U.S. NUCLEAR REGULATORY COMMISSION
REGION I

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License Nos.	DPR-21; DPR-65; NPF-49
Report Nos.	96-13
Licensee:	Northeast Nuclear Energy Company
Facility:	Millstone Nuclear Generating Station, Units 1, 2, and 3
Location:	Waterford, Connecticut
Dates:	November 12-22, 1996
Inspector:	Jason C. Jang, Senior Radiation Specialist Radiation Safety Branch Division of Reactor Safety
Approved by:	John R. White, Chief, Radiation Safety Branch Division of Reactor Safety

Areas Inspected: Announced safety inspection of the radioactive liquid and gaseous effluent control programs including: management controls, audits, air cleaning systems, plant air balance, calibration of effluent/process radiation monitoring systems, measurement laboratory QA/QC, training, staff knowledge, and implementation of the above programs.

Results: Within the areas inspected, the licensee implemented effective radioactive liquid and gaseous effluent control programs. The Chemistry and RAB staff maintained excellent knowledge in these programs. The responsibility for effluent controls will be reviewed prior to the first restart up due to reorganization of the Chemistry Department on November 8, 1996. Two violations, relative to failure to establish procedures to assure maintenance of certain ventilation system design bases, were identified as described in Section R8 of this inspection report.

Details

PLANT SUPPORT

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 Implementation of the Radioactive Liquid and Gaseous Effluent Control Programs

a. Inspection Scope (84750-01)

The inspection consisted of: (1) plant tour, (2) review of liquid and gaseous effluent release permits, and (3) review of unplanned/unmonitored release pathways for all units.

b. Observations and Findings

The inspector toured selected radioactive liquid and gas processing facilities and equipment including effluent radiation monitors and air cleaning systems. All equipment was operable at the time of the tour with the exception of the Unit 2 clean liquid radwaste effluent and the aerated liquid radwaste effluent radiation monitors. The licensee previously declared these radiation monitors to be out of service due to a strip chart problem. However, the monitors were operational and monitoring results could be obtained through the control room computer.

During the review of selected radioactive liquid and gaseous effluent discharge permits, the inspector determined that the discharge permits were complete and met the TS requirements for sampling and analyses at the frequencies and lower limits of detection established in the TS.

During a previous inspection conducted in October 1995, the inspector noted that the Unit 1 Chemistry staff developed a trending analysis technique for the offgas system, which related the meter/recorder readings to the actual offgas release rate (μCi/sec) from the main stack. During this inspection, the inspector reviewed trending results which indicated that there was very good correlation between main stack meter readings and the release rate. Trends were periodically reviewed by the Chemistry staff.

During a review of selected radioactive liquid and gaseous release permits for Units 2 and 3, the inspector evaluated comparisons between laboratory measurement results (μCi/cc) and liquid effluent radiation monitoring system (RMS) results (also μCi/cc). A conversion factor (μCi/cc/cpm) was applied to the RMS in order to obtain the same reading of the laboratory measurement results. Despite widely distributed gamma energies identified in the laboratory measurements, the response of the RMS readings were within about a factor of two of the results expected from the laboratory measurements. This represents apparently good correlation. It should be emphasized that for a valid comparison to be made, the radioactivity in the sample should be higher than about 1E-4 μCi/cc. The inspector noted that the radioactivity of Unit 1 radwaste samples were around 1E-6 μCi/cc, which is very low. The activity was at about the limit of the RMS sensitivity. Therefore, such comparison has limited value as a performance indicator.

c. Conclusions

Based on the above review, the inspector concluded that the licensee maintained and implemented the radioactive liquid and gaseous effluent control programs effectively.

R2 Status of RP&C Facilities and Equipment

R2.1 Calibration of Effluent/Process Radiation Monitoring Systems (RMS)

a. Inspection Scope (84750-01)

The inspector reviewed the most recent calibration results for the following list effluent/process RMS as designated for each unit. The inspector also reviewed the licensee's RMS self-assessment results, RMS work orders, and selected I&C calibration procedures.

b. Observations and Findings

Unit 1:

- Radwaste Effluent Radiation Monitor
- Service Water Effluent Radiation Monitor
- Reactor Building Closed Cooling Water Radiation Monitor
- Steam Jet Air Ejector Offgas Monitor
- Main Stack Noble Gas Monitor (Normal and High Range)
- Containment High-Range Radiation Monitor
- Ventilation Duct Monitor
- Refueling Floor Monitor
- Steam Tunnel Ventilation Monitor

The I&C Department has responsibility for performing electronic calibrations for the above radiation monitors. The Unit 1 Chemistry Department had the responsibility of performing the radiological calibrations for Radwaste Effluent, Service Water, Reactor Building Closed Cooling Water, and Stack Gas Normal Effluent Radiation Monitors. Radiological calibration for other RMS were performed by the I&C Department. All calibration results were within the licensee's acceptance criteria.

