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REGION I

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Licensee:	Baltimore Gas and Electric Company Post Office Box 1475 Baltimore, Maryland 21203
Facility:	Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Location:	Lusby, Maryland
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Inspectors:	J. Scott Stewart, Senior Resident Inspector Fred L. Bower III, Resident Inspector Henry K. Lathrop, Resident Inspector Leonard J. Prividy, Senior Engineer, DRS Jason Jang, Senior Radiation Specialist, DRS Lonnie Eckert, Radiation Specialist, DRS
Approved by:	Lawrence T. Doerflein, Chief Projects Branch 1 Division of Reactor Projects

EXECUTIVE SUMMARY

Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Inspection Report Nos. 50-317/97-03 and 50-318/97-03

This integrated inspection report includes aspects of BGE operations, maintenance, engineering, and plant support. The report covers a seven week period of resident inspection and the results of specialist inspections in radioactive effluents and engineering.

Plant Operations

BGE identified that the 12 HPSI pump handswitch had been misaligned following troubleshooting. This event was the third control switch mispositioning in the last year that was not identified during initial shift turnover control board walkdowns. BGE management indicated that actions were being taken to improve problem identification during control board walkdowns.

The inspectors observed that the startup from the Unit 2 refueling outage was conducted with a strong regard for nuclear safety. Good management oversight, pre-evolution briefs, and excellent communications were evident during the startup and testing programs.

During a plant walkthrough, the inspectors identified that a lock on the suction isolation valve for 11 auxiliary feedwater pump was configured so that the lock and chain could be easily removed without need of the key. In response, BGE documented the problem and conducted walkdowns of locked components throughout the plant to verify there were no additional problems. The inspectors considered the problem to be an isolated occurrence and the BGE response appropriate to the circumstances.

The inspectors observed the BGE response to a Unit 1 reactor coolant leak and found the activities effective in diagnosing and mitigating the event. The plant shutdown was well controlled and the leak was quickly isolated. Support activities including engineering, radiation protection, and maintenance were excellent and ensured that there were no complications during the event.

Maintenance

The implementation of the warehouse management system contributed to the reduction in the delivery of incorrect or defective parts to maintenance job sites. One practice of re-issuing parts returned from the field without a thorough inspection was weak and had the potential to introduce degraded or defective parts in safety-related applications.

Engineering

Changing conditions, such as the fouling factors and fouling rates have continued to challenge the operability of the service water system. The inspectors concluded that BGE continues to be proactive in testing and engineering work related to the service water system reliability. Until the scheduled replacement of the service water heat exchangers in

1998 (Unit 1) and 1999 (Unit 2), this proactive approach appeared commensurate with the safety significance of the system.

Plant Support

BGE maintained and implemented a very good radioactive liquid and gaseous effluent control program. Also, BGE implemented a good routine surveillance test program for plant effluents.

Safety Assessment

A BGE effluent control program quality assurance audit was sufficient to effectively assess the program. BGE implemented a very good quality control program to validate measurement results for effluent samples.

The inspector found that the radiation protection department did not generate issue reports for some worker concerns. The BGE practice of using gold cards to document some procedure compliance and personnel safety concerns was considered poor and could prevent timely resolution of the concern.

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ATTACHMENTS

Report Details

Summary of Plant Status

Unit 1 started the inspection period at full power and remained at full power until May 17, when power was briefly reduced for condenser water box cleaning and main turbine valve testing. On May 29, the unit was shut down to repair a primary leak (See Section 01.3). Unit 1 remained shutdown at the end of the inspection period.

Unit 2 began the inspection period shutdown in a refueling outage. Power operation resumed on May 23 and full power was achieved on May 31, 1997.

I. Operations

O1 Conduct of Operations [1]

O1.1 General Comments (71707)

Overall, the plant was operated safely. During a plant walkthrough on April 15, the inspectors identified that a lock on the suction isolation valve for 11 auxiliary feedwater pump was configured so that the lock and chain could be easily removed without need of the key. The inspector informed control room personnel of the discrepancy. Plant operators promptly responded, confirmed the inspector's observation, and restored the lock to a secured position. BGE documented the problem on an issue report and plant security was informed. There was no indication of tampering and the valve was in its designated position. BGE completed formal walkdowns of locked components throughout the plant and verified that all locked valves were in the correct position. BGE considered the auxiliary feedwater valve discrepancy was due to an open link type chain and initiated action to employ closed link chain for valve locking. The inspectors considered the problem to be an isolated occurrence and the BGE response appropriate to the circumstances.

