



**Office of Nuclear Material Safety and Safeguards
Procedure Approval**

***Reviewing the Non-Common Performance Indicator,
Uranium Recovery Program,
State Agreements (SA) Procedure SA-110***

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Director, NMSS/MSST

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David Crowley
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ML20245E135

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 Agreement State and U.S. Nuclear Regulatory Commission (NRC) uranium recovery program activities using the Non-Common Performance Indicator, Uranium Recovery Program as specified in NRC [Management Directive \(MD\) 5.6](#), *Integrated Materials Performance Evaluation Program (IMPEP)*.

II. OBJECTIVES

- A. To verify adequacy of an Agreement State or NRC uranium recovery program through the evaluation of performance with respect to five sub-elements: Technical Staffing and Training; Status of the Uranium Recovery Inspection Program; Technical Quality of Inspections; Technical Quality of Licensing Actions; and Technical Quality of Incident and Allegation Activities. Review of the activities and actions should confirm that:
1. Technical staffing and training is adequate and well managed, as generally assessed according to Office of Nuclear Material Safety and Safeguards (NMSS) State Agreements (SA) Procedure [SA-103](#), *Reviewing the Common Performance Indicator, Technical Staffing and Training*.
 2. Licensees are inspected at prescribed frequencies and to verify that statistical data on the status of the inspection program is maintained and can be retrieved, as generally assessed according to NMSS Procedure [SA-101](#), *Reviewing the Common Performance Indicator, Status of Materials Inspection Program*.
 3. Technical quality of inspections is adequate, as generally assessed according to NMSS Procedure [SA-102](#), *Reviewing the Common Performance Indicator, Technical Quality of Inspections*.
 4. Technical quality of licensing actions is adequate, as generally assessed according to NMSS Procedure [SA-104](#), *Reviewing the Common Performance Indicator, Technical Quality of Licensing Actions*.
 5. Response to incidents and allegations is adequate, as generally assessed according to NMSS Procedure [SA-105](#), *Reviewing the Common Performance Indicator, Technical Quality of Incident and Allegation Activities*.
- B. To conduct a performance-based evaluation of the uranium recovery program, considering unique programmatic needs and risk information into consideration when possible.

III. OVERVIEW

An effective uranium recovery licensing and inspection program depends on having a sufficient number of experienced, knowledgeable, and well-trained technical personnel.

Periodic inspections of licensed operations are essential to ensure that activities are conducted in compliance with regulatory requirements and consistent with good safety practices. The inspection frequency is dependent on the amount and type of radioactive material, the type of operation licensed, and the results of previous inspections. Modifications to the inspection frequency take into account licensee performance and inspection history. Information regarding the number of overdue inspections is a significant measure of the status of a uranium recovery inspection program, and thus the capability for maintaining and retrieving statistical data on the status of an inspection program must exist.

The licensing program evaluation includes review of licensing actions, decommissioning actions, and financial surety reviews, including notifications and examination of any actions that have been pending for a significant amount of time, to demonstrate effective and efficient regulation.

Responses to incidents and allegations must be conducted appropriately and in a timely manner in order to protect health, safety, and the environment, as well as maintain public confidence.

IV. ROLES AND RESPONSIBILITIES

A. IMPEP Review Team Leader (Team Leader)

1. In coordination with the IMPEP Program Manager, the Team Leader determines which team member is assigned lead review responsibility for this performance indicator.
2. Assigns team member(s) to perform inspector accompaniments.
3. Gathers the information from the Program necessary to select the inspectors to be accompanied and licensed activities to be inspected.
4. Selects inspections based upon radiological safety and security significance of the licensed activity, from the Program's pending inspections. The Team Leader may delegate these actions to the principal reviewer.
5. Communicates the team's findings to Program Management and ensures that the team's findings are in alignment with MD 5.6.

B. Principal Reviewer

1. Selects, reviews, and evaluates relevant documentation; conducts interviews with staff; conducts inspector accompaniments for this indicator (unless performed by another team member); evaluates the quality of inspection, licensing, incident, and allegation casework; and maintains a summary of the review for this indicator, including a summary of all casework files reviewed. Coordinates the review of the indicator with other

reviewers, if needed. Informs the Team Leader of the team's findings throughout the onsite review.

2. Presents the team's findings to the Program at the staff exit meeting.
3. Completes their portion of the IMPEP report for the Uranium Recovery Program performance indicator.
4. Attends the Management Review Board meeting for the IMPEP review; presents and discusses the team's findings for the Uranium Recovery Program performance indicator (this can be done either in person or remotely).

