Office of Federal and State Materials and Environmental Management Programs (FSME) Procedure Approval

Reviewing the Non-Common Performance Indicator, Uranium Recovery Program - SA-110

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NOTE

This procedure was first issued by the former Office of State and Tribal Programs. As of October 1, 2006, any changes to the procedure will be the responsibility of the FSME Procedure Contact. Copies of FSME procedures will be available through the NRC website.

	Procedure Title: ***Reviewing the Non-Common Performance Indicator, Uranium Recovery Program*** **Procedure Number: SA-110**	**Page: 1 of 11** **Issue Date:** **1/22/2010**

I. INTRODUCTION

This document describes the procedure for conducting reviews of U.S. Nuclear Regulatory Commission (NRC) Regional and Agreement State uranium recovery program activities using the Non-Common Performance Indicator, Uranium Recovery Program [NRC Management Directive (MD) 5.6, *Integrated Materials Performance Evaluation Program (IMPEP)*].

II. OBJECTIVES

A. To verify the status of an Agreement State or NRC Regional uranium recovery program through the performance of five subelements: 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.

1. To confirm that technical staffing and training is adequate and well managed, as generally assessed according to FSME Procedure SA-103, *Reviewing the Common Performance Indicator, Technical Staffing and Training*.

2. To confirm that 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 FSME Procedure SA-101, *Reviewing the Common Performance Indicator, Status of Materials Inspection Program*.

3. To confirm that the technical quality of inspections is adequate, as generally assessed according to FSME Procedure SA-102, *Reviewing the Common Performance Indicator, Technical Quality of Inspections*

4. To confirm that the technical quality of licensing actions is adequate, as generally assessed according to FSME Procedure SA-104, *Reviewing the Common Performance Indicator, Technical Quality of Licensing Actions*.

5. To confirm that the response to incidents and allegations is adequate, as generally assessed according to FSME 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, taking unique programmatic needs and risk information into consideration when possible.

III. BACKGROUND

An effective uranium recovery licensing and inspection program depends on having a sufficient number of experienced, knowledgeable, and well-trained technical staff, gauged by both qualitative and quantitative measures.

Periodic inspections of licensed operations are essential to ensure that activities are conducted in compliance with regulatory requirements and consistent with good safety practices. Inspection frequency is based on the potential radiation, chemical, and industrial hazards of the licensee's program. Modifications to the inspection frequency take licensee performance and inspection history into account. 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.

Regarding NRC's uranium recovery program, as of the date of issuance of this procedure, only NRC Region IV performs radiation safety inspections at uranium recovery facilities. NRC Headquarters staff often accompanies Region IV staff during uranium recovery inspections to provide expertise and support in specialized areas, such as ground and surface water hydrology. FSME Procedure SA-102, *Reviewing the Common Performance Indicator, Technical Quality of Inspections*, excludes reviews of inspection activities performed by NRC Headquarters staff. As of the date of issuance of this procedure, NRC licensing of uranium recovery facilities is performed by NRC Headquarters staff. FSME Procedure SA-104, *Reviewing the Common Performance Indicator, Technical Quality of Licensing Actions*, excludes reviews of licenses issued by NRC Headquarters personnel.

IV. ROLES AND RESPONSIBILITIES

A. Team Leader

Determines which team member is assigned lead review responsibility for this performance indicator. The reviewer(s) should meet the appropriate requirements specified in MD 5.10, *Formal Qualifications for Integrated Materials Performance Evaluation Program (IMPEP) Team Members*.

B. Principal Reviewer

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.

V. GUIDANCE

A. Scope

1. This procedure applies only to review of the uranium recovery program activities common to the NRC and Agreement States, including 11e.(2) byproduct and source material inspections and licensing activities related to yellowcake production and the construction, operation, and decommission of these facilities.

2. This procedure applies only to the review of uranium recovery actions performed by the NRC Region or Agreement State 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. Evaluation Procedures

1. The principal reviewer should specifically refer to MD 5.6, Part II (Performance Indicators) and Part III (Evaluation Criteria), Non-Common Performance Indicator 4 – Uranium Recovery Program. These criteria should apply to program data for the entire review period.

2. Evaluation for each subelement 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 review team may exercise some flexibility to determine the rating for this indicator. The team should take into account the current status of the program and any mitigating factors that may have affected performance.

C. Review Guidelines

1. The response generated by the NRC Region or Agreement State to relevant questions in the IMPEP questionnaire should be used to focus the review.

2. The reviewer should be familiar with the following NRC Inspection Manual Chapters (IMC): IMC 2801, *Uranium Mill and 11e.(2) Byproduct Material Disposal Site and*

Facility Inspection Program; IMC 2641, *In-Situ Leach Facilities Inspection Program*; IMC 2602, *Decommissioning Inspection Program for Fuel Cycle Facilities and Materials Licensees*; IMC 2604, *Licensee Performance Review*; and IMC 2620, *On-Site Construction Reviews at Inactive Uranium Mill Tailings Sites*.