The inspector observed portions of the Unit 2 startup from the refueling outage. In addition to the normal operating crew complement, a dedicated reactor operator and senior reactor operator were assigned to focus on the control of the primary plant during startup and low power physics testing. The inspectors observed that the dilution to initial criticality was well coordinated and safely conducted by operations personnel through the use of a detailed pre-evolution brief, three-point communications, self-checking techniques, and peer verifications of control manipulations. After a portion of the low power testing was completed, the reactor was taken sub-critical to perform a normal startup. During this startup and prior to reaching the upper bounds of the estimated critical position limit, operations and nuclear fuels personnel identified that the estimated critical rod position was miscalculated due to uncertainties in the critical boron concentration measured

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[1]Topical headings such as O1, M1, etc., are used in accordance with the NRC standardized reactor inspection report outline found in MC 0610. Individual reports are not expected to address all outline topics.

during initial criticality. A more precise critical boron concentration, although available, was not used in the estimated critical position. The reactor remained subcritical while an evaluation of the occurrence was completed. The estimated critical rod position was recalculated using the more accurate measure of critical boron concentration, and the reactor was taken critical within the limits of the re-estimated critical position. Operations management performed supervisory observations and provided management oversight for these evolutions. The inspector concluded that the startup from the Unit 2 refueling outage was conducted well.

O1.2 12 HPSI Pump Handswitch Mispositioning

a. Scope

The inspectors reviewed the circumstances surrounding the mispositioning of the 12 high pressure safety injection (HPSI) pump handswitch.

b. Findings and Observations

On May 8, a BGE senior licensed operator identified that the standby 12 HPSI pump was in the "auto" position versus its required "pull-to-lock" (PTL) position. This condition rendered the redundant 13 HPSI pump inoperable because the 13 pump would not have automatically started on a safety injection actuation signal (SIAS). Once discovered, the 12 HPSI pump handswitch was immediately restored to the correct position. BGE also took corrective action to: perform breaker and valve position verification surveillances; add additional switches, such as those that do not alarm when taken out of their normal position to the turnover checklist; install notes on the main control board concerning the required position on the 12 and 22 HPSI handswitches; and initiate a root cause analysis to fully evaluate this event.

Investigations by BGE personnel identified that the 12 HPSI handswitch had been misaligned for approximately 14 hours, since the conclusion of troubleshooting that placed the handswitch in the auto position. At the time, the 13 HPSI pump was not declared inoperable, and Technical Specification Action Statement 3.5.2 had not been entered. The 72 hour allowed outage time for the Technical Specification action statement was not exceeded.

The inspectors noted that this misalignment was not identified for approximately 14 hours, including a shift turnover control board walkdown. The misalignment was identified by an oncoming senior reactor operator during the control board walkdown for the subsequent day shift (i.e., the second shift turnover after the mispositioning occurred).

The inspectors were concerned that this event was the third control switch mispositioning event within the past year that was missed during the shift turnover control board walkdowns. The first mispositioning occurred in August 1996, when the 11 header emergency core cooling system (ECCS) room cooler fan

control handswitch was mispositioned after the 11 saltwater header was returned to service. This condition went undetected for approximately 14 hours. See NRC Inspection Report 50-317&318/96-06. The second event occurred on November 5, 1996, when a loss of power to the flow instrumentation for service water to the containment air coolers was identified during a control board walkdown by an operations support person. This condition was undetected by control room operators for approximately 16 hours.

c. Conclusions

BGE identified that the 12 HPSI pump handswitch had been misaligned following troubleshooting. The troubleshooting control form restoration directed the handswitch be placed in the incorrect "auto" position. The inspectors were concerned that this event was the third control switch mispositioning in the last year that was not identified during the control board walkdowns conducted for licensed operator shift turnover. The inspectors considered the missed opportunity to identify the misposition handswitch a weakness in the turnover process.

O1.3 Reactor Coolant Leak on Unit 1

a. Inspection Scope

The inspectors assessed BGE response to a small loss of reactor coolant event on Unit 1.

b. Findings and Observations

On May 29, at 4:27 p.m. a thermal margin low pressure pretrip occurred and reactor operators observed that one of four channels of pressurizer pressure had failed low. Subsequently, pressurizer and volume control tank levels dropped slightly, and containment humidity and radiation levels went up. Plant operators quickly and correctly diagnosed the event as a loss of coolant event and entered Abnormal Operating Procedure 2A, "Excessive Reactor Coolant Leakage," which directed actions to isolate the leak.