V. GUIDANCE

A. Scope

1. This procedure applies only to the review of uranium recovery program activities common to the Agreement States and the NRC, including 11e.(2) byproduct and source material inspections and licensing activities related to yellowcake production; and the construction, operation, and decommissioning of these facilities.
2. This procedure applies only to the review of uranium recovery actions performed by the Agreement States or the NRC in the period since the last review. The Principal Reviewer for this indicator may review earlier actions to ensure that outstanding items found in a previous review of the uranium recovery program have been addressed.

B. Review Guidelines

1. The response generated by the Agreement State or the NRC to relevant questions in the IMPEP questionnaire should be used to focus the review.
2. The Principal Reviewer should be familiar with the following NRC Inspection Manual Chapters (IMCs) with regard to the sub-elements, Technical Staffing and Training and Technical Quality of Uranium Recovery Inspections: IMC 1248, Appendix H, Training Requirements and Qualification Journal for Uranium Recovery Inspector; IMC 1248, Appendix I, Training Requirements and Qualification Journal for Uranium Recovery Project Manager/Technical Reviewer; IMC 2801, *Uranium Mill and 11e.(2) Byproduct Material Disposal Site and Facility Inspection Program*; and IMC 2620, *On-Site Construction Reviews at Inactive Uranium Mill Tailings Sites*. IMC 2641, *In-Situ Leach Facilities Inspection Program*.
3. The Principal Reviewer should be familiar with the following NUREGs with regard to the sub-element Technical Quality of Licensing Actions: NUREG-1620, *Standard Review Plan for the Review of a Reclamation Plan*

for Mill Tailings Sites; and NUREG-1569, Standard Review Plan for In-Situ Leach Uranium Extraction License Applications.

4. The Principal Reviewer should consider the following NRC Inspection Procedures (IP) when reviewing a uranium recovery inspection program: IP 89001, *In-Situ Leach Facilities*, IP 87654 *Uranium Mill In-Situ Leach Uranium Recovery*, and 11e.(2) *Byproduct Material Disposal Site Decommissioning I inspection*, and current applicable NMSS policy.
5. The Principal Reviewer should evaluate for closure or modification any issues or recommendations identified during the previous IMPEP review.

C. Review Details

1. Technical Staffing and Training

To determine technical staffing and training, in addition to the applicable guidance noted in NMSS Procedure SA-103, *Reviewing the Common Performance Indicator, Technical Staffing and Training*, the evaluation of staffing and training should be conducted in the same manner and as part of the Handbook to MD 5.6, Common Performance Indicator 1—Technical Staffing and Training.

The uranium recovery program staffing evaluated under this indicator can include contractual support or support from other State agencies. Professional staff should have bachelor's degrees or equivalent training in the physical sciences, life or earth sciences, or engineering. Staff and support contractors' qualifications, training, and experience should include the disciplines of health physics; civil or mechanical engineering; geology, hydrology and other earth sciences; or environmental science, depending on the life cycle of the uranium recovery facilities and the type of uranium recovery operations (e.g., conventional, in-situ recovery, heap leach, etc.) the program regulates during the review period.

The following steps for review of this indicator are recommended:

- Step 1: Prior to the onsite review, examine the questionnaire responses with respect to the technical staffing and training identified by the Agreement State or the NRC during the review period.
- Step 2: During the onsite review, interview the staff to verify positions, expertise required for position, education history and years of experience. Document the staff responses and any change in the number and types of positions and expertise of the staff from the last IMPEP review.
- Step 3: During the onsite review, request that staff provide an assessment of their workload and their opinion on whether current staffing and training is sufficient to conduct the required inspections, review

licensing actions, prepare licensing documents, and conduct all required responsibilities. Document the staff responses to these questions.

Step 4: During the onsite review, interview program management to verify the process and timing for filling vacant positions. If the program has staff vacancies, discuss with management the Program's plans to fill those vacancies.

2. Status of the Uranium Recovery Inspection Program

To determine the status of the uranium recovery inspection program, in addition to the applicable guidance noted in NMSS Procedure SA-101, , the evaluation of the status of the uranium recovery inspections should be conducted in the same manner and as part of the Handbook to MD 5.6, Common Performance Indicator 2—Status of Materials Inspection Program.

The frequency of periodic inspections of licensed uranium recovery operations evaluated under this indicator are essential to ensure that activities are being conducted in compliance with regulatory requirements and consistent with safety practices. The frequency of inspections is specified in IMC 2601 and in IMC 2801 for conventional uranium and thorium mills. Uranium recovery facilities that are on standby or under decommissioning also should be inspected at the frequencies specified. Inspections should occur more frequently if significant regulatory concerns develop, before major changes are made to operations, or if generic problems are identified. There must be a capability for maintaining and retrieving statistical data on the status of the inspection program for the uranium recovery program.

