U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No.	97-02
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License No.	DPR-16
Licensee:	GPU Nuclear Incorporated 1 Upper Pond Road Parsippany, New Jersey 07054
Facility Name:	Oyster Creek Nuclear Generating Station
Location:	Forked River, New Jersey
Inspection Period:	February 24 - April 13, 1997
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EXECUTIVE SUMMARY

Oyster Creek Nuclear Generating Station
Report No. 97-02

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers about a seven-week period of inspection.

This report identifies four issues as apparent violations, which appear in several functional areas. They are all related to configuration control issues whereby system, component or overall plant configuration and status have not been properly maintained. Station personnel, particularly in the operations department, were attentive to self-identify and document several of the issues, resulting in prompt attention to effect further review and evaluation of the specific issues.

Plant Operations

- Operations personnel failed to identify and address the full effect on the pressure suppression capability of the torus due to the planned on-line maintenance activity, resulting in a configuration in which the torus pressure suppression capability was degraded. Once it was identified, after the specific configuration had existed three separate times, the licensee implemented appropriate interim corrective actions. A poor safety review of a related Preventive Maintenance Change Request contributed to this event and represented an additional challenge to the operators that processed the clearance. (O1.2)

- Nuclear Safety Assessment's efforts in identifying and evaluating a suspected adverse trend as related to switching and tagging problems were very good. Their concerns were communicated to an appropriate level of management for resolution. (O7.1)

- The "Analysis of Occurrence and Safety Assessment" section of Licensee Event Report 97-03, "Suppression Pool Bypass Flow Created During Preventive Maintenance Due to Inadequate Safety Review," was weak in that it did not discuss in sufficient detail the potential safety consequences as a result of the reported condition. Rather, it focused on the "exposure" to risk, noting that the duration was short (about 10 minutes). (O8.1)

Maintenance

- Routine maintenance and surveillance activities observed by the inspectors were conducted safely and in accordance with station procedures. (M1.3)

- The licensee has been challenged by repeated performance problems with several systems and components (e.g. reactor recirculation control system, station air compressors, and 4 kV cables) that were due to various causes. Substantial efforts by the various station departments have been necessary to address these continued

problems, which may divert their efforts from other important activities. The licensee continues to attempt to reach resolution for the individual problems. (M1.4)

- The failure to meet technical specification requirements related to the trip setpoints for the reactor building ventilation exhaust radiation monitors was an apparent violation, and the causes for the mis-calibration appear to be symptomatic of broader configuration control weaknesses. (M4.1)

Engineering

- Operational performance problems continued with the reactor recirculation pumps and motor-generator sets. Substantial engineering efforts, including engineering support from an industry expert, provided new insights related to additional causes and corrective actions for these problems. Additional work is expected to occur on the remaining pump and motor-generator set systems. The inspector concluded that the licensee's efforts in their continued troubleshooting were appropriate. Continued attention is warranted to ensure all potential causes for system/pump transients are identified and corrected. (E1.1)

- An engineer inappropriately manipulated (closed) a heating boiler exhaust damper while it remained administratively closed, and was an apparent violation of the switching and tagging requirements of procedure 108, "Equipment Control." The licensee initiated prompt actions to address the specific concerns. (E4.1)

- Several recent performance problems have occurred that were related to the quality and completeness of licensee safety determinations and safety evaluations. The licensee's subsequent efforts to evaluate and address these problems have been appropriate to date. Followup training and the issuance of a safety review newsletter properly highlighted the performance weaknesses and provided adequate guidance for improved performance. (E7.1)

- The licensee failed to conduct a complete 10 CFR 50.59 safety evaluation to determine if an unreviewed safety question existed for the removal of the isolation condenser radiation monitors. As a result, they failed to recognize that the two radiation monitors satisfied a UFSAR commitment. This is characterized as a deviation. (E8.1)

Plant Support

- The licensee effectively implemented the radiation protection and security programs. (R1.1, S1.1)

- The licensee implemented adequate radioactive liquid and gaseous effluent control programs, sufficient to protect public health and safety and the environment. (R1.2)

- The calibration methodology for effluent and process radiation monitoring systems, including calibration data evaluation, was not consistently implemented, and it was unclear which industry standards and NRC Regulatory Guides were used to develop the licensee's calibration procedures. The issue is an unresolved item. (R2.1)

- Surveillance tests related to air cleaning and ventilation systems were acceptable. However, the licensee's identification that the augmented offgas building pressure was not being maintained as per the UFSAR is an unresolved item. (R2.2)

- The licensee failed to conduct an adequate 10 CFR 50.59 safety evaluation to determine if an unreviewed safety question existed for the removal of the isolation condenser radiation monitors, and is a violation of NRC requirements.

- The areas toured by the inspectors were well maintained and radiological housekeeping was generally very good. Administrative controls were adequate to caution and inform workers regarding radiological conditions. (R2.4)

- The licensee provides appropriate monitors to measure and alarm in the event of a criticality accident in areas where special nuclear material is handled, used, or stored. The emergency procedures were adequate to ensure the safety of personnel in these areas. Personnel attended training and drills to familiarize them with the emergency procedures. (R2.5)

- The Offsite Dose Calculation Manual contained sufficient specification, information, and instruction to implement and maintain the radioactive liquid and gaseous effluent control programs. Associated procedures were easy to follow, and training of personnel was good. (R3)

- The licensee met the quality assurance audit requirements. The licensee maintained good quality control programs for the chemistry measurement laboratory. (R7)

- During the inspection period, the licensee identified that there was no charcoal in the control room as specified in the UFSAR for use in the iodine instrumentation (for accident conditions). The licensee is investigating this issue, which is an unresolved item. (R8.1)

- The licensee demonstrated very good overall response during the annual emergency response exercise. Some minor problems were encountered with communication lines, but overall communications were good. A list of areas for program improvement were developed after the exercise. Overall, technical support center staff performance was assessed by the NRC inspectors as good. (P1.1)

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Report Details

Summary of Plant Status

The plant was operated at full power during this inspection period (February 24 - April 13, 1997) except for period March 7 through 11, 1997. During that time, power operation was reduced to 95% due to the inadvertent trip of the "B" reactor recirculation pump. The licensee investigated the pump trip and adjusted several components associated with the pump's motor-generator set before returning to full power operation.

I. OPERATIONS (40500, 62707, 71707, 93702)

O1 Conduct of Operations[1]

O1.1 General Comments

The inspectors conducted frequent reviews of ongoing plant activities and operations using the guidance in NRC inspection procedure 71707. The inspectors observed plant activities and conducted routine plant tours to assess equipment conditions, personnel safety hazards, procedural adherence, and compliance with regulatory requirements.

Control room activities were found to be well controlled and conducted in a professional manner with staffing levels above those required by Technical Specifications. The inspectors verified operator knowledge of ongoing plant activities, the reason for any lit annunciators, safety system alignment status, and existing fire watches. The inspectors also routinely performed independent verification from the control room indications and in the plant that safety system alignment was appropriate for the plant's current operational mode.

