packages; marking, labeling, and placarding;
 - emergency response information; general shipping inspections for compliance with regulatory requirements by DOT, NRC, and/or Agreement State;
 - personnel exposures and dosimetry (e.g., internal, bioassay, and external dosimetry);
 - personnel qualifications and training;
 - air monitoring surveys;
 - radiological surveys;
 - surface water and ground water monitoring;
 - emergency response plans and drills;
 - waste receipt, treatment, storage, and disposal operations;
 - instrument calibrations and check sources;
 - radiological posting;
 - respiratory protections;
 - As Low As is Reasonable Achievable (ALARA) records; and
 - records of incidents and allegations.
- b. The reviewer(s) should:
- i. Evaluate inspections and assess the adequacy and frequency needed for safety, security, and to demonstrate compliance with regulatory requirements and license conditions.
 - ii. Use inspection data provided by the Agreement State Program from the IMPEP questionnaire and information provided during the onsite review. The Agreement State Program should not be penalized for failing to meet internally developed inspection schedules that are more restrictive/stringent than those specified in IMC 2401.
 - iii. Evaluate inspections in comparison to IMC 2401 and note any missed, late, or overdue inspections during the IMPEP review period. In this regard, the reviewer(s) should review the license, license conditions and amendments, and current LLRW disposal activities.

3. Technical Quality of LLRW Disposal Inspections (see SA-102)

- a. The reviewer(s) performs inspector accompaniments by observing inspections (see Appendix C) and reviewing inspection documentation (e.g., reports and procedures) during this performance-based evaluation.
- b. The reviewer should:
- i. Address the completeness of the inspection(s) to cover LLRW disposal activities (see IMC 2401) including timeliness and follow-up on inspection findings.

- ii. Review inspection documentation and interview inspectors to gain an understanding of the risk significance of radiological hazards at an LLRW disposal facility.
- iii. Determine whether inspection findings, including violations, are communicated to the licensee in accordance with Agreement State procedures.
- iv. Ensure that inspections focus on radiological safety aspects, implementation of safety procedures, potential effluent releases to the environment, public and worker's exposure, and release surveys for equipment, structures, and vehicles.
- v. Ensure the inspections address the quality and adequacy of environmental monitoring data (air, soil, surface-water, and/or ground water) and evaluation of data, if applicable, for potential radionuclide releases above threshold limits has been properly addressed.
- vi. Review inspection data regarding the quality and performance of liners and covers placed at the LLRW disposal facility, to ensure compliance with the required standards. Not all facilities may utilize liners and covers.
- vii. Review inspection records for waste shipments, to ensure that radiological and physical/chemical characteristics of the waste are consistent with license requirements and NRC's and DOT's regulations and guidance.
- viii. Interview staff to ensure there are radiological monitoring and surveys of any potential on-site/off-site residual contamination.

4. Technical Quality of Licensing Actions (see SA-104)

During the operations phase, the pre-licensing/construction activities may require a review of licensing actions regarding site selection, site performance assessment, disposal cell designs, establishment of license conditions and technical specifications of liners and engineering barriers. The pre-operational activities may require examination of State licensing actions regarding each component of the LLRW disposal facility. These components may include engineering systems and planned disposal operations or processes. The operations phase may require modifications of license conditions, expansion of LLRW disposal activities, mitigation measures, site security, modification of cell design, and financial assurance. The following specific review guidelines may apply to the LLRW disposal program reviews.

a. The reviewer(s) should:

- i. Evaluate a sample of licensing actions (e.g., site performance assessments, renewals, amendments) that are representative based on the number and type of actions performed during the review period. As practical, a cross-section of as many different technical reviewers and types of actions should be included.
- ii. Ensure that selected licensing actions have been reviewed for technical correctness and quality, including adequacy, accuracy, completeness, clarity, specificity, and consistency.
- iii. Ensure that when the Agreement State examines the licensee's technical documents, the Agreement State provides a technical basis supporting their licensing decision and actions specifically any risk-significant decisions related to health and safety. The basis for licensing actions should be documented.
- iv. Ensure that selected licensing actions conform to applicable regulations and license conditions, based on regulatory guidance, checklists, and policy memoranda, to ensure consistency with current accepted practice and standards.

