

PART 52, RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (REMP)

PROGRAM APPLICABILITY: IMC 2504 Appendix B

80522-01 INSPECTION OBJECTIVE

01.01 To inspect for compliance with **Title 10 of the Code of Federal Regulations (10 CFR) 20.1301 and 20.1302, 10 CFR Part 50, Appendix I, and 40 CFR Part 190.** Based on, the programmatic controls of the Radiological Effluent Technical Specifications (RETS) as expressed in the Offsite Dose Calculation Manual (ODCM).

01.02 To determine if the radiological environmental monitoring program meets its intended objective of ensuring conformance with public dose limits published in 10 CFR **Part 20**, ensuring public radiation doses are maintained As Low As Reasonably Achievable (ALARA) in accordance with the requirements of 10 CFR **Part 50**, and ensuring that the Radiological Environmental Monitoring Program (REMP) provides an independent check on the adequacy of the RETS. This inspection procedure focuses on the REMP's readiness for use by plant personnel.

80522-02 INSPECTION REQUIREMENTS AND GUIDANCE

General Inspection Guidance

If the unit being constructed is at a site with existing operational units for which the same program will be used at all units, then this program may not require the same level of inspection as that required for units being constructed at sites with no operational units. This is consistent with the Baseline Inspection Program requirements identified in Inspection Manual Chapter 2506 (IMC), "Construction Reactor Oversight Process General Guidance and Basis Document." At sites with an operating unit where the licensee has chosen to take credit for similar operational programs as those that are already in use, the inspectors shall focus on the differences between the program already in use and the newly developed program. The operational program inspection should focus on those steps in the IMC 2504 inspection procedures where the inspectors cannot verify that the operational program, equipment, and components are the same, or substantially similar to, that of the operating unit. If the operational program, equipment, and components are the same, or substantially similar to, the operating unit, then the following minimum inspection requirements shall be completed, and all other inspection requirements may be omitted:

10 CFR Part 52 Licensees Collocated with an Existing Operational Unit

Minimum Inspection Requirements:

- a. Verify that the licensee's REMP is appropriately established and that sampling and monitoring stations have been established and are properly located and calibrated, using Section 2.1, Readiness of the Radiological Environmental Monitoring Program (REMP) and Section 2.3, Program Management, as guidance.
- b. Verify that a meteorological monitoring program is appropriately established, using Section 2.2, Implementation of the Meteorological Monitoring Program, as guidance.

Inspection Guidance: Verification of procedure incorporation should include a review of procedure cover sheet information (e.g., procedure titles and site applicability, management approvals, revision history, etc.), and a limited review of the procedure itself for applicability to the 10 CFR Part 52 site. The licensee may have developed specific procedures due to differences in plant design or layout. If so, review the site-specific design differences for conformance with the Final Safety Analysis Report (FSAR) and review procedures for adequate inclusion of the site-specific design differences. Applicable guidance can be found throughout IP 80522. Where applicable, these inspection activities should be reviewed for compliance with 10 CFR Part 20, 10 CFR Part 52, and the FSAR.

02.01 Readiness of the Radiological Environmental Monitoring Program (REMP). Determine that the REMP is ready to operate under normal and emergency conditions by conducting verification and inspection of the following:

- a. Verify that the licensee established offsite sampling and monitoring stations consistent with guidance in Regulatory Guides 4.1 and 4.8 and NUREGs 1301 and 1302. Consider site characteristics, plant design, and operations to ascertain that the licensee has identified the relevant exposure locations. Compare the radiological monitoring program described in Section 6.2 of the most recent version of the Environmental Report (ER) to that implemented and to that described in the ODCM. Determine if the monitoring and sampling stations are consistent with the ER, ODCM, and current land use census.
- b. Inspect the monitoring and sampling equipment. Determine that they are correct for their use and are operational. Compare the monitors to the monitoring system described in the ER and ODCM to ensure consistency. This is a readiness inspection, and the inspector is reminded to walk-down all sampling and direct monitoring stations to determine that they are properly sited and consistent with the ODCM.

Guidance: Technical guidance can be found in Regulatory Guides 4.1, 4.15, 4.8, 1.97, NUREG-1301 (PWR) or NUREG-1302 (BWR), [Environmental Standard Review Plan \(ESRP\) 6.2](#), Radiological Assessment Branch Technical Position (Revision1, November 1979) and ANS N320- 1979.