O1.2 Suppression Pool Water Bypass Pathway Created During Maintenance Activity Due to Inadequate Review of System Line-up (EEI 50-219/97-02-01)

a. Inspection Scope (40500, 62707, 71707)

On March 11, 1997, the licensee identified that the pressure suppression feature of the suppression pool (torus) had been inadvertently degraded during planned maintenance activities. The inspector reviewed the controlling job order, system drawings and an associated preventive maintenance program change request. The inspector also interviewed operations and maintenance personnel involved with planning and performing the maintenance activity.

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[1]Topical headings such as O1, M8, etc., are used in accordance with the NRC standardized reactor inspection report outline. Individual reports are not expected to address all outline topics.

b. Observations and Findings

A preventive maintenance (PM) activity was planned and implemented for containment spray system valve V-21-18 (a 4 inch torus spray valve) on March 11 1997. The valve branches from the containment spray system header and discharges to the air space of the torus. Concurrently, another containment spray system header branch, via 6 inch flow test valve V-21-17 remained open during the maintenance. V-21-17 discharges to one of the drywell downcomers. With V-21-17 and V-21-18 open simultaneously, some steam, in the event of a design basis accident, would enter the containment spray system piping though V-21-17 (downcomer) and flow through V-21-18, and ultimately discharge back to the torus air volume, effectively bypassing the torus water volume for pressure suppression.

The above condition existed for a total time of about 10 minutes. The valve (V-21-18) was cycled (opened and closed) a total of three times for the PM and post-maintenance testing activities. The PM activity was a motor operator inspection for V-21-18. Prior to the maintenance, the containment spray system had been in it's normal (standby) alignment, in which V-21-17 was open and V-21-18 was closed. The taggout left V-21-17 open and allowed the maintenance workers to cycle V-21-18 as part of the PM activity. This PM task had previously performed only while the plant was shutdown and the above system alignment not required for pressure suppression capability.

The licensee reviewed this event and determined that the root cause was an inadequate safety review (February 1996) of a change that moved the PM (No. 9441M) from an outage task to an on-line task. Previous to this occurrence, this activity was performed during refueling outages. As a result of the incomplete safety review, appropriate precautions were not added to the controlling job order and maintenance procedure. The technical staff personnel (maintenance assessment) that reviewed the PM Change Request for PM 9441M did not have specific operating knowledge to identify the concern. The licensee also concluded that the control room staff did not identify the potential [illegible] bypass flow path during development, review and approval of switching orders to implement the PM activity. The inspector reviewed the associated PM Change Request and confirmed it to be of poor quality for failing to identify the potential to bypass the torus water volume.

The inspector reviewed the details associated with this event. One of the day shift senior reactor operators identified this event at around 5:00 p.m., after V-21-18 had already been cycled three times. Upon discovery, V-21-17 was tagged closed for further maintenance and stroking of V-21-18. The licensee reported this condition to the NRC as per the reporting requirements of 10 CFR 50.72.

The inspector found that this potential flowpath was discussed among some of the onshift SROs during the day that the PM was being conducted. However, their focus was largely on whether the PM activity represented a pathway between the primary and secondary containments. They correctly concluded that primary containment integrity was not compromised by the work, however, they failed to

recognize the actual torus water bypass concern. The SRO's efforts in returning to the site after his shift had ended to further evaluate (and then report) this event were noteworthy.

The inspector reviewed procedure 108, "Equipment Control," and identified several areas relevant to this event. Step 9.1.1 (Isolation Switching Order Preparation) requires the control room operator to determine the appropriate isolation boundaries for the work activities using Attachment 108-6 (Guidelines for Isolation Boundaries). Item 2.4 of Attachment 108-6 states that the local valve operator does not need to be tagged for motor-operator valve actuator work (as was the case for this maintenance). However, the attachment further states that the effects on the system if the valve is physically moved during the work shall be considered and additional isolation boundaries shall be added to the outage as appropriate. In addition, step 10.1 of procedure 108 requires the licensed operations supervisor to review the switching order for compatibility with license requirements, station operating conditions, and temporary modifications to the plant's configuration. The licensee's failure to properly implement the equipment control requirements of procedure 108 is an apparent violation of NRC requirements. **(EEI 50-219/97-02-01)**

c. Conclusions

Operations personnel failed to identify and address the full effect on the pressure suppression capability of the torus due to the planned on-line maintenance activity, and this is an apparent violation of NRC requirements. A poor safety review of the PM Change Request by maintenance assessment personnel contributed to this event and represented an additional challenge to operators processing the clearance. Once it was identified, after the specific configuration had existed three separate times, the licensee implemented appropriate interim corrective actions.

O7 Quality Assurance in Operations

O7.1 Nuclear Safety Assessment Identification and Review of Multiple Switching & Tagging Issues (EEI 50-219/97-02-02)

a. Inspection Scope (40500, 62707, 71707)

The licensee's Nuclear Safety Assessment (NSA) identified that several deviation reports related to switching and tagging had occurred since July 1995. NSA subsequently initiated a deviation report (DR), which was assigned to the Operations department for review. The inspector reviewed the associated NSA monthly report and related documentation, interviewed NSA personnel and independently assessed the available information.

b. Observations and Findings

In response to several DRs initiated since the beginning of 1997, NSA commenced a detailed review of the DR database to identify whether broader weaknesses or trends related to switching and tagging existed at Oyster Creek. As a result of their review, NSA initiated a separate DR (97-107) on February 14, 1997, which identified a total of 23 DRs since July 1995 that involved either process or implementation problems during switching and tagging activities. The DR was assigned to Operations to respond to the issues, and it reported that the large number of DRs was indicative of an adverse trend which requires elevated management attention.

NSA assigned an initial root cause classification as managerial methods; corrective actions from prior deviations not effective at preventing recurrence. Although operations management did not agree with NSA's determination, operations acknowledged the development of an adverse trend in 1997. Operations management stated that they have initiated several corrective actions to improve performance in this area. Some of the actions include 1) implementing independent verification of all isolation and restoration switching orders, 2) implementing changes to the computerized tagging program (TRIS) to provide enhanced information to operators regarding the status of components, 3) and providing refresher training to operators on switching and tagging activities and processes, including management's expectations regarding performance.

The inspector reviewed the listing of the 23 DRs that were listed by NSA. NSA placed the DRs in three general categories; development, execution, and process. The majority of them were in the development and execution categories. Some of the DR examples include the following.

- Three control rods were valved out of service for maintenance on January 25 - 26, 1997, however, the technical specification surveillance requirement (4.2.D) was not considered, which requires a test of remaining control rods within 24 hours. This requirement was avoided by three hours (control rods returned to service), and the DR was characterized as a "near miss."

- An ambiguous system outage alignment resulted in establishing an improper flowrate for cooling water to a turbine building closed cooling water system heat exchanger (January 22, 1997).

- 125 Vdc panel "D" was inadvertently de-energized while tagging an associated normal power source to panel "D" due to de-energizing an incorrect DC supply breaker (October 9, 1996).

At the end of the inspection, DR 97-107 remained open. The licensee's efforts in identifying and documenting the individual deficiencies were good, as was NSA's identification of the apparent adverse trend. The inspector further considered these problems to be indicative of possibly larger configuration control issues (e.g. overall system/component status) on a site-wide basis. As such, the numerous switching

and tagging deficiencies for which corrective actions have not been fully effective is an apparent violation. **(EEI 50-219/97-02-02)**

c. Conclusions

NSA's efforts in identifying and evaluating a suspected adverse trend as related to switching and tagging problems were very good. Their concerns were communicated to an appropriate level of management for resolution. The collective issue of configuration control is being considered separately on a broad basis.