BGE declared an Unusual Event at 4:50 p.m. due to reactor coolant leakage that required unit shutdown. The estimated leak rate was approximately 10 gallons per minute. The operators determined, using control room indications, that the leak was on a 3/4 inch stainless steel instrument line that supplied the pressurizer pressure instrument. As the reactor was shutdown, a containment entry was made and the leak was isolated. The Unusual Event was then terminated at 8:05 p.m.

The NRC inspectors responded to the control room and observed the reactor shutdown and BGE activities to control and mitigate the event. Procedures were appropriately used and an ample contingent of operators and support personnel were available to effectively complete the shutdown and leak isolation. There were no complications to the event.

BGE determined the leak was due to a failed compression fitting on the pressurizer pressure instrument sensing line. While a root cause determination was being conducted, BGE inspected other compression fittings used on both units. At the end of the inspection period, no leaking compression fittings were found, although a number of fittings were tightened.

c. Conclusions

The inspectors observed the BGE response to the Unit 1 reactor coolant leak and found the activities effective in diagnosing and mitigating the event. The plant shutdown was well controlled and the leak was quickly isolated. Support activities including engineering, radiation protection, and maintenance were excellent and ensured that there were no complications during the event.

O2 Operational Status of Facilities and Equipment

O2.1 Engineered Safety Feature System Walkdown (71707)

The inspectors walked down accessible portions of the spent fuel pool cooling system and determined that the system was properly aligned in accordance with the operating procedures. Material condition and housekeeping were good. Licensee identified minor discrepancies were properly tagged. Several minor discrepancies that were identified to the system engineer were promptly entered into the issue reporting system. The inspectors identified no substantive problems during the system walkdown.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Routine Maintenance Observations (62707)

The inspector observed the conduct of maintenance and surveillance testing on systems and components important to safety. The inspectors also reviewed selected maintenance activities to assure that the work was performed safely and in accordance with procedures. The inspectors noted that an appropriate level of supervisory attention was given to the work depending on its priority and difficulty. Maintenance activities reviewed included:

MO2199702954	Adjustment of Gain of Linear Range Nuclear Instruments
MO2199604120	Replace 22A Reactor Coolant Pump Rotating Assembly
MO2199604119	Replace 21A Reactor Coolant Pump Rotating Assembly
MO0199701138	Replace OC Diesel Engine-Driven Fuel Oil Pump

M1.2 Routine Surveillance Observations (61726)

The inspector witnessed and reviewed selected surveillance tests to determine whether approved procedures were in use, details were adequate, test

instrumentation was calibrated and used, technical specifications were satisfied, testing was performed by qualified personnel, and test results met acceptance criteria or were appropriately dispositioned.

The surveillance testing was performed safely and in accordance with proper procedures. The inspectors noted that an appropriate level of supervisory attention was given to the testing depending on its sensitivity and difficulty. Surveillance testing activities that were observed and reviewed included:

STP-047A	MSIV Partial Stroke Test
STP-M-212A	Channel A Reactor Protection System Functional Test
STP-M-571C-2	Local Leak Rate Test, Penetrations 2A (Letdown to Purif Demin), 2B (RC Charging)
STP-M-471-2	Air Lock Operability and Local Leak Rate Test
STP-M-213-2	Calibration of Power Range Nuclear Instruments by Comparison with Incore Nuclear Instruments
STP-O-5A-2	Auxiliary Feedwater System Quarterly Surveillance Test

M1.3 Worker Injured During Maintenance

On May 7, a contracted worker was injured when an electric motor and gearbox assembly weighing approximately 75 pounds, fell from its support and struck the worker in the hard hat and shoulder. At the time, the individual was completing repairs to an overhead rollup door serviced by the motor and gearbox. The individual remained conscious following the accident and was transported to Calvert Memorial Hospital by ambulance. Although the work was done in a radiologically controlled area, no contamination was found on the worker in preparation for offsite transport. BGE initiated an investigation of the occurrence.