The licensee stated that the stack noble gas monitoring system (Channel 2, normal range) would be sent to the manufacturer for repair, since difficulty was experienced in maintaining the channel operable. While Channel 2 is out of service, Channel 1 will be in service in conformance with licensee requirements.

Unit 2:

- Clean Liquid Radwaste Effluent Line Monitor (RM-9094)
- Aerated Liquid Radwaste Effluent Line Monitor (RM-9116)
- Steam Generator Blowdown
- Condenser Air Ejector
- Reactor Building Closed Cooling Water Radiation Monitor
- Vent Noble Gas Monitor (RM-8132B)
- Waste Gas Decay Tank Monitor
- Containment High-Range Radiation Monitor

The I&C Department has responsibility for performing electronic and radiological calibrations for the above radiation monitors. The Unit 2 Chemistry Supervisor evaluates the radiological calibration results of all effluent RMS for acceptance. All calibration results were within the licensee's acceptance criteria.

During the review of plateau curves (voltages vs. count rate), the inspector noted that the response plateaus appeared to be unusually broad for effluent monitors, i.e., the instrument response appeared to be insensitive to relatively large variations in instrument supplied voltage. The inspector noted that the count rates had been acquired from a 6-decade logarithmic meter that was located in the control room. The inspector discussed with the licensee the use of the logarithmic readout in the Unit 2 control room for the calibration. The logarithmic display could introduce high reading errors because of the difficulty in being able to detect changes in count rates and to subsequently establish an accurate plateau curve. The inspector also discussed the use of a scaler (which reads in cpm), that could be connected to the logarithmic meter to obtain accurate count rate readings during the calibration. (The inspector noted that all effluent logarithmic RMS readout devices located in the Unit 1 control room had been replaced by digital readout devices to enhance the accuracy of the display and these data were used to establish calibration at Unit 1.) The licensee indicated that this area would be reviewed for improvement.

The inspector noted that I&C's RMS calibration procedures had been upgraded. The inspector reviewed procedures and noted that the licensee's procedures were detailed and easy to follow.

The inspector also reviewed: (1) Independent Safety Evaluation-MP2, RMS; (2) Self-Assessment Report, RMS (in draft); (3) Unit 2 Radiation Monitor Trending; and (4) selected Work Orders. The inspector determined that the licensee's efforts to enhance the RMS calibration techniques and operability were very good. Review of work orders indicated that the licensee usually completed work activities within or by the target date.

Unit 3:

- Liquid Waste Monitor
- Waste Neutralization Sump Effluent Line Monitor
- Steam Generator Blowdown Monitor

- Turbine Building Floor Drains Effluent Line Monitor
- Ventilation Vent Noble Gas Monitors (Normal and High Ranges)
- Engineering Safeguards Building Monitor
- Containment RSC Leakage Detection (Particulate and Gaseous)

The I&C Department had the responsibility of performing electronic and radiological calibrations for the above radiation monitors. The I&C Department personnel held discussions with either the Radiation Assessment Branch staff or the Chemistry staff when they encountered an unusual situation during the radiological calibration performance.

During the review of the above calibration results, the inspector independently verified several linearity tests results. The inspector determined that these independent comparisons for linearity tests were excellent. All reviewed calibration results were within the licensee's acceptance criteria.

The licensee upgraded calibration procedure, "Ventilation Vent Noble Gas Normal Range Radiation Monitor," effective on September 13, 1996. This procedure was detailed and easy to follow.

c. Conclusions

During the previous inspection conducted in October 1995, the inspector assessed several areas associated with the RMS, such as training, ownership, calibration techniques, and operability. The inspector noted that knowledge, ownership, calibration technique, and commitments for RMS operability were varied at each unit. The inspector noted that the quality of calibration processes at Unit 2 were not as high as previously observed at Units 1 and 3 (see Inspection Report Nos. 50-245, 336, and 423/95-37 for details).

During this inspection, the inspector determined that the Unit 2 I&C staff: (1) improved RMS calibration technique, (2) upgraded procedures, (3) trended RMS operability, and (4) conducted self-assessments which identified strengths and weaknesses in system performance.

Based on the above reviews and discussions, the inspector determined that all units had good RMS calibration programs. The inspector also noted that I&C management supported the effluent/process RMS calibration programs vigorously with a view toward improvement of the process.