- v. Determine whether NRC guidance is used or if the Agreement State has developed their own guidance to perform licensing reviews. If the Agreement State developed their own guidance, the reviewer(s) should evaluate the guidance for technical adequacy.
- vi. Review records that document deficiencies in licensee supporting information, including risk-significant errors, omissions, or missing information. Such records include letters, file notes of a telephone conversation, and other documents.
- vii. Determine that licensing actions are issued/signed under by an authorized official in accordance with the Agreement State procedure.
- viii. Verify the justifications of the technical licensing review whereby the Agreement State Program granted an exception, exemption, variance, or waiver from an applicable rule, regulatory guide, or industry standard.
- ix. Determine how the Agreement State Program ensured adequate financial assurance has been maintained for site closure in accordance with regulatory requirements and applicable guidance. This includes ensuring that the closure fund has the necessary funds or has reasonable assurance of obtaining the necessary funds, or a combination of the two to cover the estimated costs of conducting all licensed activities over the planned operating life of the project, including costs of construction and disposal (See Subpart E of 10 CFR Part 61).
- x. If the reviewer identifies an issue regarding one or more aspects of the technical review in support of licensing action(s), then the number of licensing actions reviewed should be increased. The reviewer will determine the extent of the issue and identify if the issue represents a programmatic weakness. The finding, if any, should be documented in the report.

5. Technical Quality of Incident and Allegation Activities (see SA-105)

- a. The reviewer(s) should:
 - i. Coordinate with the RSAO to obtain a listing of the LLRW disposal concerns and allegations the NRC referred to the Agreement State Program.
 - ii. Review the Agreement State Program's incident and allegation procedures.
 - iii. Examine a representative number of incidents and allegations files from the entire review period. All reportable incidents and allegations should be reviewed, if possible.
 - iv. Focus on: (a) risk-significant aspects; (b) discernment of root causes; (c) confidentiality and protection of allegor's identity; (d) conformance to the Program's procedures, (e) follow-up actions for closure of allegations, and (f) follow-up actions for incidents.
 - v. Review LLRW disposal facility event records entered in the Nuclear Material Events Database (NMED). The reviewer(s) should verify whether event actions and notifications are conducted as specified in SA-300.

E. Reviewer Actions During the Closure Phase

The term *closure* is typically used to encompass LLRW disposal activities that must be carried out to allow issuance of a license amendment for the disposal-site closure. The LLRW disposal-site closure is followed by a period of *post-closure* (observation and maintenance) then *institutional control* for observation of performance, environmental monitoring program at the disposal site, periodic surveillance, and minor

custodial care. The post-closure period, typically five years (see 10 CFR 61.29), is followed by an institutional control period of up to 100 years (see 10 CFR 61.7(b)(4) and 10 CFR 61.59(b)). The licensee develops a site closure plan for review and approval by the Agreement State Program.

1. The reviewer will evaluate the five subelements as noted above in Section D but will tailor the review to closure phase activities.
2. The reviewer(s) should include the following:
 - i. Focus on the review of the site-closure plan approved by the Agreement State and implementation activities associated with any portion of the plan and should also be familiar with closure phase inspection procedures listed in IMC 2401 during the closure/post-closure periods.
 - ii. Evaluate conformance with applicable regulations under 10 CFR Part 20 (Standards for Protection against Radiation) and 10 CFR Part 61 (Licensing Requirements for Land Disposal of Radioactive Waste) during the site-closure/post-closure periods. Conformance with license conditions and applicable regulations to these phases (e.g., 10 CFR §§ 61.26-61.31 or Agreement State compatible regulations) must be evaluated.
 - iii. Evaluate the Agreement State Program inspections during the closure phase to ensure that the licensee has implemented all elements of the closure plan and the Agreement State has approved initiation of the post-closure observation and maintenance.
 - iv. Determine if the Agreement State Program examined monitoring and observational data collected by the licensee during the closure and post-closure phases. The reviewer(s) should assess if the licensee compared the data to the performance assessment and site stability analysis results generated during earlier phases of facility operation. If the data did not agree with the analysis, the reviewer(s) should determine if modifications were made to the analysis or facility design, or if the differences were determined to be insignificant to public health and safety.
 - v. Review the closure and post-closure period licensing actions. These licensing actions may involve on-site, buffer zone, and off-site environmental monitoring activities, mitigation and clean-up measures, and financial assurance and institutional control issues.
 - vi. Review the following activities as applicable during the institutional control phase:
 - LLRW disposal-site record keeping;
 - review of site safety and security;
 - review of environmental monitoring data and records and follow-up, as appropriate based on trend analysis;
 - review of disposal site performance records for conformance with the safety criteria in 10 CFR Part 20 and 10 CFR Part 61;
 - review of site repair and maintenance activities and records;
 - review of financial assurance records; and
 - activities pertaining to license transfer, termination, and institutional controls.