O8 Miscellaneous Operations Issues

O8.1 (Open) Licensee Event Report (LER) 97-03: Suppression Pool Bypass Flow Created During Preventive Maintenance Due to Inadequate Safety Review. This event is discussed in detail in Section O1.2 of this report. The proposed corrective actions for this event appear appropriate and will be reviewed during a subsequent inspection. The inspector concluded that the "Analysis of Occurrence and Safety Assessment" section of this LER was weak in that it did not discuss in sufficient detail the potential safety consequences as a result of this alignment. Rather, it focused on the "exposure" to risk, noting that the duration was short (about 10 minutes). The inspector discussed this LER weakness with the licensee, who stated that they would further review and evaluate the issue. Pending completion of the licensee's review and subsequent LER revision, and verification of the licensee's corrective actions, this LER remains open.

II. MAINTENANCE (61726, 62707)

M1 Conduct of Maintenance

M1.1 Maintenance Activities

a. Inspection Scope (62707)

The inspectors observed selected maintenance activities on both safety-related and non-safety-related equipment to ascertain that the licensee conducted these activities in accordance with approved procedures, Technical Specifications, and appropriate industrial codes and standards. The inspectors observed portions of the following job orders (JO):

- JO 512916 Move Control Rod Blade Guides in the Fuel Pool;
- JO (Various) No. 2 Emergency Diesel Generator Preventive/Corrective Maintenance Activities (System Window); and
- JO (Various) Troubleshoot and Repair "B" Reactor Recirculation Pump and Motor-Generator Set Trip.

b. Observations and Findings

The inspectors concluded that the above activities had been approved for performance and were conducted in accordance with approved job orders and applicable technical manuals and instructions. Personnel performing the activities were knowledgeable of the activities being performed and were observing appropriate safety precautions and radiological practices.

M1.2 Surveillance Activities

a. Inspection Scope (61726)

The inspectors performed technical procedure reviews, witnessed in-progress surveillance testing, and reviewed completed surveillance packages. They verified that the surveillance tests were performed in accordance with Technical Specifications, approved procedures, and NRC regulations. The inspectors reviewed all or portions of the following surveillance tests:

- 612.4.001 "Standby Liquid Control Pump and Valve Operability and Inservice Test;"
- 617.4.001 "Control Rod Drive Pump (B) Operability Test;" and
- 636.4.003 "Diesel Generator (2) Load Test."

b. Observations and Findings

A properly approved procedure was in use, approval was obtained and prerequisites were satisfied prior to beginning the test. Surveillance test instrumentation was properly calibrated and used, radiological practices were adequate, technical specifications were satisfied, and personnel performing the tests were qualified and knowledgeable about the surveillance test procedure.

M1.3 Maintenance and Surveillance Activities Conclusions

The maintenance and surveillance activities observed by the inspectors were conducted safely and in accordance with station procedures.

M4 Maintenance Staff Knowledge and Performance

M4.1 Reactor Building Ventilation Exhaust Radiation Monitor Mis-calibration Due to Personnel Error (EEI 50-219/97-02-03)

a. Inspection Scope (61726, 71707)

On February 28, 1997, the licensee found that a January 1997 calibration left both reactor building (RB) ventilation exhaust radiation monitors set non-conservatively high, which would have resulted in a delayed actuation of the standby gas

treatment system (SGTS). The inspector reviewed the licensee's followup activities, including the associated formal critique session.

b. Observations and Findings

Control room operators were manually starting the SGTS using the trip test function of the RB ventilation exhaust radiation monitors, when they noticed the system did not start at the expected setpoint of about 13 mR/hr. They subsequently determined that the A-1 and A-2 monitor setpoints were at 30 mR/hr and 40 mR/hr, respectively. The operators promptly declared the two radiation monitors inoperable, and followed the applicable technical specification (Table 3.1.1, Item J.2) action statement (isolate the RB and run the SGTS).

On March 3, 1997, the licensee conducted a formal critique to identify the root causes for the common mis-calibration of the two radiation monitors. The licensee's initial review identified that the two instruments were mis-calibrated on January 22, 1997, as part of a quarterly surveillance (calibration). Their critique determined the root cause to be personnel error in that the action taken was not in accordance with accepted craft practices, expected expertise, and level of quality. Specifically, the technician stationed at the meter indications (in a control room back panel) misinterpreted the logarithmic scale on both radiation monitor modules. He interpreted the as-found readings to be about 10 1/2 compared to the actual and expected 13 (mR/hr), and then adjusted each of them about three marks past the "10" mark. However, on the logarithmic scale, three marks past "10" is "40."

The inspector attended the March 3, 1997, critique and reviewed the associated critique report. The critique meeting was effectively conducted. The report noted several observations as well as the root cause. The most significant observations were 1) the same technician correctly read logarithmic scales earlier that same day during other instrument calibrations, 2) the location/position of the lead technician (also in the control room but mostly located at a different panel) precluded his visual observation of the meter indications, and 3) neither technician located in the control room questioned the common out of specification (as-found) readings, especially considering that these instruments typically have not demonstrated drift problems in the past.

The licensee's corrective actions included conducting refresher training to all instrument technicians as related to logarithmic scales, including the critique report in "Events" training for instrument technicians, and conducting a peer review training session (by the technicians involved with this event), stressing self-checking and maintaining a questioning attitude.

The safety impact of this event was minimal. The licensee analyzed potential offsite radiation dose rates with the higher (incorrect) setpoints, and determined that the results were still well below the 10 CFR Part 20 limit of 2.0 mR/hr. The inspector reviewed the associated control room alarm response procedure and found that it appropriately lists the expected system and operator actions.

Technical Specification 3.1, Table 3.1.1 (Item J.2) requires that the RB ventilation exhaust radiation monitors initiate the SGTS at a trip setting of less than or equal to 17 mR/hr. This event relates to overall configuration control of plant systems and components to the extent that a common error occurred but was not detected by existing mechanisms (self-check, questioning unexpected as-found results, and failure of supervisory procedure review to identify the common apparent performance degradation for the monitors). This is a configuration control issue to the extent that technicians and surveillance procedure reviewers failed to recognize that equipment status and function was compromised, and is an apparent violation of Technical Specification 3.1. **(EEI 50-219/97-02-03)**

c. Conclusions

The operators were alert to identify that the trip setpoint for the RB ventilation exhaust radiation monitors were non-conservatively high while manually starting SGTS. The failure to meet technical specification requirements is an apparent violation, and the causes for the mis-calibration appear to be symptomatic of broader configuration control weaknesses.