3. The reviewer should be familiar with the following NUREGs: 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. When reviewing an NRC Regional uranium recovery inspection program, consider NRC Inspection Procedure (IP) 89001, *In-Situ Leach Facilities*; IP 87654 *Uranium Mill, In-Situ Leach Uranium Recovery, and 11e.(2) Byproduct Material Disposal Site Decommissioning Inspection*; and current applicable FSME policy.

5. Technical Quality of Licensing Actions is not part of NRC Regional reviews, given that, as of the date of issuance of this procedure, uranium recovery licensing activities are performed by NRC Headquarters staff.

6. Any issues or recommendations identified during the previous IMPEP review should be resolved in accordance with Section V.H.4, FSME Procedure SA-100, *Implementation of the Integrated Materials Performance Evaluation Program (IMPEP)*.

D. Review Details

1. Technical Staffing and Training

   To determine technical staffing and training, in addition to the applicable guidance noted in FSME Procedure SA-103, *Reviewing the Common Performance Indicator, Technical Staffing and Training*, the reviewer should evaluate and document the following:

   a. The NRC Regional and Agreement State staff have training and experience comparable to that recommended in NRC Regulatory Guide 8.31, Section 2.4.1, *Radiation Safety Officer*. Required training for NRC Regional staff is provided in IMC 1246, Appendix A, *Section XII: Training Requirements for Uranium Recovery Inspector*.

   b. Staff is available (or access to staff in other divisions/departments, or to consultants/contractors) that have expertise in materials licensing and/or inspection; civil (geotechnical) and mechanical engineering; geology (including seismology and volcanology), surface and ground water hydrology; chemical safety; and environmental science.

c. The program includes refresher training for important skills and training specific to uranium recovery including the associated chemical and industrial hazards.

d. The staff is trained in interviewing and other communication skills.

e. Knowledge transfer through mentoring of new staff and knowledge management through de-briefing of departing staff is routine. Supervision of program staff is appropriate.

f. Key staff is able to attend industry or professional meetings or symposia.

g. Staff receive some training in risk assessment, and are aware of the recommendations in NUREG/CR-6733, *A Baseline Risk-Informed, Performance-Based Approach for In Situ Leach Uranium Extraction Licensees*.

h. NRC Regional staff are aware of the Memoranda Of Understanding between NRC and the Occupational Safety and Health Administration (OSHA) and Mine Safety and Health Administration (MSHA). NRC Regional staff should also be familiar with IMC 1007, *Interfacing Activities Between Regional Offices of NRC and OSHA*.

i. NRC Regional staff are aware of the applicable State/U.S. Environmental Protection Agency groundwater and underground injection control regulations.

j. NRC Regional staff are familiar with the following NRC Regulatory Guides (RG): RG 3.11, *Design, Construction Design, Construction, and Inspection of Embankment Retention Systems at Uranium Recovery Facilities*; RG 4.14, *Radiological Effluent and Environmental Monitoring at Uranium Mills*; RG 8.11, *Applications of Bioassay for Uranium*; RG 8.22, *Bioassay at Uranium Mills*; RG 8.30, *Health Physics Surveys in Uranium Recovery Facilities*; and RG 8.31, *Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Recovery Facilities Will be ALARA*. NRC Regional staff should also be familiar with the relevant sections of NUREG-1620, Rev. 1, *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*.

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 FSME Procedure SA-101, *Reviewing the Common Performance Indicator, Status of Materials Inspection Program*, the reviewer should evaluate and document the following:

a. Any missed or late inspections (>25 percent of the frequency) in the context of the activities at the uranium recovery facility during the review period

(i.e., under construction/pre-operational, operating, on stand-by, or in decommissioning).

b. Include a qualitative evaluation that examines the justifications for an NRC Region or Agreement State to revise its internal inspection frequencies.

c. When reviewing an NRC Regional program, the principal reviewer should consult with the Decommissioning and Uranium Recovery Licensing Directorate of the Division of Waste Management and Environmental Protection, FSME, regarding revised inspection performance goals or other programmatic adjustments. Also, use inspection data provided by the Region on the questionnaire and information provided during the on-site review.

d. When reviewing an Agreement State program, use inspection data provided by the State from the questionnaire and information provided during the on-site review. The State should not be penalized for failing to meet internally developed inspection schedules that are more aggressive than those specified in IMC 2801 and IMC 2641, or current NRC policy. In addition, the reviewer should be sure that overdue inspections are tallied in a consistent fashion, (i.e., those more than 25 percent late than the minimum frequency specified in IMC 2801 and IMC 2641).