- c. Review the licensee's Standard Operating Procedures (SOPs) for the operation and use of instruments and samplers. Review the SOPs for sample handling and processing to ensure that the procedures are correct and satisfy regulatory requirements (for example, sample transport, preservation, change-out, and chain of custody). Verify that

the staff has been trained on the purpose and scope of the REMP and is implementing the SOPs.

- d. Verify that the licensee has a program in place to ensure that sampling stations and equipment are properly maintained, inspected, and repaired.

Guidance: The program should include evaluating the dose consequences associated with equipment that is inoperable or out of calibration.

- e. Compare the radiological environmental monitoring program controls and surveillance requirements in the ODCM to those in Sections 3.12.1 and 4.12.1 of NUREG-1301(PWR) or NUREG-1302 (BWR). Verify that the REMP meets the minimum specifications.

Guidance: These requirements and controls should include the exposure pathway to be monitored, number of representative samples and sampling location, sampling or collection frequency, types of analysis, reporting levels, lower limits of detection (LLD), remedial actions when actual performance deviates from the program and when reporting levels are exceeded.

- f. Determine that the volumes or mass of the samples specified in the sampling SOPs are enough to attain the desired detection limits in NUREG-1301 or 1302. Verify that the REMP contains reporting provisions consistent with NUREG-1301 or 1302.

Guidance: Inspectors are referred to NUREG-0133, and Regulatory Guides 1.21, 4.1, and 4.8, and Radiological Assessment Branch Technical Position (Revision1, November 1979).

- g. Confirm that environmental samples include milk animals and food products in addition to all other sample media specified in NUREGs 1301 and 1302. If some types of media are not available, confirm that the licensee has provided adequate justifications for their omissions and substituted alternate media in maintaining the objectives of the REMP.

Guidance: Samples from milk animals are a better indicator of radioiodine in the environment compared to vegetation. If however, the census reveals that no milk animals are available for sampling, then vegetation can be sampled in lieu of milk.

- h. Determine if direct radiation monitoring stations are located as described in the ODCM consistent with the Branch Technical Position. Verify that thermo luminosity detector (TLD) stations are positioned in a sufficient number of areas to assess the public dose impact from any sources of external radiation located in areas near the site boundary.

Guidance: The inspectors should determine that special interest areas such as population centers, residences near the site boundary, schools, and radioactive waste storage buildings are monitored appropriately.

02.02 Implementation of the Meteorological Monitoring Program. Determine that the meteorological monitoring program is operational and adequate for normal and emergency operations by conducting verification and inspection of the following:

- a. Verify that the licensee has established a working meteorological program according to the guidance in Regulatory Guide 1.23. Compare the monitoring program described in Section 2.3.3 of the most recent version of the FSAR to that in actual use. Determine that meteorological monitoring program is consistent with the FSAR.
- b. Determine if the equipment and instrumentation described in FSAR Section 2.3.3 is operable, properly calibrated, and maintained. Verify that a program is in place to ensure its operability and calibration.
- c. Review the licensee's procedures for the operation, calibration, and maintenance of meteorological instruments to ensure that procedures are consistent with Regulatory Guide 1.23. Verify that the staff has been trained on the SOPs for use and maintenance of meteorological instruments.
- d. Review the equipment maintenance records to assure that the licensee performs preventative maintenance and repairs/replaces inoperable equipment in a timely manner.
- e. Determine through direct observation that the meteorological tower (and backup tower, if present) is located to eliminate interferences from man-made or natural obstructions which could impair the quality of the meteorological data. Determine that meteorological tower instrumentation is properly positioned to eliminate interferences from the tower itself.

Guidance: Technical guidance can be found in Regulatory Guide 1.23, ANSI/ANS- 3.11-2005 and IAEA Safety Series No. 50-5G-S3.

- f. Verify that the licensee has properly identified the highest locations for dispersion and deposition and used these locations for placement of monitoring equipment.

02.03 Program Management. Determine that the licensee has a management program to maintain the REMP by verification of the following:

- a. Review the REMP to determine if the Quality Assurance/Quality Control measures recommended in Regulatory Guides 4.15, 4.8 and 1.21, NUREG-1301 or NUREG-1302, and NUREG-0133 are being followed.
- b. Verify that the licensee is following quality control measures specified in the OCDM, the licensee's **quality assurance (QA)** program, and SOPs. This verification should include:
 - 1. a review of licensee's procedures for calibration and maintenance of environmental air samplers and composite water samplers;
 - 2. a review of the licensee procedures for calibration and quality control (e.g., daily **quality control (QC)** checks) for analytical instrumentation (count room equipment) used for environmental sample analyses;
 - 3. a review of the licensee program which verifies its capabilities to perform adequate environmental sample analyses such as participation in an inter-laboratory comparison program;