III. ENGINEERING (71707, 37551, 92903)

E1 Conduct of Engineering

E1.1 Inadvertent Reactor Recirculation Pump Trip While Operating at Full Power Following Erratic Pump Performance

a. Inspection Scope (37551, 71707)

On March 7, 1997, while operating at full power, the "B" reactor recirculation (RR) pump tripped. The inspector monitored plant parameters following the unexpected RR pump and motor-generator (M-G) trip. The system engineer was interviewed to assess the licensee's planned and implemented actions to determine the cause for the "B" M-G set trip, as well as additional recent performance problems with the RR control system.

b. Observations and Findings

During routine operations, control room annunciators associated with the "B" loop of the RR system alarmed (pump differential pressure low, and drive motor breaker lockout). The operators immediately noticed that the "B" RR pump and M-G set had tripped, and they entered abnormal operating procedure ABN-3200.02, "Recirculation Pump Trip." As per the procedure, the operators closed the "B" RR loop discharge valve. In addition, core engineering personnel were notified of the pump trip. The overall plant response to the RR pump trip was normal, with reactor power stabilizing at about 95% of full power.

The "B" RR pump tripped at 10:27 a.m. on March 7. Earlier that day, between 2:00 a.m. and 4:30 a.m., the control room operators noted several operational anomalies within the "B" RR flow control system. They observed about a 10 MW thermal power decrease and a corresponding minor flow reduction in the "B" RR flowrate. They also noticed that the amperage indication was oscillating on the "B" RR M-G set, and subsequently placed the "B" RR flow controller in manual. Subsequently, the operators identified that the "B" RR pump flowrate was oscillating about 200 gpm (between about 30,800 gpm and 30,600 gpm) in a sinusoidal fashion. There was no obvious operations or maintenance activity in progress that would have caused the oscillations. A single cycle (full wave) took about five minutes. In response to the above indications, engineering and operations personnel discussed RR system performance and possible monitoring and troubleshooting activities. No conclusions were reached regarding the course of action to take before the RR pump tripped at 10:27 a.m.

An additional recent similar problem was identified regarding the "B" RR pump on February 20, 1997, as documented in NRC Inspection 50-219/97-01. At that time, a flowrate reduction of about 1300 gpm was observed over about a 21 hour period. The licensee had suspected that the tachometer was the cause for the problem. Also, at the time, the licensee had noted that the pump speed signal became "noisy" during the time of reduced flow. They were continuing to monitor and troubleshoot the problems at the end of that inspection.

Following the "B" RR pump and M-G set trip on March 7, 1997, the licensee developed a formal troubleshooting plan (Action Plan 97-06). A recorder was installed to monitor voltage regulator parameters. During the troubleshooting activities, the M-G set field breaker open fuses were tagged out to prevent energizing the RR pump with the M-G set drive motor operating. Actual tachometer generator speed was measured and compared to the indicated speed.

The licensee brought an industry expert onsite, who was experienced with RR pump and M-G set problems, to assist them in troubleshooting the "B" RR system. The individual reviewed prior maintenance and performance history, reviewed voltage regulator adjustment procedures and techniques, and retrieved data from the licensee's troubleshooting efforts.

The industry expert assisted the licensee in adjusting the voltage regulator, which provided enhanced stability of the control system. He also identified that the RR control system components appeared less stable when ambient temperature is cold in combination with the RR pumps operating at high speeds. The industry expert assisted by providing guidance for "tuning" additional critical components in the control system. While the "B" RR pump remained shutdown, the licensee also replaced the tachometer as an additional precaution.

The "B" RR pump and M-G operated normally for the remainder of the inspection period. The licensee was continuing their evaluation of system performance, including environmental conditions on the electrical components. They were in the process of evaluating which pumps' controls (voltage regulator) would be adjusted,

as well as other system window planned maintenance, during the upcoming power reduction (April 18, 1997).

c. Conclusions

Operational performance problems continued with the RR pumps and M-G sets. Substantial engineering efforts, including engineering support from the industry expert, provided new insights related to additional causes and corrective actions for these problems. Additional work is expected to occur on the remaining RR pump systems. The inspector concluded that the licensee's efforts in their continued troubleshooting were appropriate. Continued attention is warranted to ensure all potential causes for system/pump transients are identified and corrected.

E4 Engineering Staff Knowledge and Performance

E4.1 Heating Boiler Tagged-Closed Damper Opened by Unauthorized Individual (EEI 50-219/97-02-04)

a. Inspection Scope (62707, 71707)

On March 19, 1997, while restoring an existing taggout for the No. 2 heating boiler, operations personnel identified that an individual had inappropriately mispositioned a damper that was part of the taggout boundary. The inspector reviewed the licensee's followup of this event by reviewing relevant documentation and interviewing station personnel.

b. Observations and Findings

Operations personnel reported that, while removing tags and repositioning components to normal position, the No. 2 boiler discharge damper was partially open. The associated switching and tagging order to support the system outage had tagged the discharge damper closed to support boiler stack cleaning. Operations personnel subsequently learned that personnel who were supporting a vendor for nozzle tip diffuser replacement had opened the red-tagged and closed damper to aid in natural circulation cooling in the heating boiler firebox. The operations department then submitted a deviation report for further review and followup.

The project engineer for ongoing heating boiler work was aware of maintenance activity to clean the heating boiler stack. He was also aware that the cleaning activity had been completed and that component restoration was imminent. Nevertheless, he had checked the position of the damper and had apparently partially opened it. There were no personnel safety implications of this particular event. However, there was regulatory significance in that the project engineer was not authorized to operate that damper.

Procedure 108, "Equipment Control," is a general procedure for the control of maintenance and includes the method for obtaining permission and clearance for personnel to work. The stated purpose of the procedure is ensure that switching operations are performed consistent with equipment protection, nuclear safety concerns, and regulatory requirements. Step 4.2 (General Practices) of the procedure requires that the act of positioning components shall be controlled and coordinated by the operations department. Step 5.2.2 of the procedure requires that components bearing a red tag shall not be operated or activated except as permitted by Attachment 108-3 (Testing Electrical Components). Attachment 108-3 was not applicable for this occurrence. Failure to implement the above requirements of procedure 108 in an apparent violation. **(EEI 50-219/97-02-04)**

The licensee responded promptly to this occurrence. The licensee implemented disciplinary actions for the inappropriate actions. In addition, a plan was developed to achieve corrective actions and to prevent recurrence.

c. Conclusions

The failure to implement the switching and tagging requirements of procedure 108 in an apparent violation of NRC requirements and is a further example of deviating from established system configuration control requirements. Operations personnel were attentive and responsive to the unexpected condition of the heating boiler exhaust damper, and initiated prompt actions to effect further review and action.

E7 Quality Assurance in Engineering Activities

E7.1 Licensee Followup for Safety Evaluation/Determination Performance Weaknesses

a. Inspection Scope (37551, 40500)

The inspector reviewed the licensee's actions to address recent problems concerning the adequacy of 10 CFR 50.59 safety evaluations and safety determinations. The inspector interviewed personnel and reviewed relevant training material and other documentation.

b. Observations and Findings

In response to several issues related to performing 10 CFR 50.59 safety evaluations and safety determinations, as documented in several recent NRC inspection reports, the licensee has initiated steps to improve performance. Several of the problems were related to engineering personnel not completing a thorough review of the UFSAR or other design basis information, resulting in incomplete safety reviews.

The licensee enhanced the safety review training program to emphasize the need to completely investigate and accurately answer the safety determination screening questions. The training focused on the tools available to the engineers to assist in their reviews (e.g. computerized UFSAR database). The inspector reviewed the training handout and found it to be useful for the training needs.