R2.2 Air Cleaning Systems

a. Inspection Scope (84750-01)

The inspector reviewed the licensee's most recent surveillance test results to determine the implementation of TS requirements for the following systems.

Unit 1:

- Standby Gas Treatment System

  Note: The licensee was in the process of resolving a series of operational problems that affected the standby gas treatment system.

Unit 2:

- Secondary Containment Enclosure Building Filtration System
- Control Room Emergency Ventilation System

Unit 3:

- Auxiliary Building Filter System
- Control Room Emergency Ventilation System
- Fuel Building Exhaust Filter System

b. Observations and Findings

The inspector reviewed the following surveillance test results:

- Visual Inspection,
- In-Place HEPA Leak Tests,
- In-Place Charcoal Leak Tests,
- Air Capacity Tests,
- Pressure Drop Tests, and
- Laboratory Tests for the Iodine Collection Efficiencies.

All reviewed test results were within the licensee's TS acceptance criteria.

c. Conclusions

Based on the above reviews, the inspector determined that the licensee implemented good air cleaning system surveillance programs for the above systems.

R3 RP&C Procedures and Documentation

R3.1 Radioactive Effluent Release Procedures

a. Inspection Scope (84750-01)

The inspector reviewed the following selected chemistry procedures to determine whether the licensee could implement the radioactive liquid and gaseous effluent control programs effectively.

- CP 809A/2809B/3809A, Liquid Waste Discharge,
- SP 824/2857/3865, Liquid Effluent Dose,

- SP 821/2821/3821, Unmonitored Liquid Release Paths,
- SP 823/2823/3823, Instantaneous Gaseous Release Rate Calculations,
- CP 806J, Stack Gas Sampling and Counting (Unit 1),
- CP 2806X, Unit 2 Containment Atmosphere Sampling and Discharge,
- CP 3806AU, Sampling Inoperative Radiation Monitors (Unit 3),
- SP 826, Offsite Dose - Noble Gases from Unit 1 Stack,
- SP 2858, Offsite Dose - Noble Gases from Unit 2 Vent, and
- SP 3867, Offsite Dose - Noble Gases from Unit 3.

b. Observations and Findings

The inspector noted that the above effluent control procedures were detailed, easy to follow, and ODCM requirements were incorporated into the appropriate procedures.

The inspector also noted that Unit 3 Chemistry procedures had been rewritten using the new procedure development guidelines (Developing and Revising Millstone Procedures and Forms). The inspector reviewed selected procedures and noted that the procedures were effectively written.

c. Conclusions

Based on the above procedures review, the inspector determined that the reviewed effluent control procedures were sufficiently detailed to facilitate performance of all necessary steps.

R3.2 Annual Radioactive Effluent Report

a. Inspection Scope (84750-01)

The inspector reviewed the 1995 Annual Radioactive Effluent Report to verify the implementation of TS.

b. Observations and Findings

This report provided data indicating total released radioactivity for liquid and gaseous effluents. This annual report also summarized the assessment of the projected maximum individual and population doses resulting from routine radioactive airborne and liquid effluents. Projected doses to the public were well below the TS limits. The inspector determined that there were no anomalous measurements, omissions or adverse trends in the report.

c. Conclusions

Based on the above review, the inspector determined that the licensee effectively implemented the TS requirement for reporting effluent releases and projected doses to the public.

R3.3 Review of the ODCM

a. Inspection Scope (84750-01)

Inspection of this area consisted of: (1) review of setpoint calculation methodologies; (2) review of selected parameters for calculating projected doses; (3) review of radioactive liquid and gaseous discharge pathways; and (4) review of ODCM Revision 5, including corrective actions of NRC's Letter (Technical Evaluation Report for the Millstone Nuclear Power Station, Units 1,2 and 3, ODCM) issued on November 15, 1995.

b. Observations and Findings

The licensee was in the process of revising the ODCM during this inspection. The inspector was informed that the corrective actions of NRC's letter issued on November 15, 1995, were either incorporated or being incorporated in the revised ODCM. The inspector stated that the revised ODCM will be reviewed during a subsequent inspection.

The current ODCM provided descriptions of the sampling and analysis programs, which were established for quantifying radioactive liquid and gaseous effluent concentrations, and for calculating projected doses to the public. All necessary parameters, such as the effluent radiation monitor setpoint calculation methodologies, site-specific dilution factors, and dose factors, were listed in the ODCM. The licensee adopted other necessary parameters from Regulatory Guide 1.109.

c. Conclusions

Based on the above review, the inspector determined that the licensee's ODCM contained sufficient specification, information, and instruction to acceptably implement and maintain the radioactive liquid and gaseous effluent control programs.