F. Discussion of Findings with the Radiation Control Program

1. The IMPEP team should follow the guidance in SA-100, *Implementation of the Integrated Materials Performance Evaluation Program (IMPEP)*, for discussions of technical findings with

inspectors, supervisors, and management. If performance issues are identified by the reviewer(s) that lead to programmatic weaknesses, the reviewer(s) should seek to identify the root cause(s) of the issues which can be used as the basis for developing recommendations for corrective actions. As noted in Section II.A.3, SA-100 contains criteria regarding the development of recommendations by the IMPEP team.

2. The reviewer(s) will provide one overall rating for this indicator. In terms of general guidance for the IMPEP review team, a finding of "satisfactory" should be considered when none or only a few or small number of the cases or areas reviewed involve performance issues/deficiencies (e.g., inspection, licensing, staffing, etc.); an "unsatisfactory" finding should be considered when a majority or a large number of cases or areas reviewed involve performance issues/deficiencies, especially if they are chronic, programmatic, and/or of high-risk significance; and a finding of "satisfactory, but needs improvement" should be considered when more than a few or a small number of the cases or areas reviewed involve performance issues/deficiencies in high-risk-significant regulatory areas, but not to such an extent that the finding would be considered unsatisfactory.

VI. APPENDICES

Appendix A – Specific Reference Material List

Appendix B – Examples of Less than Fully Satisfactory Findings of a Program Performance

Appendix C – Inspector Accompaniment Summary Sheet

VII. REFERENCES

- a. NRC Inspection Manual Chapters available at: <https://www.nrc.gov/reading-rm/doc-collections/insp-manual/manual-chapter/>.
- b. [NRC Allegation Manual](#).
- c. Management Directives (MD) available at <https://scp.nrc.gov>.
- d. NMSS SA Procedures available at <https://scp.nrc.gov>.
- e. NRC/Agreement State Working Groups available at <https://scp.nrc.gov>.
- f. Title 10 Code of Federal Regulations available at <https://www.nrc.gov/reading-rm/doc-collections/cfr/>.
- g.

VIII. ADAMS REFERENCE DOCUMENTS

For knowledge management purposes, all previous revisions of this procedure, as well as associated correspondence with stakeholders that have been entered into NRC's Agencywide Documents Access and Management System (ADAMS) are listed below.

No.	Date	Document Title/Description	Accession Number
1	7/2/2004	STP-04-047, Opportunity for Comments on Draft of Two New IMPEP Procedures Regarding Review of Uranium Recovery Programs and Low-Level Waste Programs	ML041880157
2	6/20/05	STP Procedures SA-109, Reviewing the Non-Common Performance Indicator, Low-Level Radioactive Waste Disposal Program (Redline/Strikeout Version)	ML061640294
3	6/20/05	Summary of Comments on SA-109	ML061640301
4	5/16/06	STP Procedures SA-109, Reviewing the Non-Common Performance Indicator, Low-Level Radioactive Waste Disposal Program	ML061640290
5	6/30/05	STP-05-050, Final STP Procedure SA-109	ML051810484
6	7/14/09	NMSS-09-051, Opportunity to Comment on Draft Revisions to SA-108 and SA-109	ML091330602
7	7/14/09	NMSS Procedure SA-109 Draft Revision	ML091330114
8	1/22/10	Procedure SA-109, Reviewing the Non-Common Performance Indicator, Low-Level Radioactive Waste Disposal Program	ML092740597
9	TBD	NMSS Procedure SA-109 Draft Revision	ML