4. a determination, if applicable, of participation in an interlaboratory comparison program of a vendor laboratory so as to verify the adequacy of the vendors analytical capabilities; and
 5. a review the most recent land-use census to determine if the type and the location of environmental sample media coincide with the land's use.
- c. Determine if the laboratories in the licensee's program are following the guidance in Regulatory Guide 4.15. Verify that the laboratories participate in an inter-laboratory comparison program specified in NUREG-1301 or NUREG-1302.
 - d. Verify that the licensee has a program in place to ensure that a land use census is conducted every year and the results of the census are used to review and modify the REMP to ensure monitoring of all appropriate pathways.
 - e. Confirm that there is adequate documentation confirming the verification and validation of digital computer software used in processing and evaluating the results of the REMP. This confirmation includes software developed by the licensee, purchased through a vendor, or software included with the instrumentation.

Guidance: Regulatory Guide 4.15 provides a list of references that can be used as guidance for software documentation, and verification/validation.

- f. Confirm that the data reduction and reporting of radiological measurement data occurs according to the NUREG-1301 or 1302 and Regulatory Guides 4.1, 4.15 and 4.8.
- g. Confirm that the data reduction and reporting of meteorological measurement data occurs according to Regulatory Guides 1.23.
- h. Confirm that the licensee has a mechanism to document and incorporate changes to the REMP. Determine that changes in the annual census information will be incorporated into the REMP and ODCM.

80522-03 RESOURCE ESTIMATE

Approximately 100 hours of direct inspection effort will be required to implement this procedure. An inspection of the REMP and the Meteorological Monitoring Program will require the following personnel:

- a. a health physicist who is trained in environmental measurements and monitoring.
- b. a meteorologist who is trained in meteorological instrument and measurements.

The actual hours required to complete the inspection may vary from this estimate. The inspection hours allocated for this inspection are an estimate for budgeting purposes. The hours expended for this inspection should take into account plant specific design features and operational programs. The level of effort expended in such inspections should be recorded for the purpose of planning future inspections and updating budget allocations.

80522-04 PROCEDURE COMPLETION

Inspection of the minimum sample size will constitute completion of this procedure. The minimum sample size for this procedure is one, defined as the sum of all the inspection requirements. Therefore, all the inspection requirements of the procedure should be completed verifying the inspection objectives have been met. Completion of the inspection must demonstrate that the program can be inspected under the Reactor Oversight Process.

80522-05 REFERENCES

ANSI N320 – 1979, “Performance Specifications for Reactor Emergency Radiological Monitoring Instrumentation.” Reaffirmed 1993.

ANSI/ANS-3.11 – 2005, “Determining Meteorological Information at Nuclear Facilities.”

NUREG-1555, “Environmental Standard Review Plan, Section 6.2, Radiological Monitoring.”

International Atomic Energy Agency (IAEA), 1980, “Atmospheric Dispersion in Nuclear Power Plant Siting,” Safety Series No. 50-SG-S3.

NUREG-0133, “Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants.”

NUREG-1301, “Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors,” (With Generic Letter 89-01, Supplement 1).

NUREG-1302, “Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Boiling Water Reactors,” (With Generic Letter 89-01, Supplement 1).

Regulatory Guide 1.21, “Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants.”

Regulatory Guide 1.23, “Meteorological Monitoring Programs for Nuclear Power Plants.”

Regulatory Guide 4.1, “Programs for Monitoring Radioactivity in the Environs of Nuclear Power Plants.”

Regulatory Guide 4.15, “Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment.”

Regulatory Guide 4.8, “Environmental Technical Specifications for Nuclear Power Plants.”

Generic Letter 89-01, "Implementation of Programmatic Controls for Radiological Effluent Technical Specifications in the Administrative Controls Section of the Technical Specifications and the Relocation of Procedural Details of RETS to the Offsite Dose Calculation Manual or to the Process Control Program."

END

Attachment 1:
Revision History for IP 80522

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Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional, Non-Public Information)
	ML073450515 07/01/10 CN 08-019	Completed review of CNs for previous 4 years and none found. Initial issue to support inspections of operational programs described in IMC 2504, NON-ITAAC INSPECTIONS.	N/A	ML072851219
	ML20121A022 05/07/20 CN 20-024	Revises guidance for units being constructed at a site with existing operational units for which the same program will be used at all units and conditionally lowers the Resource Estimate.	N/A	N/A