R4 Staff Knowledge and Performance in RP&C

a. Inspection Scope (84750-01)

The inspector evaluated the licensee staff's (Chemistry, RAB, I&C, and HVAC Engineers) knowledge of the radioactive liquid and gaseous effluent control programs through job-related discussions in the following areas:

- effluent/process Radiation Monitoring Systems,
- effluent ALARA,
- protection of the public health and safety and the environment, and
- the TS/ODCM requirements.

b. Observations and Findings

The inspector discussed various aspects of the radioactive liquid and gaseous effluent control programs, such as implementation of the ALARA concept. From discussions with the Chemistry staff, the inspector noted that the personnel were sufficiently knowledgeable of the operation and performance of the RMS, the ALARA concept relative to effluents, and the TS/ODCM requirements, including bases.

The inspector discussed effluent and process RMS ownership, calibration techniques, and operability with the I&C staff of each unit. The inspector noted that knowledge, ownership, calibration techniques, and commitments for the operability varied at each unit. The inspector noted that the I&C supervisors of all units had a strong sense of ownership for all the effluent RMS. The inspector also noted that the calibration techniques of all units would likely become more consistent as the technicians were subjected to common training provided by the Nuclear Training Department, as described in Section R5 of this inspection report. The inspector noted that the I&C management of all units focused on maintaining RMS operability.

The inspector discussed performance of TS-required air cleaning systems and FSAR-described HVAC systems with the Operations and System Engineering personnel. The inspector noted that the staff understood the importance of maintaining and verifying performance of TS-required air cleaning systems. However, the inspector noted that the understanding of the importance and need to verify performance for the FSAR-described HVAC systems varied at each unit. For example, the Unit 1 staff did not recognize the importance of maintaining a negative pressure for the turbine building, as described in Section 9.4.6 of the UFSAR (see Section R8 of this inspection report). However, staff from other units appeared to recognize the need for performance verification of design bases described in the FSAR/UFSAR.

c. Conclusions

Based on the above limited interviews and discussions, the inspector formed the following conclusions:

- The Chemistry and RAB staff had good knowledge and performed the effluent control programs, including effluent ALARA vigorously with a view toward improvement;

- I&C staff had good and/or had improved their knowledge on calibration techniques and ownership for the effluent RMS; and

- Operations and System Engineering staff had good knowledge of the TS-required air cleaning systems. However, knowledge and performance verification of UFSAR/FSAR-described systems varied. In this regard, the Unit 1 staff did not have the same understanding of UFSAR/FSAR commitments as that demonstrated by the Units 2 and 3 staff.

R5 Staff Training and Qualification in RP&C

a. Inspection Scope (84750-01)

During a previous inspection conducted in March 1994, the inspector discussed the consideration of adding several topics to the Training Manual for the I&C technicians. Although I&C Departments of Units 2 and 3 had the responsibility of performing electronic and radiological calibrations for effluent/process RMS, the Training Manual did not contain important subjects, such as radiation counting statistics and data reduction techniques. The Nuclear Training Department instructors stated that these items would be evaluated and incorporated, if appropriate (see Inspection Reports 50-245/94-15; 50-336/94-13; and 50-423/94-13 for details).

During this inspection, the inspector: (1) reviewed training manuals for Operations staff and I&C technicians; (2) interviewed the Training Department staff; (3) attended a training class; and (4) reviewed training records for Chemistry technicians.

b. Observations and Findings

The inspector reviewed selected Radiation Monitoring Systems training materials for Operations. The contents of the training materials were good. Technical Specification requirements were used for the course exercise, such as TS required ACTION(s) to be taken when a certain RMS was out-of-service.

The inspector reviewed a selected portion of the RMS Training Manual for the I&C technicians. The Training Manual contained good information about the radiological calibration techniques and appropriate learning objectives and training sequences. The RMS Training Instructors stated the expectation that the trainees were to clearly understand the importance of each radiological calibration step and effectively perform the requirement. The training required 40 hours in class and a test upon completion. The passing grade was 80%.

The inspector attended a training class. The training instructor effectively explained electrical circuit board configurations and characteristics of the radiation detector. The instructor used an actual RMS for demonstrating the parts and components. The inspector noted that students participated in the class.

The inspector also reviewed the training records for Chemistry technicians. The training consisted of classroom training with an examination, and on-the-job training, as necessary. The inspector had no further questions in this area.

c. Conclusions

Based on the above review, discussions, and the class observation, the inspector determined that the Nuclear Training Department implemented effective training programs for the Operations, I&C technicians and Chemistry technicians.