APPENDIX A

Specific Reference Material List

General IMPEP related documents:

1. NMSS Procedure SA-100, *Implementation of the Integrated Materials Performance Evaluation Program (IMPEP)*
2. NMSS Procedure SA-101, *Reviewing the Common Performance Indicator, Status of Materials Inspection Program*
3. NMSS Procedure SA-102, *Reviewing the Common Performance Indicator, Technical Quality of Inspections*
4. NMSS Procedure SA-103, *Reviewing the Common Performance Indicator, Technical Staffing and Training*
5. NMSS Procedure SA-104, *Reviewing the Common Performance Indicator, Technical Quality of Licensing Actions*
6. NMSS Procedure SA-105, *Reviewing the Common Performance Indicator, Technical Quality of Incident and Allegation Activities*
7. NMSS Procedure SA-111, *Formal Qualifications for Integrated Materials Performance Evaluation Program (IMPEP) Team Members and Team Leaders*
8. NMSS Procedure SA-300, *Reporting Material Events*
9. NMSS Procedure SA-400, *Management of Allegations*
10. NRC Management Directive 5.6, *Integrated Materials Performance Evaluation Program (IMPEP)*
11. NRC Management Directive 8.8, *Management of Allegations*

Documents for both operations and closure phases of a LLRW disposal facility:

1. NRC Inspection Manual, Inspection Manual Chapter (IMC) 1248, *Qualification Programs for Federal and State Materials and Environmental Management Programs*
2. NRC Inspection Manual, Inspection Manual Chapter (IMC) 2401, *Near-Surface Low-Level Radioactive Waste Disposal Facility Inspection Program* (Issue date: 11/27/01)
3. NRC Regulatory Guide 4.15, *Quality Assurance for Radiological Monitoring Programs (Inception through Normal Operations to License Termination) – Effluent Streams and the Environment*
4. NRC Regulatory Guide 4.18, *Standard Format and Content of Environmental Reports for Near Surface Disposal of Radioactive Waste*
5. NRC NUREG-0945, *Final Environmental Impact Statement on 10 CFR Part 61: Licensing Requirements for Land Disposal of Radioactive Waste*
6. NRC NUREG-1200, *Standard Review Plan for the Review of a License Application for a Low-Level Radioactive Waste Disposal Facility*
7. NRC NUREG-1573, *A Performance Assessment Methodology for Low-Level Radioactive Waste Disposal Facilities: Recommendations of NRC's Performance Assessment Working Group*
8. NRC NUREG-2175, *Guidance for Conducting Technical Analyses for 10 CFR Part 61*
9. Low-Level Radioactive Waste Disposal Information on the NRC Web site includes, but is not limited to the following documents:
 - i. Branch Technical Position on Concentration Averaging and Encapsulation, dated February 2015, (ADAMS Accession Nos.: ML12254B065, ML12326A611, and ML16096A278)
 - ii. Interim Guidance on Blending of Low-Level Radioactive Waste, dated March 17, 2011 (ML110480850)
 - iii. Branch Technical Position on Waste Form, Rev.1, dated January 24, 1991 (ML033630746)

Documents specifically for the operations phase for the LLRW disposal facility:

1. NRC Regulatory Guide 4.19, *Guidance for Selecting Sites for Near Surface Disposal of Low-Level Radioactive Waste*
2. NUREG-1199, Rev 2, *Standard Format and Content of a License Application for a Low-Level Radioactive Waste Disposal Facility*, January 1991
3. NUREG-1300, *Environmental Standard Review Plan for the Review of a License Application for a Low-Level Radioactive Waste Disposal Facility*, April 1987

4. NRC NUREG/CR-6567, *Low-Level Radioactive Waste Classification, Characterization, and Assessment: Waste Streams and Neutron-Activated Metals*