The licensee has established an Oyster Creek safety review process assessment team to assess the overall effectiveness of implementation of the safety determination element of the safety review process. The team's charter included 1) reviewing the specific NRC-cited examples (violations), 2) selecting and reviewing a sample population of safety determination reviews performed prior to, during, and since the 16R refueling outage (including those for procedure changes, temporary modifications, troubleshooting, and engineering configuration changes), and 3) reviewing safety evaluation implementation associated with a sample of the above safety determinations (from item 2).

The licensee prepared a "Safety Review Newsletter," issued in April 1997. The purpose of the newsletter is to inform safety review process users and independent reviewers of important safety review issues and developments. It was sent to about 700 GPUN safety review process users. The licensee plans to continue to issue periodic newsletters as a communication tool on the subject matter. The inspector reviewed the document and found that it provided useful insights to GPUN safety reviewers.

c. Conclusions

The inspector concluded that the licensee's efforts to evaluate and address several recently identified performance problems associated with safety determinations and safety evaluations were appropriate to date. The results of their continuing reviews will be assessed upon completion. Followup training and the issuance of a safety review newsletter properly highlighted the performance weaknesses and provided adequate guidance for improved performance.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) Unresolved Item 50-219/97-01-03: Isolation condenser vent radiation monitors removed from service prior to addressing all relevant UFSAR commitments. This item is administratively closed, and has been re-characterized as noted in Section R2.3 of this report.

IV. PLANT SUPPORT (71707, 71750, 82701, 84750, 92904, 93702)

R1 Radiological Protection and Chemistry Controls

R1.1 General Observations

During entry to and exit from the radiologically controlled area (RCA), the inspectors verified that proper warning signs were posted, personnel entering were wearing proper dosimetry, personnel and materials leaving were properly monitored for radioactive contamination, and monitoring instruments were functional and in calibration. During periodic plant tours, the inspectors verified that posted extended

Radiation Work Permits (RWP) and survey status boards were current and accurate. They observed activities in the RCA and verified that personnel were complying with the requirements of applicable RWPs, and that workers were aware of the radiological conditions in the area.

R1.2 Implementation of the Radioactive Liquid and Gaseous Effluent Control Programs

a. Inspection Scope (84750-01)

The inspection consisted of: (1) plant tours, including the control room; (2) review of liquid and gaseous effluent release permits; (3) review of airborne tritium quantification techniques; and (4) review of unplanned/unmonitored release pathways, if any.

b. Observations and Findings

The inspectors toured the control room and selected radioactive liquid and gas processing facilities and equipment including effluent radiation monitors and air cleaning systems. No inoperable equipment was noted during the tour.

During review of selected radioactive gaseous effluent discharge permits, the inspectors determined that the discharge permits were complete and met the Technical Specification/Offsite Dose Calculation Manual (TS/ODCM) requirements for sampling and analyses at the frequencies and lower limits of detection established in the TS/ODCM.

At the inspectors' request, the licensee demonstrated their capability for monitoring and quantifying the airborne tritium. The licensee calculated the total amount of water loss using the plant makeup water inventory. The licensee assumed a certain percent of water loss due to an evaporation from the spent fuel pool and other components (e.g., air ejector) to the environment via the main stack. The water vapor released through the main stack. The licensee calculated the airborne tritium release using waterborne tritium measurement results (e.g., reactor coolant and spent fuel pool). Calculated airborne tritium released through the main stack for the fourth quarter of 1996 was to be about 4.1 curies. The inspectors compared this value to what was reported in the 1996 Annual Report; during the same quarter, about 5.5 curies of airborne tritium was reported to have been released. The inspectors stated that the licensee's assumptions and calculation methodologies were good.

At the time of the inspection, the inspectors noted that there were no unplanned/unmonitored releases since the previous inspection conducted in February 1996, with the exception of slightly contaminated water release on September 17-18, 1996, (See Inspection Report No. 50-219/96-09).

c. Conclusions

Based on the above review, the inspectors concluded that the licensee generally maintained and implemented the effluent control programs effectively. It was noted that the inadvertent release on September 17, 1996, was caused by inadequate work process controls and was not a programmatic deficiency in implementation of the effluent controls program.

R2 Status of RP&C Facilities and Equipment

R2.1 Calibration of Effluent/Process Radiation Monitoring System and Flow Measuring Devices (Unresolved Item 50-219/97-02-05)

a. Inspection Scope (84750-01)

The inspectors reviewed the most recent calibration results and calibration procedures for the effluent/process radiation monitoring system (RMS) and effluent flow measuring devices.

The inspectors noted that the licensee's technical specifications and UFSAR were not specific in regard to RMS calibration methodology. Therefore, the inspectors applied the following general industry practice attributes to determine calibration adequacy:

(1) Electronic calibration results;
(2) Plateau checks;
(3) Number of calibration sources (and linearity determination); and
(4) Evaluation of the secondary calibration data to validate the primary calibration results.

The inspectors also utilized the following documents as a basis to determine whether the calibration procedures contained sufficient detail and guidance to verify conversion factors (calibration factors):

- NRC 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, February 1979";

- NRC Regulatory Guide 4.15, "Quality Assurance for Radiological Monitoring Programs (Normal Operations)- Effluent Streams and the Environment, February 1979";

- ANSI N42.18, 1980, "Specification and Performance of On-Site Instrumentation for Continuously Monitoring Radioactivity in Effluents"; and

- EPRI TR-102644, "Calibration of Radiation Monitors at Nuclear Power Plants, March 1994".

b. Observations and Findings

The Instrumentation and Controls Department had the responsibility for performing electronic and radiological calibrations for the radiation monitors and associated flow measurement devices. The inspectors reviewed the most recent calibration results for effluent and sampler flow measuring devices. All calibration results of the flow measurement devices met the licensee's acceptance criteria.

The inspectors' review of the most recent calibration results for the effluent/process RMS indicated the following:

- Containment High Range Radiation Monitors (2 channels)
  (1) Electronic calibration was performed.
  (2) Plateau check data was not available.
  (3) One radiation level was used (8.154 R/hr).
  (4) No evaluation of the secondary calibration data to validate the primary calibration results was available.

- Main Stack High Range Noble Gas Effluent Monitor
  (1) Electronic calibration was performed.
  (2) Plateau check data was not available.
  (3) Performed the primary Calibration using two Xe-133 sources (5.521 μCi/cc and 0.5697 μCi/cc)
  (4) No evaluation of the secondary calibration data to validate the primary calibration results was available.

- Turbine Building Vent High Range Noble Gas Effluent Monitor
  (1) Electronic calibration was performed.
  (2) Plateau check data was not available.
  (3) One radiation level was used (8.170 R/hr).
  (4) No evaluation of the secondary calibration data to validate the primary calibration results was available.

- Main Stack Normal Range Noble Gas Effluent Monitor
  (1) Electronic calibration was performed.
  (2) Plateau check data was not available, but high voltage setpoints were verified.
  (3) Four solid sources (Ba-133) were used.
  (4) No evaluation of the secondary calibration data to validate the primary calibration results was available.

- Turbine Building Vent Normal Range Noble Gas Effluent Monitor
  (1) No electronic calibration data was available.
  (2) Plateau check data was not available, but high voltage setpoints were verified.
  (3) Three solid sources (Sr-90) were used.
  (4) No evaluation of the secondary calibration data to validate the primary calibration results was available.

