

# NRC INSPECTION MANUAL

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## INSPECTION PROCEDURE 84521

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### RADWASTE - STARTUP

PROGRAM APPLICABILITY: 2514

#### 84521-01 INSPECTION OBJECTIVE

To determine whether initial chemical and radiochemical tests, reactor coolant water quality, effluent releases, and laboratory checks of effluent monitors meet requirements.

#### 84521-02 INSPECTION REQUIREMENTS

02.01 Chemical and Radiochemical Tests. Determine whether performance and evaluations of startup chemical and radiochemical tests are in accordance with FSAR commitments and licensee procedures.

02.02 Technical Specifications. Determine whether reactor coolant water quality and radioactive effluents meet requirements of technical specifications.

02.03 Comparisons of Effluent Monitor Readings Against Known Effluent Concentrations. If sufficient radioactivity is available, determine whether the licensee meets the requirements of the testing program related to comparisons of effluent monitor readings against known effluent concentrations as determined by laboratory analysis of grab samples.

02.04 Waste Systems. Determine whether the licensee has demonstrated that gaseous and liquid radioactive waste processing, storage, and release systems operate in accordance with the design.

02.05 Other Process and Effluent Streams. Determine whether the licensee has checked normally nonradioactive process and effluent streams for unanticipated radioactivity.

#### 84521-03 INSPECTION GUIDANCE

##### 03.01 Chemical and Radiochemical Tests

- a. These tests normally include:

1. Measurements made to determine base levels and establish water quality of reactor systems during precritical tests.

2. Measurements made to determine coolant quality during heatup and operation at temperature and to demonstrate the ability to control water quality.
  3. Tests continued through power ascension (at 25 percent, 50 percent, 75 percent, and 100 percent) to determine the concentration of radionuclides and impurities in coolant water.
- b. Review the test program and selected procedures and schedules to determine whether they meet requirements. Review selected test results and determine whether they have been evaluated as required, whether the evaluations are complete and whether any necessary corrective actions have been initiated.
  - c. Review the effectiveness of the interactions among the operations, chemistry, and health physics groups in completing the required tests.

03.02      Technical Specifications.   No guidance offered.

03.03      Comparison of Effluent Monitor Readings Against Known Effluent Concentrations.   The acceptance criteria of Standard Review Plan Section 14.2 (Initial Test Program - FSAR) include conformance with Regulatory Guide 1.68. Regulatory Guide 1.68 calls for tests to verify the response of installed process and effluent monitors by laboratory analyses of samples from process or effluent streams.

The acceptance criteria of Standard Review Plan Section 11.5 include meeting the provisions of Regulatory Guides 1.21, 1.97, and 4.15. Regulatory Guide 1.21 calls for frequent comparisons of continuous effluent monitor readings with the results of analyses for specific radionuclides in effluents; these comparisons are to be used as bases for "calibrating" continuous monitor readings. Regulatory Guide 4.15 includes a similar provision for correlation of monitor readings with measured concentrations or release rates of radioactive material. Requirements for analyses for determining specific radionuclides in effluents are normally included in technical specifications.

In addition to the comparisons/correlations discussed above, technical specifications normally require "channel calibrations" of effluent monitors using one or more reference materials certified by the National Bureau of Standards or standards that have been obtained from suppliers that participate in measurement assurance activities with NBS (see Regulatory Guide 4.15). These "channel calibrations" are covered in inspection procedures 84522, 84523, and 84524.

03.04      Waste Systems.   No guidance offered.

03.05      Other Process and Effluent Streams.   The licensee should check nonradioactive streams during low power and power ascension stages. It is not necessary for the licensee to check all streams at each power level plateau.

84521-04 REFERENCES

Standard Review Plan Section 11.5, "Process and Effluent Radiological Monitoring Instrumentation and Systems," NUREG-0800.

Standard Review Plan Section 14.2, "Initial Plant Test Program - Final Safety Analysis Report," NUREG-0800.

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 1.68 "Initial Test Program for Water-Cooled Nuclear Power Plants"

Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident."

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

IE Bulletin No. 80-10, "Contamination of Nonradioactive System and Resulting Potential for Unmonitored, Uncontrolled Release of Radioactivity to the Environment," May 6, 1980.

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