R6 RP&C Organization and Administration

R6.1 Organization Changes and Responsibilities

a. Inspection Scope (84750-01)

The inspector reviewed the organization and administration of the radioactive liquid and gaseous effluent control programs and discussed with the licensee changes made since the last inspection, conducted in October 1995.

b. Observations and Findings

The Chemistry Department had primary responsibility for conducting the radioactive liquid and gaseous effluent control programs before the current reorganization. On November 8, 1996, the Chemistry Department divided into four groups: (1) Unit 1 Chemistry, (2) Unit 2 Chemistry, (3) Unit 3 Chemistry, and (4) Chemistry Technical Support. The Unit 1 Chemistry Supervisor reported to the Support Services Director, who reported to the Unit 1 Recovery Officer. The Units 2 and 3 Chemistry Supervisors reported to Units 2 and 3 Operations Managers, who reported to the Unit Directors, respectively. The Units 2 and 3 Directors reported to the Units 2 and 3 Recovery Officers, respectively. The Chemistry Technical Support Manager reported to the Engineering Programs Director, who reported to the Recovery Officer-Nuclear Engineering and Support. Routine chemistry functions are not expected to be affected by the reorganization, but enhanced communications between the Operations and Chemistry organizations are expected to be an outcome.

The reorganization affects program implementation relative to radioactive liquid and gaseous releases since the program is no longer controlled by a common organization. Therefore, the inspector discussed oversight and control responsibility with representatives from all units and the Engineering Programs Director. Licensee management stated that the responsibility for the radioactive liquid and gaseous effluent control programs was being developed in support of the new organizational alignment. The inspector stated that this area will be reviewed prior to any unit restart (IFI 50-245/96-13-01).

The Operations/Engineering, Radwaste Operations, and Instrumentation and Controls (I&C) Departments had the same responsibilities as during the last inspection for supporting the effluent control programs, such as with the air cleaning system, radwaste discharges, and radiation monitoring system calibration (radiological and/or electronic calibrations), respectively.

The Radiological Assessment Branch (RAB) had the responsibility of supporting the effluent control programs, including submitting the Annual Effluent Report and supporting the Radiological Environmental Monitoring Program.

c. Conclusions

The assignment of responsibility for management of the radioactive liquid and gaseous effluent control programs was being developed and will be reviewed in a subsequent inspection.

R7 Quality Assurance (QA) in RP&C Activities

R7.1 QA Audits

a. Inspection Scope (84750-01)

The inspection consisted of: (1) review of the 1995 and 1996 (Draft) QA Audit results (95-A24-053 and 96-A10-02) for effluent control programs, and (2) review of the 1994 Audit Report (94-A21-063) for iodine monitoring requirement.

b. Observations and Findings

The inspector reviewed the 1995 Quality Services Department (QSD) Audit Report Number A24053. The inspector also reviewed the 1996 draft QSD Audit results (Audit Number 96-A10-02). These audits were conducted by the QSD and covered the radioactive liquid and gaseous effluent control programs and ODCM. The inspector noted that the audits were conducted by members of the Assessment Services Department with assistance from other technical personnel. The 1995 audit team identified two findings, two unresolved items, and three recommendations to enhance the effluent control programs. The corrective actions were completed in a timely manner. The 1996 audit identified potential findings and recommendations. Neither the potential findings or recommendations were safety significant. The inspector noted that the scope and technical depth of the audits were sufficient for assessing the radioactive liquid and gaseous effluent control programs.

The inspector noted that there was an issue regarding QA requirements for radiological programs during the 1996 audit. The issue was a QA policy for software used to analyze and report effluent radioactivity in the chemistry laboratory. The Radiological Assessment Branch (RAB) supervisor issued a memorandum on this question raised by chemistry supervisors. The RAB supervisor used the following documents to answer/resolve the issue: (1) specific guidance, such as Regulatory Guide (RG) 1.97; (2) alternate guidance, such as RGs 1.21, 4.1. and 4.15; (3) standard industry practice; and (4) adequacy of current QA programs. The inspector determined that the memorandum was well written to explain the QA requirements of the specific computer code.