Documents specifically for the closure phase of a LLRW disposal facility:

1. NUREG-1388, *Environmental Monitoring of Low-Level Radioactive Waste Disposal Facility*, December 1989
2. Site Closure Plan for the LLRW disposal facility
3. 10 CFR 61.28 *Contents of Application for Closure*

APPENDIX B

Examples of Less Than Fully Satisfactory Findings of a Program Performance

NOTES:

The effectiveness of a program is assessed through the evaluation of the criteria listed in Section III, Evaluation Criteria, of MD 5.6. These criteria are NOT intended to be exhaustive but provide a starting point for the IMPEP review team to evaluate this indicator. The review team should also take into consideration other relevant mitigating factors that may have an impact on the program's performance under this performance indicator. The review team should consider a less than fully satisfactory finding when the identified performance issue(s) is/are programmatic in nature, and not isolated to one aspect, case, individual, etc. as applicable.

This list is not all inclusive and will be maintained and updated in the IMPEP Toolbox on the state communications portal website: <https://scp.nrc.gov>.

The IMPEP Team should take a holistic approach when reviewing these examples and take into consideration the impact on health, safety, and security. For this non-common performance indicator, the team will provide one overall finding.

Consideration should be given to a finding of “**satisfactory, but needs improvement**” when a review demonstrates the presence of one or more of the following conditions:

Performance Indicator (subelement) issues:

Technical Staffing and Training

- There are vacancies in the Program which has resulted in backlog of inspections with inspections being frequently completed late and a delay in response to incidents. Program management has not prioritized the backlog based on health and safety and risk significance.
- More than a few inspectors and license reviewers have not attended refresher training in accordance with IMC 1248 which has adversely affected the quality and timeliness of licensing actions and inspections.

Status of the Materials Inspection Program

- There have been more than a few missed or overdue inspections over the review period. The Agreement State Program was aware of what inspections were conducted overdue and identified actions but did not implement actions to conduct inspections at the required frequencies.
- More than a few (and less than most) inspection records/reports could not be located at the time of the review.
- Management was not aware that a module was missed and repeatedly not performed. The module did not directly relate to a public health and safety issue during the review period. For example, the Agreement State Program did not inspect erosion control barriers.
- The Agreement State Program performed between 75 and 90 percent of the required annual inspections for the last four years.

Technical Quality of Inspections

- Review of more than a few (less than most) inspection records indicated that survey instrumentation used by inspectors were not in calibration when used at the LLRW disposal facility.
- Management (or designated senior staff) did not perform accompaniments for some of the inspectors during the review period.

- More than a few (and less than most) inspection records/reports were not being reviewed and were not signed by management. Some of the reports contained items of noncompliance.
- During inspector accompaniments, the inspector(s) did not perform a thorough inspection. For example, the inspectors missed some inspection components (e.g., a posting requirement, used a survey meter that was not source checked, did not review required records in accordance with the Agreement State Program's inspection procedure).
- During the accompaniment of the LLRW inspectors, they did not observe licensed activities. The inspection consisted of a review of records and interviews with the licensee. The Agreement State Program did not conduct a performance-based inspection. During interviews with the inspectors, the inspectors indicated that they prefer reviewing records and not walking around the LLRW disposal facility.

Technical Quality of Licensing Actions

- More than a few (and less than most) license requests are approved without any review (i.e., rubber-stamp approval).
- The technical basis for more than a few (and less than most) licensing actions was not documented. There was an appearance that the license reviewer accepted the licensee's analysis with limited review or that there was no evaluation of the licensee's site performance assessment. Technical issues were identified that did not demonstrate compliance and the Agreement State Program did not identify these issues.

Technical Quality of Incident and Allegation Activities

- The Program should have conducted an on-site inspection for an incident that had potential impact on health and safety, but instead the Program evaluated the incident in the office and delayed an on-site review.
- Limited actions were taken for more than a few (and less than most) allegations.
- For more than a few (and less than most) allegations, the Program failed to provide the results of the investigation.