The following steps for review of this indicator are recommended:

Step 1: Prior to the onsite review, examine the questionnaire responses with respect to the status of the uranium recovery inspections identified by the Agreement State or the NRC during the review period.

Step 2: During the onsite review, interview the staff to verify the number of inspectors and required inspections for each licensee. Document the staff responses and any change in the number and types of licensee inspections conducted each year since the last IMPEP review.

Step 3: During the onsite review, request that staff provide their assessment of the status of the uranium recovery inspections. Interview staff and determine how many inspections were on time, and how many were late or missed. Also determine the reasons for the late or missed inspections. Document the staff responses to these questions.

Step 4: During the onsite review, review the program tracking system to verify that inspections were completed in accordance to the IMC 2801 and that inspection results were issued to the licensee in a timely manner.

Step 5: Document the case information as required by SA-101.

3. Technical Quality of Uranium Recovery Inspections

To determine technical quality of uranium recovery inspections, in addition to the applicable guidance noted in NMSS Procedure SA-102, *Reviewing the Common Performance Indicator, Technical Quality of Inspections*, the evaluation of the technical quality of the uranium recovery inspections should be conducted in the same manner and as part of the Handbook to MD 5.6, Common Performance Indicator 3—Technical Quality of Uranium Recovery Inspections.

The Principal Reviewer or other review team members will accompany the Agreement State or NRC inspectors to evaluate their knowledge and capabilities. During these accompaniments, the program's performance regarding evaluation of licensee's adherence to regulatory requirements, and the safe and secure use of agreement material at uranium milling facilities during the inspections will also be assessed. Ideally, these accompaniments will occur at a time other than the onsite review of the Agreement State or the NRC program. Reviews of this sub-element focus on the scope, completeness, and technical accuracy of completed inspections and related documentation. The Principal Reviewer will conduct in-depth, onsite reviews of completed inspection reports. In addition, the Principal Reviewer will verify that supervisors or designated senior staff conduct accompaniments of inspectors on an annual basis to provide management quality assurance.

The following steps for review of this indicator are recommended:

Step 1: Prior to the onsite review, examine the questionnaire responses with respect to the technical quality of uranium recovery inspections identified by the Agreement State or the NRC during the review period.

Step 2: Prior to the onsite review, examine the applicable Agreement State or NRC inspection procedures, and accompany inspector(s) at a uranium recovery facility. The number of inspector accompaniments should be in accordance with SA-102. Observe the inspectors conducting the inspection and their adherence to applicable inspection procedures. Document your observations and the staff responses to questions.

Step 3: During the onsite review, inquire as to how inspection reports and findings are transmitted to the licensee. Request information on

how safety concerns or violations are addressed during an inspection and what actions licensees are expected to take to respond to safety concerns and violations uncovered during an inspection. Document the staff responses.

- Step 4: During the onsite review, request that staff provide inspection reports, including those where safety concerns or violations were identified for your review. Review the inspection reports against applicable inspection guidance. Review the quality and clarity of these inspection documents. Review any required actions taken by the licensee to respond to any inspection safety concerns or violations.
- Step 5: During the onsite review, request that staff provide their assessment of the technical quality of the uranium recovery inspections and if any improvements are needed to enhance the quality of the inspections or applicable inspection guidance. Document the staff responses to these questions.
- Step 6: Document the case information as required by SA-102, *Reviewing the Common Performance Indicator, Technical Quality of Inspections*.

4. Technical Quality of Licensing Actions

To determine technical quality of licensing actions, in addition to the applicable guidance noted in NMSS Procedure SA-104, *Reviewing the Common Performance Indicator, Technical Quality of Licensing Actions*, the evaluation of the technical quality of the uranium recovery licensing program should be conducted in the same manner and as part of the Handbook to MD 5.6, Common Performance Indicator 4—Technical Quality of Licensing Actions.

The Principal Reviewer will evaluate whether the essential elements of the regulatory licensing requirements for radiation protection, qualifications of personnel, facilities and equipment, operating and emergency procedures, financial qualification and assurance, closure and decommissioning procedures, and institutional arrangements are met in a manner sufficient to establish the basis for a licensing action. Licensing actions and other related activities may be accomplished through the preparation and use of internal licensing guides, policy memoranda, or use of the NRC compatible guides to ensure technical quality in the licensing program. Onsite visits of facilities during the licensing process are conducted, when appropriate.