- Offgas Building Exhaust Vent Noble Gas Monitor
  (1) No electronic calibration data was available.
  (2) Plateau check data was not available, but high voltage setpoints were verified.
  (3) Two solid sources (Sr-90 and Ba-133) were used.
  (4) No evaluation of the secondary calibration data to validate the primary calibration results was available.

- Steam Jet Air-Ejector Monitor (2 Channels)
  (1) No electronic calibration data was available.
  (2) Plateau check data was not available.
  (3) Two radiation levels were used (30.7 mR/hr and 123.6 mR/hr).
  (4) No evaluation data was available.

- Main Steam Line Radiation Monitors (4 Channels)
  (1) No electronic calibration data was available.
  (2) Plateau check data was not available.
  (3) One Radiation level was used.
  (4) No calibration data evaluation was available.

- Liquid Radwaste Effluent Line Monitor
  (1) No electronic calibration data was available.
  (2) Plateau check data was not available, but high voltage setpoints were verified.
  (3) Two solid sources (Ba-133 and Cs-137) were used.
  (4) No evaluation of the secondary calibration data to validate the primary calibration results was available.

- Reactor Building Service Water Effluent Line Monitor
  (1) Electronic calibration was performed.
  (2) Plateau check data was not available, but high voltage setpoints were verified.
  (3) Four solid sources (2 Ba-133, Cs-137, and Co-60) were used.
  (4) No evaluation of the secondary calibration data to validate the primary calibration results was available.

- Turbine Building Sump No.1-5 Radiation Monitor
  (1) No electronic calibration data was available.
  (2) Plateau check data was not available, but high voltage setpoints were verified.
  (3) Two solid sources (Co-60) were used.
  (4) No evaluation of the secondary calibration data to validate the primary calibration results was available.

With regard to the high range RMS, it should be noted that the NRC has accepted one point calibration methodology to minimize personnel exposures in order to effect ALARA. Accordingly, electronic calibration is relied on for RMS calibration. For example, the licensee used one radiation level (8.154 R/hr) for Containment

High Range Radiation Monitors (2 channels), which was acceptable. However, the licensee's method did not demonstrate and document that the detector response was linear in the cross over region between the low and high ranges of RMS.

The inspectors noted that licensee calibration practices were inconsistent. It can be noted from the above that high voltage setpoints were not evaluated in all cases, and various numbers and types of calibration sources were used which could effect response linearity. The inspectors questioned the licensee as to how they were complying with NRC Regulatory Guides 1.21 and 4.15 or how they had established acceptable alternative calibration practices. The licensee was not able to locate any analysis of these NRC Regulatory Guides prior to the end of the inspection. The inspectors questioned the licensee as to: (1) which standards and NRC Regulatory Guides were used in the preparation of their calibration procedures; and (2) how calibration data was evaluated. These questions were being researched by the licensee at the end of the inspection. The licensee informed the inspectors that other calibration documentation existed, but was not immediately available for review.

The inspectors also noted that the licensee did not perform trending or tracking of the secondary calibration factors to the primary calibration factors. Consequently, the inspectors were not able to validate the primary conversion factors which were used for alarm setpoint calculations of the effluent monitors.

c. Conclusions

Based on the above reviews, the inspectors determined the following conclusions:

- The licensee's RMS calibration practices were not consistent, and
- It was also not clear which industry standards and NRC Regulatory Guides were used in the development of the licensee's calibration procedures.

Based on these conclusions, the inspectors stated that this matter was considered to be unresolved pending further more comprehensive reviews. This unresolved item consisted of: (1) review of the licensee's positions on NRC Regulatory Guides 1.21, 4.15 and other relevant guidance, and (2) review of the above RMS electronic and radiological calibration records back to 1990. **(URI 50-219/97-02-05)**

R2.2 Surveillance Tests for Air Cleaning and Ventilation Systems (Unresolved Item 50-219/97-02-06)

a. Inspection Scope (84750-01)

The inspectors reviewed the licensee's: (1) most recent surveillance test results, and (2) performance summaries to determine the implementation of technical specification (TS) requirements and UFSAR commitments for the following systems:

- Standby Gas Treatment System (TS requirement),
- Turbine Building Ventilation System (UFSAR),
- Old and New Radwaste Building Ventilation Systems (UFSAR), and
- Offgas Building Ventilation System (UFSAR).

b. Observations and Findings

Test methodologies for the SGTS were good and surveillance test results were within the licensee's TS acceptance criteria.

Turbine building air flow tests were performed and test results were within the established criteria. Offgas building and the new radwaste building HEPA tests were performed and the test results were within the established criteria.

With regard to plant air balance, the licensee had not retrieved all of the requested information prior to the end of the inspection. After the inspection, the inspectors were informed that the licensee had initiated a deviation report on April 7, 1997, pertaining to the discovery that the differential pressure being maintained in the AOG building was not being maintained at -0.25"W.G. as per UFSAR Section 9.4.4.2.3. These matters will be the subject of further review **(URI 50-219/97-02-06)**.

c. Conclusions

Filtration test results were acceptable. However, this area requires further review to determine the licensee's conformance with regulatory requirements.

R2.3 Removal of the Isolation Condenser Radiation Monitors (Violation 50-219/97-02-07)

a. Inspection Scope (84750-01, 92904)

The inspection consisted of: (1) plant tours; (2) review of the licensee's 10 CFR 50.59 analysis supporting removal of the isolation condenser system radiation monitors; (3) review of the licensee's NUREG-0737 Action Item II.K.3.14 commitment; (4) review of the NRC safety evaluation (a December 12, 1981, letter to the licensee) pertaining to NUREG-0737 action item II.K.3.14 commitment; (5) Operator Training Lesson Plan No. 69, "Process Radiation Monitors", (December 8, 1980); (6) Section 3.2.4.5 of the UFSAR, "Operating Philosophy" (Isolation Condenser), Revision 0; and (7) other relevant documents such as engineering memoranda.

Current licensee isolation condenser tube leak detection capabilities are assessed in Section R3 of this report.

b. Observations and Findings

A permanent change (December 1995) was made to the facility, as described in the safety analysis report (SAR) involving the removal of the isolation condenser radiation monitor without considering all relevant portions of the Updated Final Safety Analysis Report (UFSAR) to determine if an unreviewed safety question existed. Specifically, the inspectors noted that Section 1.9.31 of the UFSAR, a section containing commitments regarding the isolation condenser system radiation monitor, was not reviewed during the conduct of the subject 10 CFR 50.59 assessment and documented by a written safety evaluation which provided the basis that the change did not involve an unreviewed safety question.