Inspection frequency issues:

- For more than a few (and less than most) LLRW disposal inspection modules are not inspected at prescribed frequencies in accordance with IMC 2401 or compatible Agreement State procedure for an operational facility.
- For more than a few (and less than most) deviations from the IMC 2401 inspection schedule were not coordinated and documented by the Program for a closure phase of a LLRW disposal facility.

Procedure issues:

- For more than a few (and less than most) procedures are not implemented and followed.
- For more than a few (and less than most) procedures are not compatible with IMC 2401.

NOTE: This list is not all inclusive and will be maintained and updated in the IMPEP Toolbox on the state communications portal website.

Consideration should be given to a finding of **"unsatisfactory"** when a review demonstrates the presence of one or more of the following conditions:

Performance Indicator (subelement) issues:

Technical Staffing and Training

- Ongoing vacancies adversely impacting the LLRW disposal program. There are vacancies in the Program which has resulted in a backlog of licensing and inspections not being conducted. Program management has not prioritized the backlog based on health and safety and risk significance.

- There are not enough technical staff to license, inspect and/or respond to incidents.

Status of the Materials Inspection Program

- Management does not track inspections and there have been missed or overdue inspections over the review period. The Agreement State Program was not aware of what inspections were conducted, or not conducted, over the review period.
- Most inspection records/reports are not maintained or missing.
- Management was not aware that a module was missed and repeatedly not performed. The Agreement State Program failed to review modules that could impact public health, safety, and security (e.g., personnel internal/external monitoring, environmental monitoring, and site security inspections) which are required to be inspected annually.
- The Agreement State Program performed less than 75 percent of the required annual inspections for the last four years.

Technical Quality of Inspections

- Survey instrumentation used by inspectors are not appropriate for the detection of radioactive material at the LLRW disposal facility.
- Management (or designated senior staff) did not perform accompaniments for all of the inspectors during the review period.
- Inspection records/reports are not being reviewed and signed by management. All of the reports were backlogged and management was not aware of the issues at the LLRW disposal facilities.
- During the inspector accompaniments, the inspector(s) failed to identify a violation of the license/regulations, used a survey meter that was not calibrated to perform independent measurements, did not identify security issues (e.g., an open gate or holes in the fence), did not review required records (e.g., waste manifest forms and dosimetry records) and failed to implement the Agreement State inspection procedure.

Technical Quality of Licensing Actions

- License requests are approved without any review (i.e., rubber-stamp approval).
- The technical basis for licensing actions was not documented. There was an appearance that the license reviewer accepted the licensee's analysis without additional review or that there was no evaluation of the licensee's site performance assessment. Technical issues were identified that did not demonstrate compliance and the Agreement State Program did not identify these issues.
- The license reviewers do not review well data or ground water studies and did not identify the release of radioactive material above the guidelines.

Technical Quality of Incident and Allegation Activities

- The Program does not respond to incidents.
- Allegations are not reviewed.
- The Program did not perform a review of the concerns from two allegations that were referred by the NRC. The two allegations dealt with site security and untrained operators handling radioactive materials.
- The Program disclosed the alleged's identity to the LLRW disposal facility licensee.

Inspection frequency issues:

- LLRW disposal inspection modules are not inspected at prescribed frequencies in accordance with IMC 2401 or compatible Agreement State procedure for an operational facility. Any deviations from this schedule are not coordinated and documented.
- The LLRW disposal facility had not been inspected over the entire review period.

Procedure issues:

- There are no procedures or procedures are not implemented and followed.
- The procedures are not compatible with IMC 2401.

ITEM	OK or N/A	COMMENTS
INSPECTOR'S PREPARATION		
Adequate review of license, tie-down conditions, & compliance history		
Inspection procedure(s), guidance, plan or field form (including last inspection record/report)		
Appropriate radiation detection and measurement instruments for activities inspected Calibrated Instrument response check, if appropriate		
Supplemental materials: Identification Regulations Forms Dosimetry		
OPENING		
Entrance briefing conducted at appropriate level		
Explanation of inspection purpose, scope, method		
Inquired about any incidents, overexposures, worker injuries, equipment failure, etc.		
Asked about what activities are occurring at the LLRW disposal facility		
INSPECTION		
Use of appropriate inspection form or checklist		