Sections 6.14 of Units 1 & 2 TS and Section 6.8.4.b of Unit 3 TS required that the licensee shall implement a program which will ensure the capability to accurately determine the airborne iodine concentration in vital areas under accident conditions. The inspector reviewed the 1994 Quality Services Department (QSD) Audit Report Number 94-A21-063. This audit was conducted by the QSD and covered the TS implementation verifications, including iodine monitoring requirements. The inspector noted that the audit was conducted by members of the QSD with assistance from other technical personnel. The 1994 audit team identified one recommendation for enhancing the iodine monitoring program.

c. Conclusions

Based on the above reviews, the inspector determined that the scope and technical depth of the audits were sufficient for assessing the radioactive liquid and gaseous effluent control programs. The inspector also determined that the licensee met QA Audit requirements.

R7.2 Laboratory QA/AC

a. Inspection Scope (84750-01)

Inspection of this area consisted review of: (1) QA policy of the measurement laboratory; (2) implementation of the measurement laboratory quality control program for radioactive liquid and gaseous effluent samples; and (3) internal memorandum, QA Requirements for Radiological Programs.

b. Observations and Findings

The inspector reviewed Procedure NUC CHM 01, "Chemistry Quality Control Program" and determined that the contents of the procedure were good for performing and implementing the laboratory QA policy.

The Yankee Atomic Environmental Laboratory (YAEL) established the In-Plant Quality Assurance Support Program in 1985 to provide test samples for validation of on-site effluent radioanalytical measurements performed by YAEL sponsors. These measurements are performed by the sponsor plants in accordance with the requirements set forth in Appendix of 10 CFR 50. The In-Plant QA program consisted of the quarterly distribution of test or quality control samples and issuance of a performance evaluation report. The licensee (Millstone Chemistry and Health Physics Departments) participated in the YAEL In-Plant QA Program.

The inspector reviewed 1995 and 1996 quarterly measurement results performed by the licensee and evaluation results performed by the YAEL. The In-Plant QA samples were: (1) tritium in water; (2) mixed gamma emitters in water, filter, and styrofoam filter; and (3) charcoal cartridge. The accuracy and precision of the licensee performance were 100% in 1994 and 97% and 98% in 1995, respectively. Where any discrepancy occurred, the licensee pursued the resolution.

The inspector reviewed quality control (QC) charts for gamma measurement laboratories for all units. All chemistry laboratories maintained good QC charts.

c. Conclusions

Based on the above reviews, the inspector determined that the licensee maintained and implemented the laboratory QA/QC effectively.

R8 Review of Updated Final Safety Analysis Report (UFSAR) for Unit 1 and Final Safety Analysis Report (FSAR) for Units 2 & 3 Commitments

a. Inspection Scope (84750-01)

A recent discovery of a licensee operating their facility in a manner contrary to the UFSAR description highlighted the need for a special focused review that compares plant practices, procedure and/or parameter to the UFSAR descriptions. The inspector reviewed the measurement results of the air handling capacity and/or maintaining a negative/positive pressure for the following systems:

Unit 1:

Section 9.4.2 of the UFSAR, Reactor Building,
Section 9.4.4 of the UFSAR, Radwaste Building Ventilation,
Section 9.4.5 of the UFSAR, Radwaste Storage Building,
Section 9.4.6 of the UFSAR, Turbine Building Area Ventilation,
Section 9.4.8 of the UFSAR, Steam Tunnel Ventilation System.

Unit 2:

Section 9.9.9 of the FSAR, Main Exhaust System, and
Section 9.9.12 of the FSAR, Turbine Building Ventilation.

Unit 3:

Table 9.4-2 of the FSAR, Control Building,
Table 9.4-4 of the FSAR, Auxiliary Building Filtration Units and Fans.

b. Observations and Findings

The inspector reviewed most current measurement results and discussed with the licensee representatives (Operations and HVAC System Engineers) the bases of the FSAR commitments and tested surveillance results. The inspector noted that there was no similarity for implementing the commitments among the units. The UFSAR commitments for Unit 1 and FSAR commitments for Units 2 and 3, and the licensee's actual performances were listed for each system.

Unit 1:

Section 9.4.2 of the UFSAR, Reactor Building

* Description: Maintain a negative pressure at 0.25" of water
* Performance: The licensee stated the negative pressure was maintained.

Section 9.4.2 of the Unit 1 UFSAR, "Reactor Building" required maintaining a negative pressure. The licensee stated that a negative pressure was maintained in the Reactor Building. Supporting data will be reviewed during a subsequent inspection (IFI 50-245/96-13-02).

Section 9.4.4 of the UFSAR, Radwaste Building Ventilation

* Description: 1 volume of air ventilation/one hour (10,900 scfm supply)
* Performance: Never verified.

Section 9.4.5 of the UFSAR, Radwaste Storage Building

* Description: About 3,350 cfm supply
* Performance: Never verified.