M1.4 Procurement Program

a. Inspection Scope (38701)

The inspector reviewed aspects of BGE's procurement program for the issuance, return and inspection of spare parts, and equipment staged for field implementation. The inspection was in part the result of an apparent increasing trend in the delivery to the field of incorrect or defective parts. Procurement management and engineering personnel were interviewed to assess their knowledge of the issues, as well as implemented or anticipated corrective actions.

b. Observations and Findings

In early 1996, BGE implemented a warehouse management system (WMS) to better track the receipt, storage, and disbursement of spare parts and material for plant modifications. At that time, the inspectors were given a tour of the warehouse facility and a demonstration of WMS performance. Based on a review of issue reports generated in the latter part of 1996, the inspectors noted that there were fewer reports describing the delivery of defective or incorrect parts than had

historically been the case, indicating that the WMS had been effective in improving parts and material control performance. However, in the first quarter of 1997, and particularly after the Unit 2 refueling outage began in mid-March, the inspectors noticed a pronounced increase in the number of issue reports detailing the delivery to the job site of incorrect or defective parts. In addition, several issue reports indicated that in some instances, parts and material returned to the warehouse did not conform to the original procurement documentation.

The inspector discussed the incorrect parts issue with procurement management, who stated that there had been a site-wide program in 1996 to return both safety and non safety-related parts and equipment to the warehouse. Returned items were receipt inspected prior to being placed in stock. However, the inspectors noted that the inspection was not always of sufficient rigor to identify deficiencies which might not be immediately visible. In some cases, returned items were then the first items issued when needed in the field. The inspectors considered this practice to have been weak with the potential to introduce degraded or defective components in safety-related applications and whose condition might not be apparent during post-maintenance or implementation testing. While root cause analyses for several of the recent issue reports dealing with defective parts delivered to the jobsite were pending, BGE stated that preliminary indications were that these parts had been returned to the warehouse in 1996, but had not been noted as being degraded or defective.

The inspector found several other apparent causes for delivery of incorrect parts. Recently, BGE implemented a corporate-wide business information system (BIS) which was to integrate all information-based data systems used at various BGE locations. However, BIS did not interface effectively with the WMS in use at Calvert Cliffs. In the meantime, several data bases used to control inventories had been eliminated, causing a degradation in parts and material control. The inspectors considered the length of time expended on resolving the BIS/WMS interface compatibility problems to be excessive and was reflective of poor change management by BGE.

The inspector reviewed a recently completed BGE audit (97-01) covering procurement and materials management. The audit was of sufficient scope to support the conclusion that the procurement program was generally effective in procuring and controlling items and services. The audit did not reveal any safety-significant weaknesses, although the effectiveness and timeliness of corrective actions for some shelf-life and storage issues were noted to be unsatisfactory. The inspectors discussed the results of the audit with procurement management, who indicated that not all of the thirteen recommendations had been accepted, specifically recommendations dealing with increased inspections and checks of equipment where problems had not been identified to date. The inspectors concluded that the rationale behind the rejection of several such recommendations appeared reasonable.

BGE procurement management outlined several initiatives undertaken in the last fifteen months to strengthen the procurement process, including:

- Implementation of the warehouse management system
- Procedure enhancements to streamline and simplify procurement and procurement engineering processes
- Procurement process training for interfacing engineers and planners
- Enhancements to the commercial grade dedication program

The inspector considered these initiatives to reflect BGE's efforts to improve the procurement process and address several long-standing deficiencies. An audit by independent engineering personnel conducted in June 1997, indicated that some improvements have resulted from these efforts with regard to safety-related parts and equipment. However, the inspectors noted that neither the June 1997 audit nor internal BGE procurement assessments addressed how effectively BGE managed issues with non safety-related parts whose failure could affect safety-related equipment. This was a weakness in BGE's procurement program which requires additional management attention.

c. Conclusions

The implementation of the warehouse management system contributed to the reduction in the delivery of incorrect or defective parts to work sites. However, the return of many spare parts from the field in 1996 may not have included adequate receipt inspection prior to being replaced in stock. This problem may have contributed to an increasing trend of improper deliveries noted in 1997. The practice of re-issuing these parts was weak and had the potential to introduce degraded or defective parts in safety-related applications where testing might not reveal problems. The BIS/WMS interface difficulty was a problem with change management.