3. Technical Quality of Uranium Recovery Inspections

To determine technical quality of uranium recovery inspections, in addition to the applicable guidance noted in FSME Procedure SA-102, *Reviewing the Common Performance Indicator, Technical Quality of Inspections*, the reviewer should evaluate and document the following:

a. The risk significance of chemical and industrial hazards at a uranium recovery facility, in addition to the radiological hazards, are considered during an inspection. The inspector has access to chemical safety experts to consult with if a chemical safety issue is noticed on an inspection. The inspector understands the regulatory authority and relationships between agencies in regulating chemical and industrial hazards at a uranium recovery facility. (e.g., OSHA, MSHA, U.S. Environmental Protection Agency, and State agencies).

b. Environmental monitoring programs are inspected in accordance with written inspection procedures. Inspections of this area focus on the licensee's radiological effluent processing, control, release, and reporting of information as appropriate. Radiological effluents include both liquid and airborne effluents. In addition, releases of radioactivity to the environment and doses to members of the public are evaluated against regulatory criteria and limits, as appropriate.

c. Decommissioning activities are inspected in accordance with written inspection procedures. Inspections of decommissioning activities focus on safety, observation of decommissioning activities in progress (if possible), implementation of licensee procedures, release of effluents to the environment, public and worker exposure, and suitability of decontaminated areas and structures for release. Decommissioning, restoration, and reclamation occur in a timely manner as outlined in 10 CFR 40.42 or equivalent Agreement State regulations. Where applicable, inspections also address issues related to restoration of groundwater at *in-situ* facilities.

d. Decommissioning recordkeeping (10 CFR 40.36(f)) is periodically checked for completeness, especially before commencement of decommissioning.

e. Sufficient radiological surveys, given the extent and significance of any residual contamination, are performed as required by 10 CFR 40.42(j)(2) before license termination. The licensee radiation survey results are validated through a closeout inspection or confirmatory survey according to current FSME policy. Refer to IP 87654, *Uranium Mill, In-Situ Leach Uranium Recovery, and 11e.(2) Byproduct Material Disposal Site Decommissioning Inspection*, and IP 83890, *Closeout Inspection and Survey*, and the applicable portions NUREG-1575, *Multi-Agency Radiation Survey and Site Investigation Manual*.

f. The reviewer might find it helpful to utilize Appendix A of FSME Procedure SA-102 to document their inspection casework reviews. In addition, Appendix B of FSME Procedure SA-102 might be helpful to document the results of accompaniments of inspectors.

4. Technical Quality of Licensing Actions

To determine technical quality of licensing actions, in addition to the applicable guidance noted in FSME Procedure SA-104, *Reviewing the Common Performance Indicator, Technical Quality of Licensing Actions*, the reviewer should evaluate and document the following:

a. Select a sample of licensing actions that are representative based on the number and type of actions performed during the review period, including a cross-section of as many different technical reviewers and categories as practical.

b. The selected licensing actions should be reviewed for technical correctness and quality, including adequacy, accuracy, completeness, clarity, specificity and consistency.

c. The selected licensing actions should conform to applicable regulations and license conditions in all aspects, based on regulatory guidance, checklists, and

policy memoranda, to ensure consistency with current accepted practice and standards.

d. Examine records which document deficiencies in licensee or applicant supporting information, including significant errors, omissions, or missing information. Such records include letters, file notes of a telephone conversation, electronic mail records, and other documents.

e. Examine how well the decision-making process is documented, including any significant deficiencies related to health and safety. Determine if decisions are under proper signature by an authorized official.

f. If the initial review suggests a weakness on the part of the program, or problems with respect to one or more aspects of the technical review in support of licensing actions, additional samples should be reviewed to determine the extent of the problem or identify a systematic weakness. The finding, if any, should be documented in the report.

g. In reviewing licensing actions against the criteria, the team may exercise flexibility in making the determination for this sub-indicator. The team should take into account the current status of the program and any mitigating factors that may have prohibited the program from completing needed technical review, for example, a written Technical Evaluation Report, normally required for supporting a licensing action. If management took appropriate steps to work off the significant backlog, an unsatisfactory rating may not be appropriate.

h. Criteria for timeliness of licensing actions exist and are routinely followed.

i. Review justifications for the granting of an exception or exemption from an applicable regulation, regulatory guide, or industry standard.

j. Determine that adequate financial assurance for the decommissioning of sites has been established in accordance with applicable regulatory requirements. Financial assurance mechanisms are maintained and periodically reviewed to ensure that they would be executable. Review the itemized decommissioning cost estimates to ensure that the surety amount provides sufficient funding for decommissioning (including reclamation and restoration) in the event that the licensee liquidates, declares bankruptcy, or is otherwise unable to pay for decommissioning.

k. During the on-site review, special effort is made to identify local regulatory guidance and how such guidance may be uniquely applied.

l. The reviewer might find it helpful to utilize Appendix A of FSME Procedure SA-104 to document their licensing casework reviews.