Section 9.4.6 of the UFSAR, Turbine Building Area Ventilation

* Description: Maintain negative pressure (about 0.1" of water)
* Performance: Never tested.

Section 9.4.8 of the UFSAR, Steam Tunnel Ventilation System

* Description: Maintain a negative pressure about 0.25" of water
* Performance: Never verified. However the licensee recognized the importance of the test and entered the project list (Project # 96-0058).

Sections 9.4.4, 9.4.5, 9.4.6, and 9.4.8 of the Unit 1 UFSAR describe plant air balance, defined by either air handling capacity (cfm) or negative pressures (inches of water). For example, Section 9.4.6 of the UFSAR describes that turbine building area ventilation differential pressure should be maintained at a negative pressure (about 0.1" of water) to avoid any release of potentially contaminated air through turbine building vents or doors (resulting in an unmonitored release pathways). The licensee stated that the negative pressure of the turbine building had not been verified since the pre-operation test. Section 9.4.8 of the UFSAR, "Steam Tunnel Ventilation System," describes that differential pressure should be maintained at a negative pressure (about 0.25" of water) to ensure that there will be no inadvertent ground level release. The licensee stated that the negative pressure of the steam tunnel ventilation system had not been verified since the pre-operational test. The inspector noted that Section 3.2.E of the TS, "Reactor Building Ventilation, Steam Tunnel Ventilation Isolation, and Standby Gas Treatment System Initiation" requires two steam tunnel ventilation area radiation monitors and that maintaining a

negative pressure in the steam tunnel area was important to ensure the validity of readings from the steam tunnel ventilation area radiation monitors. The licensee recognized the importance of testing for a negative pressure from the steam tunnel ventilation system and entered a test into the project list (Project No. 96-0058). As of the completion of this inspection, the pressure test had not been completed.

Sections 9.4.4 and 9.4.5 of the UFSAR describe the design basis relative air handling capacity (cfm), 10,900 scfm to the radwaste building ventilation and 3,350 cfm to the radwaste storage buildings. The licensee stated that the air handling capacity test for the radwaste building ventilation and the radwaste storage buildings had not been verified since the pre-operational test.

Section 6.8 of the Unit 1 TS requires, in part, the written procedures shall be established, implemented and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33 (RG 1.33), February 1978. Appendix A of the RG 1.33, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," describes typical procedures for the control of radioactivity, including procedures directed to performance verification of ventilation systems.

Contrary to the Section 6.8 TS requirements, as of November 22, 1996, the licensee failed to establish procedures and implement to verify that: (1) the design basis relative to air balance affecting the turbine building area ventilation system and the steam tunnel ventilation system, as described by the UFSAR, was maintained at a negative pressure; and (2) the design basis relative to air handling capacity supplying to the radwaste and radwaste storage buildings was maintained. (VIO 50-245/96-13-01)

Unit 2:

The Main Exhaust System handles air exhaust from the areas served by the radwaste and fuel handling ventilation systems located in the auxiliary building, and the purge system in the containment and enclosure building. The exhaust air from these areas is processed through the air cleaning system (HEPA), a part of the Main Exhaust System, and then exhausted to the environment, as described in Section 9.9.9 of the FSAR. This exhaust air is being monitored for iodine, particulates, and noble gas as required by Section 4.3.3.10 of the TS. The inspector reviewed Section 9.9.9 of the FSAR as described below.

Section 9.9.9 of the FSAR, Main Exhaust System

* Description: 32,000 cfm
* Performance: Most recent measurement result was 34,500 cfm, (within the licensee's 10% acceptance criteria).

* Description: In-Leakage test for the HEPA
* Performance: Never tested.

* Description: Maintain a negative pressure for the auxiliary building.
* Performance: No data available, however, the licensee checked negative pressures by walking down the system. The licensee stated that a formal surveillance program will be established to satisfy the commitment.

Section 9.9.9.4.2 of the FSAR required the tests and inspections (following Section 6.7.4.2 of the FSAR) for the air cleaning system (HEPA) of the Main Exhaust System. Section 6.7.4.2 describes that the HEPA filter bank is tested, in place, periodically using DOP as a testing agent. The licensee stated that the system had not been tested since the operation. The licensee, however, recognized the importance of the test during the discussion, and the licensee issued an Adverse Condition Report (ACR). It should be emphasized that the exhaust air from the Main Exhaust System is monitored for radioiodines, particulates, and noble gases.