M8 Miscellaneous Maintenance Issues

M8.1 (Closed) LER 50-317/96-04-00 Two ASI Channels OOS Due to Reversed Nuclear Instrumentation Leads

The Licensee Event Report (LER) described the discovery that the axial shape index for Unit 1 Reactor Protective System Channels B and C were out of service due to the reversal of the associated upper and lower linear range nuclear instrument detector leads. The causes of this event were personnel error in not recognizing changes to or the importance of detector labeling, and inadequate procedure guidance to ensure proper cable connection. An opportunity to find the problem was missed during the post-installation test. The leads were correctly reconnected on August 2, 1996. The inspectors verified the corrective actions stated in the LER including: performance of root cause analyses, enhancement of the installation and test procedure, and strengthening of related procurement documentation and receipt inspection procedures. The LER was closed as a Non-Cited Violation in accordance with Section VII.B.1 of NUREG 1600, NRC Enforcement Policy. A related item

(URI 50-317&318/96-06-02) that was unresolved pending completion of the BGE root cause analyses was also closed.

M8.2 (Closed) LER 050-317/96-03; Discovery of Holes in the Containment Sump Screen to Facilitate Field Run Tubing

The Licensee Event Report described the discovery of two approximately three inch by six inch holes in the containment sump screens for Units 1 and 2. BGE stated that the holes were likely field installed during initial plant construction and were made to allow instrument tubing to pass into the sumps. Upon discovery, BGE closed the holes by welding stainless steel plates over the openings. The inspectors observed that the penetrations had been closed. After observing the holes and their orientation, the inspectors concluded that the threat to the sump from material passing through the holes was negligible. The BGE actions to identify and correct the penetrations was appropriate. The LER is closed.

III. Engineering

E2 Engineering Support of Facilities and Equipment

E2.1 (Update) URI 50-317&318/96-06-03: Salt Water and Service Water Systems Continued Operability

a. Inspection Scope (37550)

The inspectors reviewed the BGE efforts to ensure service water system reliability during summer Chesapeake Bay water temperatures.

b. Findings and Observations

In January 1996, while reviewing data collected to quantify the tube side (or micro-) fouling factor, BGE determined that the equilibrium micro-fouling factor assumed in the service water heat exchanger (SRWHX) thermal performance calculations was too small. This issue was documented in NRC Inspection Report (IR) 50-317&318/96-01 and in Licensee Event Report (LER) 50-317/96-01.

Prior to this discovery, BGE design calculations had established the maximum allowed Chesapeake Bay water temperature for service water subsystem operability at 87.4 degrees Fahrenheit (°F). The fouling factor data indicated that to continue to use the same micro-fouling factor and retain the same maximum temperature limit, BGE would be required to clean the individual tubes in the SRWHX every 14 days. BGE sought additional means to increase the design margin of the SW and SRW systems and completed a 1996 bi-weekly cleaning schedule for the SRWHX as bay temperatures rose above 70°F.

BGE sought to restore the lost design margin by replacing the fixed flow stops on the containment air cooler (CAC) SRW inlet control valve actuators with flow control devices. The intended finer control of SRW flow would remove uncertainty

from the design calculations and therefore increase margin lost to the increase in the micro-fouling factor. Since this modification involved an unreviewed safety question, a license amendment was obtained from the NRC, and the modification was installed in both units in 1996.

During surveillance testing in December 1996, the containment air cooler-service water inlet control valves demonstrated unstable behavior. A temporary modification was installed to disable the flow controllers and reinstall the mechanical stops in the control valves until the instability of the flow controllers could be resolved. The return to the mechanical stops was expected to reduce the maximum allowable Chesapeake Bay water temperature by 2°F.

BGE continued to collect additional fouling factor data using a single tube model of the SRWHX called a side stream monitor. BGE reviewed this data and determined that, although the equilibrium micro-fouling factor remained the same, the time to reach a limiting micro-fouling factor was reduced from approximately 14 to approximately 9 days.

BGE determined that cleaning the SRWHXs on a frequency of every 9 days would not be prudent. The related thermal performance calculations were being recalculated using the equilibrium micro-fouling factor. Using the equilibrium micro-fouling factor would provide an extended period of time between cleanings for micro-fouling. Bay water inlet temperature, SRWHX differential pressure, and flow through the SRWHX would continue to be monitored to determine when cleaning was required for macro-fouling.

BGE considered several additional measures to increase the maximum allowable inlet water temperature. Among the measures, BGE planned to quantify the capacity of each of the normal service water pumps. Using the information obtained from these tests in the thermal performance calculations was expected to reduce the uncertainty in the calculations and increase the design margin. BGE's preliminary estimate of the increase in margin is 1°F.