The following steps for review of this indicator are recommended:

- Step 1: Prior to the onsite review, examine the questionnaire responses with respect to the technical quality of licensing actions identified by the Agreement State or the NRC during the review period.

- Step 2: Prior to the onsite review, if possible, or at the beginning of the onsite review, examine the applicable Agreement State or NRC licensing procedures.
- Step 3: During the onsite review, request that staff provide several examples of documentation of licensing actions completed since the last IMPEP. These should include new licensing actions, license renewals, license amendments, license termination, surety reviews, major construction or decommissioning decisions, and any others if possible. Review the quality and clarity of these licensing action documents and their adherence to any applicable guidance. Document your review of these actions.
- Step 4: During onsite review, request that staff provide their assessment of the technical quality of the licensing actions and if any improvements are needed to enhance the quality of the licensing actions or applicable guidance. Document the staff responses to these questions.
- Step 5: Document the case information as required by SA-104, *Reviewing the Common Performance Indicator, Technical Quality of Licensing Actions*.

5. Technical Quality of Incident and Allegation Activities

To determine technical quality of incident and allegation activities, in addition to the applicable guidance noted in NMSS Procedure SA-105, the evaluation of the uranium recovery program incidents and allegations of safety concerns should be conducted in the same manner and as part of the Handbook to MD 5.6, Common Performance Indicator 5—Technical Quality of Incident and Allegation Activities.

The following steps for review of this indicator are recommended:

- Step 1: Prior to the onsite review, examine the questionnaire responses with respect to the incidents and allegations identified by the Agreement State or NRC during the review period.
- Step 2: Prior to the onsite review, perform a search of the Nuclear Material Events Database (NMED) to determine if there were any events in this indicator identified for the program under review.
- Step 3: Prior to the onsite review, if possible, or at the beginning of the onsite review, examine the applicable Agreement State or NRC incident response and allegation procedures.
- Step 4: During the onsite review, request a summary list of incident and allegation cases and select specific case files to review.

- Step 5: During the onsite review, evaluate the quality of the case files to determine if the response was thorough and commensurate with the safety significance of the incident or allegation.
- Step 6: During the onsite review, interview staff responsible for handling incident and allegation response to gain an understanding of the process by which incidents and allegations are resolved, and to answer any questions about the case files that were reviewed.
- Step 7: Document the case information required by the casework summary sheets referenced in SA-105.

D. Evaluation Process

1. The Principal Reviewer should specifically refer to MD 5.6, Part II (Performance Indicators) and Part III (Evaluation Criteria), Non-Common Performance Indicator, Uranium Recovery Program. These criteria should apply to program data for the entire review period. A finding of “satisfactory” is appropriate when a review demonstrates the presence of the following conditions:
 - a. The uranium recovery 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 identified in the Handbook to MD 5.6.
 - b. Uranium recovery licensees are inspected at regular intervals in accordance with frequencies prescribed in Inspection Manual Chapters (IMC) 2641 *In-Situ Leach Facilities Inspection Program* and 2801 *Uranium Mill and 11e.(2) Byproduct Material Disposal Site and Facility Inspection Program*, or compatible Agreement State procedure; inspection schedule deviations are generally the result of decisions that consider the risk of licensee operation, past licensee performance, and the need to temporarily defer the inspection(s) to address more urgent or more critical priorities; and there is a plan to reschedule any missed or deferred inspections or a basis established for not rescheduling.
 - c. Inspection findings are well-founded and communicated to licensees at the exit briefings, and confirmed formally in writing in 30 days, or 45 days for a team inspection, after inspection completion.
 - d. A review of inspector field notes or completed reports indicates that inspections are complete and reviewed promptly by supervisors or management.
 - e. Procedures are in place and implemented to help identify root causes and poor licensee performance. Follow-up inspections address previously identified open items and past violations.