Section 6.8 of the Unit 2 TS requires, in part, the written procedures shall be established, implemented and maintained covering the activities recommended in Appendix A of Regulatory Guide 1.33 (RG 1.33), February 1978. Appendix A of the RG 1.33, "Typical Procedures for Pressurized Water Reactors and Boiling Water Reactors," describes typical procedures for the control of radioactivity, including procedures directed to performance verification of ventilation systems.

Contrary to the Section 6.8 TS requirement, as of November 22, 1996, the licensee had failed to establish and implement procedures sufficient to test the HEPA filter of the Main Exhaust System, in the manner described by the FSAR, since commencement of operations at the facility. (VIO 50-336/96-13-01)

Section 9.9.12 of the FSAR, Turbine Building Ventilation

* Description: Maintain a slight positive pressure
* Performance: Never tested.

Section 9.9.12.4.1 stated that the turbine building was maintained at a slight positive pressure by the area ventilation system to prevent infiltration from the adjacent Unit 1 turbine building. The system engineer recognized the importance of this requirement and submitted Engineering Work Order (EWO) in January 1995. The EWO, however, had low priority and had not been acted on. The System Engineer submitted ACR-7615. Corrective actions for ACR-7615 will be reviewed during a subsequent inspection (IFI 50-336/96-13-01).

During discussions with Unit 2 staff, the inspector noted that the staff was effective in updating measurement data on the plant information drawings, trending data, and initiating an EWO prior to this inspection and ACR-7615 during this inspection.

Unit 3:

The inspector reviewed the most recent plant air balance test results for the Control Building and Auxiliary Building Filtration Units and Fans listed in Tables 9.4-2 and 9.4-4 of the FSAR, respectively.

Table 9.4-2 of the FSAR, Control Building

* Description: Maintain a negative pressure, about 0.125" of water
* Performance: 0.13" of water

Table 9.4-4 of the FSAR, Auxiliary Building Filtration Units and Fans

* Description: 30,000 cfm/each fan
* Performance: 30,512 cfm/each fan

All test results were within the licensee's acceptance criteria. The inspector had no further questions in this area.

c. Conclusions

Based on the above reviews and discussions, the inspector determined following:

- The attention given to Unit 1 ventilation systems was inadequate, particularly, in view of the potential release paths that are available in a BWR design;

- For Unit 2, although one violation and one inspector followup item were identified, the responsible individuals appeared to understand the bases of FSAR and had previously issued an ACR and EWO to effect corrective action; and

- For Unit 3, the responsible individuals appeared to understand the bases of the FSAR related to these areas.

X1 Exit Meeting Summary

The inspector presented the inspection results to members of the licensee management at the conclusion of the inspection on November 22, 1996. The licensee acknowledged the findings.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

*J. Armstrong,	Unit 1 Director- Engineering
*T. Burns,	Unit 1 Manager- Oversight
L. Chiarizia,	Unit 2 I&C Engineering
*R. Crandall,	Supervisor, Radiological Assessment Branch
*M. Dolishny,	Unit 3 I&C General Supervisor
*J. Dorosky,	Sr. Engineer, Technical Chemical Support
*M. Moore,	Unit 1 Director- Support Services
*C. Flory,	Sr. Scientist, Radiological Assessment Branch
*R. Hanley,	Unit 3 Nuclear Oversight
*P. Hinnenkamp,	Unit 1 Director- Unit Operations
C. Hines,	Unit 2 I&C Engineering Supervisor
S. Flynn,	Unit 2 I&C System Engineer
*J. Gionet,	Unit 3 NRC Coordinator
*R. Griffin	Unit 2 Chemistry Supervisor
*F. Mueller,	Unit 3 Chemist
*R. Palmieri,	Unit 1 Manager, Technical Support
*J. Peschez,	Unit 3 Licensing Manager
*D. Peiffer,	Supervisor, Technical Chemical Support
M. Pinkowicz,	Unit 3 Operations Manager
*J. Price,	Unit 2 Licensing and Safety Manager
*R. Ruta,	Nuclear Oversight
S. Scace,	Director, Engineering Program
*R. Schmidt,	Manager, Radiological Assessment Branch
*J. Smith,	Unit 2 Recovery Plan Manager
*J. Taylor,	Nuclear Training Department
*B. Thumm,	NRC Coordinator
*S. Walsh,	Unit 2 I&C Manager
*T. White,	Manager, 50.54(f) Engineering Support
*D. White,	Manager, Audit and Evaluation
M. Wilson,	Unit 2 Operations Manager
D. Wilkens,	Unit 1 Chemistry Supervisor

*Denotes those present at the exit meeting on November 22, 1996. The inspectors also interviewed other licensee personnel.