BGE also considered throttling the SRW flow to the EDGs and making it a safety-related function by the installation of a safety-related backup supply (nitrogen accumulator) to the air operator for the EDG SRW control valve operator. Once completed the maximum saltwater inlet temperature limits will be 88°F for 11 train and 86°F for the 12, 21, and 22 trains of cooling water. This modification is scheduled for completion in July 1997.

Another option was to take one of the four containment air coolers out-of-service and enter the related technical specification action statement when the salt water maximum temperature limits were approached. Taking a containment air cooler out-of-service was to reduce the amount of post-accident heat rejected to the SRW header, and therefore, reduce the peak SRW header temperature below the EDG design limit of 105°F. BGE estimated that implementing this option could raise the maximum inlet saltwater temperature for each train to as high as 90°F. BGE continued to review the potential safety and regulatory impacts of this option.

BGE also stated that the final actions for increasing bay water temperature would be included in a procedure upgrade and would receive review by the plant operational safety review committee. The action plan would receive a 10 CFR 50.59 screen to ensure that an unreviewed safety question was not involved.

c. Conclusions

Changing conditions, such as the fouling factors and fouling rates on operability of the service water system has continued to challenge BGE. The inspectors concluded that BGE has continued to be proactive in testing and engineering work related to the service water system reliability. Until the scheduled replacement of the SRWHXs in 1998 (Unit 1) and 1999 (Unit 2), this proactive approach appears commensurate with the safety significance of the system. However, NRC review of the BGE action plan and operating procedures for high Chesapeake bay temperatures will be necessary to close the unresolved item.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) Unresolved Item 50-317&318/94-24-02: Reactor Coolant Code Safety Valve Performance Issues

a. Inspection Scope (92903)

The inspector reviewed the unresolved item which involved BGE's investigation into the causes behind the seat leakage from the reactor coolant system (RCS) safety valves (SRVs) 1-RV-200 and 1-RV-201, as well as potential discrepancies in the procedures and facilities used to set/adjust the safety valve lift setpoint.

b. Observations and Findings

BGE determined that the seat leakage from the two safety relief valves in 1994 was caused by unrelated circumstances. In the first case, 1-RV-201 had been shipped to a vendor for disassembly and inspection. The vendor found that the valve had lifted prematurely in 1994 because the disc holder had been improperly staked, allowing it to contact the lower adjusting ring. Steam leaking past the seat then effectively worked against the seating force of the SRV spring, resulting in a lower lifting point. Misalignment of the disc holder also caused internal damage to the SRV such that it did not fully reseat following the original lift, resulting in the high leak rate observed after the transient. The vendor concluded that the internal damage would not have prevented the SRV from lifting again should pressure have increased beyond the lift setpoint. BGE also performed an extensive root cause analysis (RCA) and developed a number of corrective actions, including an inspection of 1-RV-201 during the 1996 refueling outage which validated the assumptions and corrective actions of the root cause analysis.

BGE also evaluated whether the deferral of the replacement of 1-RV-201 during the 1994 refueling outage contributed to the valve's leakage. BGE system engineering concluded that the reasons for the deferral were sound, given the excellent

performance of 1-RV-201 up to that point. Several SRVs had been in service for fifteen years without notable problems prior to BGE's implementation of a routine preventive maintenance program in 1991.

In the case of relief valve, 1-RV-200 seat leakage, BGE engineering personnel noted that several different SRV's in this position had leaked previously in 1984, 1986 and 1992. Following extensive walkdowns and evaluations, BGE engineers determined that several SRV discharge piping supports (sway struts and spring hangers) were either misaligned or improperly loaded, which, as the pressurizer expanded during plant heatup, imparted a bending force to the SRV discharge nozzle, which distorted the valve seat, allowing leakage to occur. BGE could not determine exactly when the supports became misaligned, but suspected it may have occurred when the pressurizer spray valves were relocated to the top of the pressurizer "dog house" in the early 1980s. The piping supports were returned to their original configuration in 1994. Relief valve, 1-RV-200 was inspected during the 1996 refueling outage and there was no indication of seat leakage or piping stresses beyond design limits.