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 FSME Procedure SA-105, *Reviewing the Common Performance Indicator, Technical Quality of Incident and Allegation Activities*, the reviewer should evaluate and document the following:

   a. A representative number of incidents and allegations are sampled from the review period. If possible, all incidents and allegations from the review period are reviewed.

   b. Selected incidents and allegations are reviewed for attention to risk significant aspects, discernment of root causes and other causal factors, and conformance to applicable regulations, guidance and license conditions.

   c. The review includes all pertinent event records entered in the Nuclear Material Events Database (NMED). For Agreement States, notifications of events and followup actions are conducted as specified in FSME Procedure SA-300, *Reporting Material Events*. For NRC Regional programs, events are processed in accordance with comparable FSME and/or NRC Regional guidance, such as IP 87103, *Inspection of Materials Licensees Involved in an Incident or Bankruptcy Filing*. If there are any issues or questions with the event data, the NMED project manager in FSME should be consulted prior to the on-site review.

   d. The reviewer might find it helpful to utilize Appendices A and B of FSME Procedure SA-105 to document their incident and allegation reviews.

VI. APPENDICES

Not Applicable.

VII. REFERENCES

1. NRC Inspection Manual Chapters:
   IMC 1007, *Interfacing Activities Between Regional Offices of NRC and OSHA*.
   IMC 1246, *Formal Qualification Programs in the Nuclear Material Safety and Safeguards Program Area.*
   IMC 2801, *Uranium Mill and 11e.(2) Byproduct Material Disposal Site and Facility Inspection Program*.
   IMC 2641, *In-Situ Leach Facilities Inspection Program.*
   IMC 2602, *Decommissioning Oversight and Inspection Program for Fuel Cycle Facilities and Materials Licensees*.
   IMC 2604, *Licensee Performance Review.*
   IMC 2620, *On-Site Construction Reviews at Inactive Uranium Mill Tailings Sites (Title I, Uranium Mill Tailings Radiation Control Act)*.

2. NRC Inspection Procedures:
   IP 87654, *Uranium Mill, In-Situ Leach Uranium Recovery, and 11e.(2) Byproduct Material Disposal Site Decommissioning Inspection.*
   IP 83890, *Closeout Inspection and Survey*.
   IP 89001, *In-Situ Leach (ISL) Facilities.*
   IP 87103*, Inspection of Materials Licensees Involved in an Incident or Bankruptcy Filing*

3. NRC Management Directives:
   MD 5.6, *Integrated Materials Performance Evaluation Program (IMPEP)*.
   MD 5.10, *Formal Qualifications for Integrated Materials Performance Evaluation Program (IMPEP) Team Members*.

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

5. NUREG Series:
   NUREG-1569, *Standard Review Plan for In Situ Leach Uranium Extraction License Applications*, June 2003. (ADAMS Accession No. ML032250177)
   NUREG-1575, Rev. 1, *Multi-Agency Radiation Survey and Site Investigation Manual,* August 2000. (ADAMS Accession No. ML003761476)
   NUREG-1620, Rev. 1, *Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites Under Title II of the Uranium Mill Tailings Radiation Control Act of 1978*, June 2003. (ADAMS Accession No. ML032250190)
   NUREG/CR-6733, *A Baseline Risk-Informed, Performance-Based Approach for In Situ Leach Uranium Extraction Licensees,* September 2001. (ADAMS Accession No. ML012840152)

6. NRC Regulatory Guides:
   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.

7. NRC Regulatory Issue Summaries (RIS):
   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.

8. FSME Procedures:
   SA-100, *Implementation of the Integrated Materials Performance Evaluation Program (IMPEP)*.
   SA-101, *Reviewing the Common Performance Indicator, Status of Materials Inspection Program*.
   SA-102, *Reviewing the Common Performance Indicator, Technical Quality of Inspections*.
   SA-103, *Reviewing the Common Performance Indicator, Technical Staffing and Training*.
   SA-104, *Reviewing the Common Performance Indicator, Technical Quality of Licensing Actions*.
   SA-105, *Reviewing the Common Performance Indicator, Technical Quality of Incident and Allegation Activities*.
   SA-300, *Reporting Material Events*.

9. Memorandum of Understanding Between the NRC and OSHA; Worker Protection at NRC-Licensed Facilities, 53 FR 43950, October 31, 1988. (ADAMS Accession No. ML031140641)

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

VIII. ADAMS REFERENCE DOCUMENTS

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

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