Title 10 CFR 50.59, "Changes, Tests and Experiments", section (a)(1), states that the holder of a license (i) may make changes to the facility as described in the safety analysis report, and (ii) make changes in procedures as described in the safety analysis report without prior Commission approval, unless the proposed change involves a change in the Technical Specifications or involves an unreviewed safety question. Section (b)(1) states that the licensee shall maintain records of changes ... made pursuant to this section. Those records must include a written safety evaluation which provides the basis for the determination that the change does not involve an unreviewed safety question.

c. Conclusions

The inspectors concluded that failure to perform an adequate safety evaluation required by 10 CFR 50.59 constituted a violation of NRC requirements. **(VIO 50-219/97-02-07)**

R2.4 Tours of Plant Areas

a. Inspection Scope (71750)

The inspectors toured various areas of the site including areas within the radiologically controlled area (RCA).

b. Observations and Findings

The inspectors observed the general conditions and radiological housekeeping in the various areas of the facility. Equipment and buildings were kept in good condition. Radiological housekeeping was very good in most areas. However, one minor radiological concern was identified by the inspectors to licensee representatives and immediate corrective actions were taken to resolve the concern. Administrative controls were adequate, including information signs warning workers regarding radiological conditions, access controls to radiological areas, and barriers to prevent inadvertent entry into high radiation areas.

c. Conclusions

The areas toured by the inspectors were well maintained and radiological housekeeping was generally very good. A minor concern was brought to the licensee's attention for resolution or correction. Administrative controls were adequate to caution and inform workers regarding radiological conditions.

R2.5 Criticality Radiation Monitors

a. Inspection Scope (71750)

The inspectors reviewed the licensee's compliance with NRC regulations (10 CFR 70.24) which require a monitoring system in each area where special nuclear material (quantity exceeding 700 grams) is handled, used, or stored. The monitoring system must be capable of detecting a criticality accident and may not be further than 120 feet from the material. In addition, emergency procedures are required for each area.

b. Observations and Findings

The inspectors noted that the licensee has installed radiation/criticality detection monitors on the refueling floor. These monitors would detect a criticality from fuel being loaded into the reactor. The inspectors asked the licensee's staff about a separate monitor for the new fuel vault. The licensee stated that the detector on the west end of the refueling floor would also detect a criticality accident in the new fuel vault. The new fuel vault was within 120 feet of the criticality monitor. But the inspectors were concerned that the licensee did not have documentation regarding the effect of concrete shielding between the fuel and the monitor. Specifically, it was unclear whether the concrete would shield the radiation from a criticality accident to a lower level than the detection level on the existing radiation criticality monitor. The licensee's staff responded that the concrete would not shield the radiation enough to create a detection problem. The licensee's staff had responded to this concern in the past, but no documentation was found to verify this calculation. The licensee performed and documented a calculation (dated April 8, 1997) that concluded that the radiation monitor (C-5) was adequate to detect a criticality accident in the new fuel vault. The inspectors reviewed the licensee's calculation and noted that the calculation appeared accurate with appropriate assumptions and methodology.

The inspectors also reviewed the licensee's emergency procedures and training pertaining to a criticality alarm. The licensee includes the response training in the annual site training. Site evacuations are periodically rehearsed during emergency preparedness drills. The inspectors concluded that this training was adequate to ensure that all personnel in a special nuclear materials area withdraw to an area of safety. The training and drills are conducted on a frequency that allows personnel to become familiar with the evacuation plan.

c. Conclusions

The licensee provides appropriate monitors to measure and alarm in the event of a criticality accident in areas where special nuclear material is handled, used, or stored. The emergency procedures were adequate to ensure the safety of personnel in these areas. Personnel attended training and drills to familiarize them with the emergency procedures.

R3 RP&C Procedures and Documentation

a. Inspection Scope (84750-01, 82701)

The inspectors reviewed the ODCM implemented at the Oyster Creek site, including: (1) dose factors, (2) setpoint calculation methodology, and (3) bio-accumulation factors for aquatic sample media. The inspectors also reviewed the 1995 and 1996 annual radioactive effluent reports.

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

- Gaseous and Liquid Effluent Control Procedures,
- Airborne Tritium Measuring Procedures,
- Implementation of Section 6.16 of TS, Iodine Monitoring, and
- Implementation of Section 6.15.2.(4) of TS, System Leak Test.

b. Observations and Findings

All necessary parameters, such as 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 NRC Regulatory Guide 1.109.

The inspectors reviewed the 1995 and 1996 annual radioactive effluent release reports. The annual reports 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 technical specification (TS) limits. The inspectors determined that there were no anomalous measurements, omissions or adverse trends in the reports.

Section 6.16 of TS, Iodine Monitoring, stated 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. This program shall include the following: (1) training of personnel; (2) procedures for monitoring; and (3) provisions for maintenance of sampling and analysis equipment." The Radiological Control/Safety Department (RC/S) had responsibilities to implement these requirements. The inspectors toured RC/S Department laboratory and discussed with the representative. The inspectors noted that the licensee had provisions to satisfy the above requirements by establishing 25 iodine sampling stations throughout the plant.

Section 6.15.2.(4) of the TS requires that the isolation condenser system leak test must be performed once every 24 months. In practice, the chemistry department takes a grab water sample from the isolation condenser tank and analyzes it every month. The grab samples (500 ml of water) were analyzed using a gamma spectrometer (1000 seconds counting). The inspectors reviewed selective analytical data for 1996 and 1997. The analytical results indicated that there were no tube (or system) leaks to the isolation condenser tank.

c. Conclusions

Based on the above review, the inspectors determined that the licensee's ODCM contained sufficient specification, information, and instruction to implement and maintain the radioactive liquid and gaseous effluent control programs. The inspectors also determined procedures were detailed and easy to follow. Training of personnel, procedures for iodine monitoring, and provisions for maintenance of sampling and analysis equipment were good.

R6 RP&C Organization and Administration

The inspectors 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 February 1996. No changes since the last inspection of this program area were noted. Staffing levels appeared to be appropriate for the conduct of routine duties.

R7 Quality Assurance in RP&C Activities

a. Inspection Scope (84750-01)

The inspection consisted of reviews of the: (1) Quality Assurance (QA) Audits required by Section 6.5.3 of the TS, and (2) Quality assurance program for Chemistry measurement laboratory required by Section 6.8.1.i of the TS.

b. Observations and Findings

The inspectors noted that the audit frequency was changed from 12 months to 24 months for ODCM/REMP. However, the licensee audited certain functions of the effluent control programs annually. The 1996 chemistry audit covered a portion of the effluent control program. The inspectors reviewed the audit scope and plan for licensee Audit S-OC-97-03, "ODCM/REMP," which had been initiated at the time of the inspection. Scope and content of the audit were good. The inspectors noted that subject matter experts were used as members of audit teams.

The QA/Quality Control (QC) program for analyses of effluent samples was conducted by the chemistry department. The chemistry laboratory participated in the interlaboratory QC and the intralaboratory comparison programs. The inspectors reviewed the QC data for intra/interlaboratory comparisons and noted that the majority of QC data were within the licensee's acceptance criteria. Discrepancies were investigated and resolved.

c. Conclusions

Based on the above review and discussions with the licensee, the inspectors determined that the licensee met the audit requirements and QA and QC programs for the radioactive liquid and effluent control programs.

R8 Miscellaneous RP&C Issues

R8.1 Review of Updated Final Safety Analysis Report (Unresolved Item 50-219/97-02-09)

A discovery of a licensee operating their facility in a manner contrary to the Updated Final Safety Analysis Report (UFSAR) description highlighted the need for a special focused review that compares plant practices, procedures and/or parameters to the UFSAR description.

While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the UFSAR that related to the areas inspected. Several inconsistencies were noted between the wording of the UFSAR and the plant practices, procedures and/or parameters observed by the inspectors (see R2.2 and below).