BGE evaluated the causes behind the consistent setpoint difference between the as-left at the laboratory and what was found after the valve was re-installed in the plant. BGE determined that almost all of the difference was attributable to the use of differing temperature profiles; BGE's profile used data gathered over the previous three years, while the laboratory profile used original construction data which had not been updated. Some minor enhancements to the Hydroset test procedure accounted for the remaining difference. The laboratory profiles were updated and BGE engineers validated these conclusions during the Unit 2 refueling outage in 1995.

c. Conclusions

BGE's root cause analyses for the problems with 1-RV-200 and -201 in 1994 were comprehensive and very thorough. Given that in both cases there were significant raw data lapses due to unrelated equipment performance issues, the inspectors noted that BGE engineering personnel paid special attention to the validation of their assumptions and the effectiveness of their corrective actions. The inspectors concluded that BGE's actions were effective, as demonstrated by satisfactory SRV performance since July 1994, including no recurrence of seat leakage. This item is therefore closed.

IV. 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)

The inspection consisted of: a tour of radioactive liquid and gaseous effluent pathways and the BGE process facilities, and control room; a review of radioactive liquid and gaseous effluent release permits; a review of unplanned or unmonitored release pathways; and review of the quantification technique for the airborne tritium release.

b. Observations and Findings

The inspector toured the control room radiation monitoring station and 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. Effluent/process/area radiation monitors were also operable with the exception of Unit 2 main steam line monitors which were being calibrated.

During review of selected radioactive liquid and gaseous effluent discharge permits, the inspector determined that 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.

The inspector also noted that there were no unplanned/unmonitored radioactive liquid and gas releases since the previous inspection conducted in February 1996. The inspectors noted that BGE had reviewed the effluent control programs relative to IE Bulletin No. 80-10, "Contamination of Nonradioactive System and Resulting Potential for Unmonitored, Uncontrolled Release of Radioactivity to Environment."

The inspector requested BGE demonstrate the capability for monitoring and quantifying airborne tritium. BGE calculated the total amount of water loss from the spent fuel pool (SFP). BGE assumed that water loss was due to evaporation from the SFP released to the environment via the plant vent. BGE calculated the airborne tritium released using SFP tritium measurement results. Calculated airborne tritium released through the plant vent during the second half of 1996 was 1.16 curies. BGE reported, in the second half of 1996, "Semiannual Effluent Report," that 1.49 curies of airborne tritium was released. The inspector determined that BGE's assumptions and calculation methodologies were effective in monitoring and quantifying airborne tritium releases.

c. Conclusions

Based on the above reviews, the inspector determined that BGE maintained and implemented very good radioactive liquid and gaseous effluent control programs.

R1.2 Implementation of the Effluent ALARA Program

a. Inspection Scope (84750-01)

The chemistry department implemented the Chemistry Business Plan in February 1996 and the effluent ALARA program was a major part of this plan. During this inspection, the inspector reviewed: (1) comparisons between projected radioactive liquid and gaseous releases and actual releases during 1996; (2) participation of other supporting groups (e.g., HP, I&C, system engineers, and operations) to the program; (3) communication; and (4) safety focus.

b. Observations and Findings

The projected total amount of radioactive liquid and gaseous effluents released during 1996 were 214 millicuries and 80 curies, respectively. The 1996 actual releases of liquid and gaseous effluents were 220 millicuries and 77.4 curies, respectively, indicating that BGE was effective in monitoring and controlling effluent releases.

Participation of other supporting groups (i.e., staff from operations, maintenance, engineering, and radiation control departments) to support the effluent ALARA program was good. For example, chemistry and engineering/technical staff made efforts to optimize system performance to reduce the radioactive liquid and gaseous effluent releases to the environment. The inspector also noted that management supported the effluent ALARA program and efforts to minimize radiological releases to the environment.

Good communications between the chemistry staff and other supporting groups (operations, maintenance, engineering, and radiation control) were noted. The chemistry organization also provided technical training to other organizations. For example, training topics for the control room operators were: (1) secondary chemistry, including S/G corrosion; (2) implementation of the ODCM; (3) outage chemistry, including reactor coolant system degasification, and liquid and gaseous waste controls; and (4) primary chemistry principles. A similar training program was developed by the chemistry staff for engineering/technical initial training and system engineering training.

c. Conclusions

Based on the above reviews, the inspector determined that BGE maintained and implemented a very good effluent ALARA program.