- f. Inspection findings of performance issues lead to appropriate and prompt regulatory action by program staff and management.
 - g. Supervisors or designated senior staff accompany all inspectors on an annual basis.
 - h. Review indicates that uranium recovery inspections address potentially important radiological health, safety, and environmental concerns.
 - i. Review of completed licensing actions and a representative sample of licensing files indicates that licensing actions are thorough, complete, consistent, and of acceptable technical quality.
 - j. Procedures compatible with the NMSS procedures listed in SA-107 *Reviewing the Non-Common Performance Indicator, Legislation, Regulations, and Other Program Elements* and other applicable guidance documents are implemented and followed. In determining compatibility, the Principle Reviewer should exercise flexibility by taking into account the uranium recovery facilities and the type of uranium recovery operations (e.g., conventional, in-situ recovery, heap leach, etc.) the program regulates during the review period.
 - k. Public hearings have occurred in accordance with the State's administrative laws.
2. Evaluation for each sub-element for this Non-Common Performance Indicator should be conducted in a manner similar to, but not necessarily part of, the respective Common Performance Indicators.
 3. In applying the evaluation criteria, the Principal Reviewer should exercise flexibility to determine the rating for this indicator. The team should consider the current status of the program and any mitigating factors that may have affected performance. The team should also consider the life cycle of the uranium recovery facilities and the type of uranium recovery operations (e.g., conventional, in-situ recovery, heap leach, etc.) the program regulates during the review period.
- E. Discussion of Findings with the Radiation Control Program
1. The reviewer should follow the guidance given in NMSS Procedure SA-100, *Implementation of the Integrated Materials Performance Evaluation Program (IMPEP)*, for discussing technical findings with staff, supervisors, and management.
 2. If the IMPEP review team identifies programmatic performance issues, the IMPEP review team should seek to identify the root cause(s) of the issues, which can be used as the basis for developing recommendations for

corrective actions. The NMSS procedure SA-100 contains criteria regarding the development of recommendations by the IMPEP team.

3. A single rating will be assigned to this performance indicator using the guidance in of this procedure. If an Agreement State's program is limited to the regulatory oversight of uranium recovery facilities, the review team will provide individual ratings for each of the sub-indicators as if they were common performance indicators in accordance with MD 5.6. See SA-100 for additional guidance.

Note: *Examples of Less than Satisfactory Findings of Program Performance* can be found in the IMPEP Toolbox on the State Communications Portal Web site. These examples may assist the reviewer in identifying less than fully satisfactory findings of a Program's performance

VI. REFERENCES

Memorandum of Understanding Between the NRC and OSHA; Worker Protection at NRC- Licensed Facilities, July 19, 2013. (ADAMS Accession No. ML11354A432)

Memorandum of Understanding Between the NRC and MSHA, 45 FR 1315, January 4, 1980. (ADAMS Accession No. ML093020131).

Memorandum to M. Virgilio, Re: Adjustments to the Uranium Recovery Inspection Program February 13, 2004 (ADAMS Accession No. ML040480067).

NMSS SA Procedures available at <https://scp.nrc.gov>.

NRC Inspection Manual Chapters available at <https://www.nrc.gov/reading-rm/doc-collections/insp-manual/manual-chapter/>.

NRC Inspection Procedures at <https://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>.

NRC Management Directives available at <https://scp.nrc.gov>.

NRC Regulatory Guides (RGs) available at <https://www.nrc.gov/reading-rm/doc-collections/reg-guides/#guides>.

The following may be most applicable to this performance indicator:

RG 3.11, Rev. 3, *Design, Construction Design, Construction, and Inspection of Embankment Retention Systems at Uranium Recovery Facilities*, November 2008.

RG 4.14, Rev.1, *Radiological Effluent and Environmental Monitoring at Uranium Mills*, April 1980.

RG 8.11, Rev. 0, *Applications of Bioassay for Uranium*, June 1974.

RG 8.22, Rev. 1, *Bioassay at Uranium Mills*, August 1988.

RG 8.30, Rev. 1, *Health Physics Surveys in Uranium Recovery Facilities*, May 2002.

RG 8.31, Rev. 1, *Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Recovery Facilities Will be As Low As is Reasonably Achievable*, May 2002.

NRC Regulatory Issue Summaries(RIS) available at <https://www.nrc.gov/reading-rm/doc-collections/gen-comm/reg-issues/>

RIS 2000-023, *Recent Changes to Uranium Recovery Policy*, November 30, 2000.

RIS 2009-005, *Uranium Recovery Policy Regarding: (1) the Process for Scheduling Licensing Reviews of Applications for New Uranium Groundwater Facilities, and (2) the Restoration of Groundwater at Licensed Uranium in-situ Recovery Facilities*. April 29, 2009.

NUREG Series available at <https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/>

VII. 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 ADAMS are listed below.

No.	Date	Document Title/Description	Accession Number
1	7/2/2004	Request for Comments on Draft of Two New IMPEP Procedures Regarding Review of Uranium Recovery Programs and Low Level Waste Programs (STP-04-047)	ML041880157
2	4/14/2004	Summary of Comments on SA-110	ML060450028
3	8/30/2005	Final STP Procedure SA-110	ML052440571
4	1/22/2010	Revised FSME Procedure SA-110	ML093420327
5	12/20/2019	NMSS Interim Procedure SA-110	ML19324D066
6	07/06/2020	Resolution of Comments	ML20188A165
7	09/15/2020	Final NMSS Procedure SA-110	ML20245E135