

## ATTACHMENT 71124.07

INSPECTION AREA: Radiological Environmental Monitoring Program

CORNERSTONE: Public Radiation Safety

EFFECTIVE DATE: January 1, 2010

INSPECTION BASES: The radiological environmental monitoring program (REMP) is required by Criterion 64, "Monitoring Radioactivity Releases," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities." The REMP supplements the effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation in the environment are in agreement with the values predicted by the radioactive effluent monitoring program. The licensee is required to implement the REMP in accordance with its technical specifications (TS) and/or offsite dose calculation manual (ODCM), which are based on the design objectives contained in Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion 'As Low as is Reasonably Achievable' for Radioactive Material in Light Water-Cooled Nuclear Power Reactor Effluents," to 10 CFR Part 50, as required by 10 CFR 50.34a, "Design Objectives for Equipment To Control Releases of Radioactive Material in Effluents—Nuclear Power Reactors." The scope of the REMP is specified in 10 CFR Part 50, Appendix I, Section IV, paragraph B. This inspection area verifies aspects of the Public Radiation Safety Cornerstone for which there are no performance indicators to measure performance.

LEVEL OF EFFORT: Inspect biennially

## 71124.07-01 INSPECTION OBJECTIVES

01.01 To verify that the REMP quantifies the impact of radioactive effluent releases to the environment and sufficiently validates the integrity of the radioactive gaseous and liquid effluent release program.

01.02 To verify that the REMP is implemented consistently with the licensee's TS and/or ODCM and to validate that the radioactive effluent release program meets the design objective in Appendix I to 10 CFR Part 50.

01.03 To ensure that the REMP (1) monitors noneffluent exposure pathways (e.g., onsite spills or leaks, exposures from direct and scattered (skyshine) radiation from plant facilities and components), (2) is based on sound principles and assumptions, and (3) validates that doses to members of the public are within the dose limits of 10 CFR Part 20, "Standards for Protection against Radiation," and 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations," as applicable.

## 71124.07-02 INSPECTION REQUIREMENTS

### 02.01 Inspection Planning.

- a. Review the annual radiological environmental operating reports, and the results of any licensee assessments since the last inspection, to verify that the REMP was implemented in accordance with the TS and ODCM. Review the report for changes to the ODCM with respect to environmental monitoring, commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, interlaboratory comparison program, and analysis of data.
- b. Review the ODCM to identify locations of environmental monitoring stations.
- c. Review the final safety analysis report (FSAR) for information regarding the environmental monitoring program and meteorological monitoring instrumentation.
- d. Review quality assurance audit results of the program to assist in choosing inspection "smart samples." If the licensee uses a vendor laboratory to analyze the REMP samples, review any audits and technical evaluations performed on the vendor's program.
- e. Review the annual effluent release report and the 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," report, to determine if the licensee is sampling, as appropriate, for the predominant and dose-causing radionuclides likely to be released in effluents.

## 02.02 Site Inspection.

- a. Walk down three to five of the air sampling stations and three to five of the thermoluminescent dosimeter (TLD) monitoring stations to determine whether they are located as described in the ODCM and to determine the equipment material condition. Consistent with smart sampling, the air sampling stations should be selected based on the locations with the highest X/Q, D/Q wind sectors, and TLDs should be selected based on the most risk-significant locations (e.g., those that have the highest potential for public dose impact).
- b. For the air samplers and TLDs selected above, review the calibration and maintenance records to verify that they demonstrate adequate operability of these components. Additionally, review the calibration and maintenance records of up to five composite water samplers as available.
- c. Verify that the licensee has initiated sampling of other appropriate media upon loss of a required sampling station.
- d. Observe the collection and preparation of two to four environmental samples from different environmental media (e.g., ground and surface water, milk, vegetation, sediment, and soil) as available. Verify that environmental sampling is representative of the release pathways as specified in the ODCM and that sampling techniques are in accordance with procedures.
- e. Based on direct observation and review of records, verify that the meteorological instruments are operable, calibrated, and maintained in accordance with guidance contained in the FSAR, NRC Regulatory Guide 1.23, "Meteorological Monitoring Programs for Nuclear Power Plants," and licensee procedures. Verify that the meteorological data readout and recording instruments in the control room and, if applicable, at the tower are operable.
- f. Verify that missed and or anomalous environmental samples are identified and reported in the annual environmental monitoring report. As available, select three to five events that involved a missed sample, inoperable sampler, lost TLD, or anomalous measurement, and verify that the licensee has identified the cause and has implemented corrective actions. Review the licensee's assessment of any positive sample results (i.e., licensed radioactive material detected above the lower limits of detection (LLDs)). Review the associated radioactive effluent release data that was the source of the released material.
- g. Select three to five structures, systems, or components (SSCs) that involve or could reasonably involve licensed material for which there is a credible mechanism for licensed material to reach ground water, and verify that the licensee has implemented a sampling and monitoring program sufficient to detect leakage of these SSCs to ground water.