ITEM	OK or N/A	COMMENTS
"Walk through" at beginning of inspection		
Observation of licensee performance, licensee operations, licensed activities in progress		
Independent and/or confirmatory measurements performed including validation of public dose limits		
Facility checked for proper posting		
Waste checked for proper labeling/markings		
Site security and site boundaries verified: Restricted area and facility perimeter fence integrity; <input type="checkbox"/> Guard force or licensee personnel maintaining security		
Workers checked for proper dosimetry		
Interviews and discussions conducted with: licensee personnel / radworkers Ancillary workers		
Adherence to ALARA evaluated		
Inspection conducted in sufficient scope & depth		
Verification of corrections to: previous violations open or unresolved items of noncompliance		
Review of management oversight of licensed activities		

ITEM	OK or N/A	COMMENTS
Document the specific activity(ies) the inspector reviewed:		
RECORDS REVIEWED		

ITEM	O.K. or N/A	COMMENTS
<p>Inspectors should review records to supplement the performance-based inspection, as appropriate. For example:</p> <p>receipt & transfer of material</p> <p>internal (safety & security) audits</p> <p>radiation safety committee meeting minutes</p> <p>qualification and training of personnel; refresher training</p> <p>authorized users</p> <p>incidents & allegations</p> <p>instrument calibration</p> <p>radiological surveys & monitoring</p> <p>personnel dosimetry, bioassay, declarations of pregnancy</p> <p>operating & emergency procedures</p> <p>utilization logs</p> <p>leak tests</p> <p>sealed source inventory</p> <p>equipment & maintenance</p> <p>vehicle surveys</p> <p>release of air & sewer effluents</p> <p>environmental sampling & monitoring</p> <p>waste management, storage & disposal</p> <p>hazmat refresher training</p> <p>transportation of materials (waste manifests)</p> <p>any special license condition</p> <p>any new licensee procedure</p>		

INSPECTOR'S PROFESSIONALISM	
Use of proper health physics techniques (self monitoring, time, distance, shielding, use of survey instrument, etc.)	
Accurate evaluation of radiation safety	
Knowledge of health physics & regulations	
Appropriate appearance for license type, including proper use of PPE and safety equipment as appropriate	
Skill in wording questions (open-ended questioning technique)	
Suitable rapport with management and workers	
CLOSING	
Preparation for exit meeting; assembly of supporting material	
Exit conducted at appropriate management level	
Violations fully explained; license condition or regulation cited	
Recommendations clearly distinguished from violations	
Impending enforcement actions explained	
Licensee advised of expected response and need for corrective actions	

SUMMARY OF EVALUATION

The purposes of the inspector accompaniment(s) are to: (a) observe the status of LLRW disposal facility safety and security; (b) observe the inspector to ensure the inspector is familiar with the inspection process and procedures; (c) evaluate the adequacy of inspection tools and equipment used; (d) evaluate the completeness of onsite inspections; and (e) examine inspection reports, inspection records, and findings. If an onsite inspector is stationed at the facility, the reviewer(s) may observe this inspector as part of the inspector accompaniment(s).

1.	INSPECTOR'S PERFORMANCE	SATISFACTORY	NEEDS IMPROVEMENT
2.	PERFORMANCE COMMENTS:		
3.	SPECIFIC AREAS OF IMPROVEMENT:		
4.	THE INSPECTOR MIGHT BENEFIT FROM ADDITIONAL TRAINING IN: (SPECIFY TYPE OF TRAINING: e.g., Formal Course, Mentoring, On-The-Job, Webinar, Etc.)		
5.	<input type="checkbox"/> EVALUATION DISCUSSED WITH INSPECTOR AT THE END OF THE INSPECTION		
6.	<input type="checkbox"/> EVALUATION DISCUSSED WITH TEAM LEADER		
7.	<input type="checkbox"/> EVALUATION DISCUSSED DURING CONFERENCE CALL WITH INSPECTOR'S SUPERVISOR MANAGEMENT AND TEAM LEADER ON:		