UFSAR Item 1.9.50 response described that a "dedicated analyzer and charcoal cartridge are provided in the control room." UFSAR Item 1.9.50 reflects the requirement of NUREG-0737 Item III.D.3.3, "Improved Inplant Iodine instrumentation Under Accident Conditions." On April 3, 1997, the licensee issued a deviation report (Deviation Report No. 97-222). The deviation report described that the licensee identified that there was no charcoal in the control room to satisfy the UFSAR Item 1.9.50 requirement. The licensee was investigating this issue during the current NRC inspection. Pending completion of their review and subsequent NRC followup, this item is unresolved. **(URI 50-219/97-02-09)**

R8.2 (Closed) IFI 50-219/96-09-06: Adequacy of the licensee's review of the event (unplanned radioactive liquid release) and its corrective actions. Dose assessment was completed and included in the 1996 annual report. Quantification techniques of radioactive releases were appropriate.

R8.3 (Closed) LER 97-002: Reactor building vent radiation monitor setpoints exceeded Technical Specification limit (17 mR/hr) due to personnel error. The licensee identified that the improper setpoints (30 mR/hr and 40 mR/hr) of the reactor building ventilation exhaust radiation monitors on February 28, 1997. The improper setting occurred on January 22, 1997.

The licensee promptly corrected the improper setpoints and investigated other setpoints. Appropriate action was taken to address the inadequate performance of the individuals involved. The safety significance of this particular event is minimal because the offsite dose rate would be about 0.1 mR/hr as a result of a 40 mR/hr setpoint, well below the 10CFR20 limit of 2.0 mR/hr. See Section M4.1 for additional discussion of this event. This LER is closed.

R8.4 Periodic Report Review

The 1996 Effluent Release Report was reviewed and found to be acceptable.

P1 Conduct of Emergency Preparedness Activities

P1.1 Emergency Response Drill

a. Inspection Scope (71750)

The inspectors observed a portion of the annual emergency response drill and staff performance during the drill at the licensee's Technical Support Center (TSC).

b. Observations and Findings

Overall, accident assessment, plant response monitoring, and event classification activities in the TSC were good. Good communications were evident among the various emergency response facilities (i.e., simulator control room, technical support center, operations support center). The technical support center (TSC) provided properly-supported bases for technical conclusions. The Emergency Director in the TSC conducted good briefings with his staff that were sufficiently frequent, were of good detail, and were consistent with changing plant conditions. The inspectors noted that the computer used to simulate the control room indications was unavailable for approximately 90 minutes during the middle of the day. The licensee's exercise participants suspended the exercise and resumes when the computer system became available. The NRC resident office was informed that a drill was in progress and the simulated emergency classification.

The inspectors attended the licensee's exercise critique the day following the exercise. The licensee's critique focused on major observations and comments, and a performance assessment was discussed. During the critique, the licensee noted all minor deficiencies. The problem with the computer used to simulate the control room indicators was discussed. Communications were a principle problem due to a failure of several phone lines. The inspectors assessed the licensee's critique as being good. The licensee was very self critical and identified many areas for future improvement.

c. Conclusions

The licensee demonstrated very good overall response during the annual emergency response exercise. Some minor problems were encountered with communication lines, but overall communications were good. A list of areas for program improvement were developed after the exercise. Overall, TSC staff performance was assessed by the NRC inspectors as good. The inspectors noted no particular exercise strengths or exercise weaknesses in the TSC.

S1 Conduct of Security and Safeguards Activities

S1.1 General Observations

During routine tours, access controls were verified in accordance with the Security Plan, security posts were properly manned, protected area gates were locked or guarded, and isolation zones were free of obstructions. Vital area access points were examined and verified that they were properly locked or guarded, and that access control was in accordance with the Security Plan.

V. MANAGEMENT MEETINGS

X1 Exit Meeting Summary

A verbal summary of preliminary findings was provided to the senior licensee management on May 7, 1997. During the inspection, licensee management was periodically notified verbally of the preliminary findings by the resident inspectors. No written inspection material was provided to the licensee during the inspection. No proprietary information is included in this report.

ATTACHMENT 1
PARTIAL LIST OF PERSONS CONTACTED

Licensee (in alphabetical order)

T. Blount, Emergency Preparedness Manager
G. Busch, Manager, Regulatory Affairs
D. Croneberger, Director, Equipment Reliability
J. Hildebrand, Plant Maintenance Director
S. Levin, Director, Operations and Maintenance
K. Mulligan, Manager, Plant Operations
M. Roche, Director, Oyster Creek
R. Shaw, Radiological Controls/Safety Director
D. Slear, Director, Configuration Control
R. Tilton, Manager, Nuclear Safety Assessment

NRC (in alphabetical order)

L. Eckert, Radiation Specialist
J. Jang, Senior Radiation Specialist
J. Nick, Reactor Engineer (Temporary)
S. Pindale, Senior Resident Inspector (Temporary)
B. Welling, Project Engineer (Temporary)

ATTACHMENT 2
INSPECTION PROCEDURES USED

Procedure No.	Title
40500	Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
37551	Onsite Engineering
61726	Surveillance Observation
62707	Maintenance Observation
71707	Plant Operations
71750	Plant Support
82701	Operational Status of the Emergency Preparedness Program
84750-01	Radioactive Waste Treatment, and Effluent and Environmental Monitoring
92700	Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
92901	Followup - Operations
92902	Followup - Maintenance
92903	Followup - Engineering
92904	Followup - Plant Support
93702	Onsite Event Response

ATTACHMENT 3
ITEMS OPENED AND CLOSED

Opened

Number	Type	Description
97-02-01	EEI	Apparent violation - Suppression pool pressure suppression capability degraded due to inadequate review of system line-up. (O1.2)
97-02-02	EEI	Apparent violation - Multiple switching and tagging issues (trend identified by Nuclear Safety Assessment). (O7.1)
97-02-03	EEI	Apparent violation - Reactor building ventilation exhaust radiation monitor mis-calibration due to personnel error and ineffective post-work review. (M4.1)
97-02-04	EEI	Apparent violation - Heating boiler tagged-closed exhaust damper mis-positioned by unauthorized individual. (E4.1)
97-02-05	URI	Inconsistent implementation of calibration methodology for effluent and process radiation monitoring systems. (R2.1)
97-02-06	URI	Augmented offgas building pressure not being maintained as per the UFSAR specified value. (R2.2)
97-02-07	VIO	The licensee failed to conduct an adequate 10 CFR 50.59 safety evaluation to determine if an unreviewed safety question existed for the removal of the isolation condenser radiation monitors. (R2.3)
97-02-09	URI	No charcoal in the control room as specified in the UFSAR for use in iodine instrumentation during accident conditions. (R8.1)
97-03	LER	Suppression Pool Bypass Flow Created During Preventive Maintenance Due to Inadequate Safety Review. (O8.1)

Closed

Number		Description
97-01-03	UPI	Isolation condenser radiation monitors inappropriately removed from service. (E8.1)
96-09-06	IFI	Licensee followup of unplanned radioactive liquid release. (R8.2)
97-02	LER	Reactor building ventilation exhaust radiation monitor setpoints exceeded Technical Specification limit. (R8.3)