- h. Verify that records, as required by 10 CFR 50.75(g), of leaks, spills, and remediation since the previous inspection are retained in a retrievable manner.
- i. Review any significant changes made by the licensee to the ODCM as the result of changes to the land census, long-term meteorological conditions (3-year average), or modifications to the sampler stations since the last inspection. Review technical justifications for any changed sampling locations. Verify that the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.
- j. Verify that the appropriate detection sensitivities with respect to TS/ODCM are used for counting samples (i.e., the samples meet the TS/ODCM required LLDs). Review quality control charts for maintaining radiation measurement instrument status and actions taken for degrading detector performance. If the licensee uses a vendor laboratory to analyze the REMP samples, review the results of the vendor's quality control program, including the interlaboratory comparison program, to verify the adequacy of the vendor's program.
- k. Review the results of the licensees' interlaboratory comparison program to verify the adequacy of environmental sample analyses performed by the licensee. Verify that the interlaboratory comparison test included the media/nuclide mix appropriate for the facility. If applicable, review the licensee's determination of any bias to the data and the overall effect on the REMP.

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

## 71124.07-03 INSPECTION GUIDANCE

### 03.01 Inspection Planning.

- a. Guidance on the proper location of environmental monitoring stations is in NUREG-1301, "Offsite Dose Calculation Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors," issued April 1991. Also, refer to the NRC Branch Technical Position, Revision 1, "An Acceptable Radiological Environmental Monitoring Program," for additional information.
- b. through e. No guidance provided.

03.02 Site Inspection.

- a. Shifts in wind sectors with the highest X/Q and D/Q may be detected by comparing several years of the licensee's meteorological data.
- b. No guidance provided.
- c. Guidance on sample collection and preservation is provided in NUREG-1576, "Multi-Agency Radiological Laboratory Analytical Protocols Manual" (MARLAP), issued July 2004. Also, refer to the NRC Branch Technical Position, Revision 1, "An Acceptable Radiological Environmental Monitoring Program," for guidance on sampling other appropriate media upon loss of a required sample location.
- d. Compare readout data (i.e., wind speed, wind direction, and delta temperature) in the control room and at the meteorological tower to identify any differences that would indicate that inaccurate data are being used for dose determination.

Note that most 10 CFR Part 50 licensees will not be committed to Regulatory Guide 1.23, but may be committed to Safety Guide 23 (1972).

- e. Ensure that the licensee has addressed any positive indications in the environmental monitoring samples and has adjusted the effluent monitoring program and dose modeling, as appropriate to ensure the accuracy of the models. (See Section 6.8 in NUREG-1301 and in NUREG-1302, "Offsite Dose Calculation Guidance: Standard Radiological Effluent Controls for Boiling Water Reactors," issued April 1991.)
- f. Some examples of SSCs are outdoor refueling water storage tanks, spent fuel pools, spent fuel pool leak detection systems, outdoor tanks, outdoor storage of contaminated equipment, buried piping, retention ponds, basins, or reservoirs, and steam lines. Some examples of leak detection methods for the SSCs are ground water monitoring, operator rounds, engineering walkdowns or inspections, leak detection systems, or periodic integrity testing.
- g. through i. No guidance provided.

03.03 Identification and Resolution of Problems. No guidance provided.

71124.07-04 RESOURCE ESTIMATE

For planning purposes, it is estimated to take 26 hours, on average (with a range of 22 to 30 hours) to perform the requirements of this attachment.

71124.07-05      COMPLETION STATUS

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

END

Revision History for  
IP 71124.07

Commitment Tracking Number	Issue Date	Description of Change	Training Needed	Training Completion Date	Comment Resolution Accession Number
N/A	12/02/09 CN 09-030	<p>Conducted four year search for commitments and found none.</p> <p>This new procedure is being issued as a result of the 2009 ROP IP Realignment. It supersedes inspection requirements in IP 71121 and 71122.</p>	YES	09/09/2009	ML092810423