R1.3 High Radiation Area Control Problems

On May 1, 1997, BGE identified that an electrician had entered the Unit 2 containment and had worked for over one hour in a locked high radiation area without the required dosimetry. The individual had entered the radiologically controlled area with the proper dosimetry for the job, but had removed the dosimetry during dressout for the containment entry. Subsequently, the individual entered the containment with no dosimetry. About an hour later, another BGE employee saw the dosimetry and reported the finding to radiation controls personnel. The electrician was informed and immediately directed out of the radiation area.

On May 4, 1997, BGE identified that during the construction of scaffolding in the radiologically controlled area, a high radiation area was inadvertently entered. As individuals constructed the third tier of the scaffolding, the worker's electronic personnel dosimeters alarmed. The individuals immediately informed radiation controls personnel, a survey was performed, and a maximum dose rate of 300 mrem per hour was found. The area had not been previously surveyed. Work was stopped until an evaluation was completed.

BGE discussed these events with NRC personnel on May 1 and May 5, 1997. Subsequently, BGE documented the occurrences and corrective actions taken in a letter to NRC Region I, dated May 9, 1997. These events were also discussed at a predecisional enforcement conference held on June 12, 1997. Since the two events involved non-compliance with BGE procedures for control of high radiation area access, and were additional examples of recent high radiation area control problems, they were considered apparent violations of NRC requirements. Enforcement action for the two events will be addressed in a separate correspondence.

R2 Status of RP&C Facilities and Equipment

R2.1 Calibration of Effluent/Process Radiation Monitoring Systems

a. Inspection Scope (84750)

The inspector reviewed: (1) the most recent calibration results for the following selected effluent/process/area radiation monitoring systems and their system flow rates; (2) an RMS self-assessment; and (3) the quarterly trending reports.

- Liquid Radwaste Effluent Monitor (Common)
- Liquid Radwaste Effluent Line Flow Rate Measuring Device
- Steam Generator Blowdown Radiation Monitors (Units 1 and 2)
- Steam Generator Blowdown Line Flow Rate Measuring Device
- Main Steam Line Monitors (Units 1 and 2)
- Main/Plant Vents Noble Gas Monitors (Units 1 and 2)
- Wide Range Noble Gas Monitors (Units 1 and 2)
- Waste Gas Discharge Noble Gas Monitor (Common)

- Waste Gas Effluent System Flow Rate Measuring Device
- Containment Purge Radiation Monitors (Units 1 and 2)
- Condenser Air Evacuators Discharge Monitors (Units 1 and 2)
- Containment Area High Range Monitors (Units 1 and 2)
- Spent Fuel Pool Platform Area Monitor (Common)
- Access Control Area Vent Monitor (Common)
- Control Room Vent Gaseous Monitor (Common)

b. Observations and Findings

The instrumentation and controls department had the responsibility to perform electronic and radiological calibrations for the above radiation monitors. The system engineer had the responsibility to trend and track the above RMS. All reviewed calibration results were within BGE's acceptance criteria, with the exception of Unit 2 main steam line monitors which were newly installed and were being calibrated. Calibration results will be reviewed during a subsequent inspection.

During the review of the above RMS calibration documentation, the inspector independently calculated and compared several calibration results, including linearity tests and conversion factors. The inspector determined that BGE's results were comparable to the independent calculations.

BGE applied very good calibration methodologies for the above area radiation monitoring systems, including radiological and electronic calibrations. Alarm setpoint calculation methodologies were good. Calibration procedures were detailed and easy to follow.

The inspector also reviewed RMS assessment and quarterly trending reports that were prepared by the RMS system manager. The RMS system manager assessed the system availability using a tracking system (e.g., 99.5% availability of the Unit 2 wide range gas monitor during 1996). The inspectors determined that the RMS system manager and engineer provided focus and attention in the areas of: (1) RMS upgrade project; (2) RMS system improvement project; (3) trending analyses for conversion factors and linearities; and (4) follow-up on the progress of modifications.

c. Conclusions

Based on the above reviews, the inspector determined that BGE maintained and implemented good calibration and assessment/trending programs for effluent/process/area radiation monitoring systems.

R2.2 Air Cleaning Systems and Plant Air Balance

a. Inspection Scope (84750)

The inspector reviewed BGE's most recent surveillance test results (visual inspection, in-place HEPA and charcoal filter leak tests, air capacity/pressure drop tests, and laboratory tests for the iodine collection efficiencies) for the following systems:

- Control Room Emergency Air Supply Systems,
- Spent Fuel Handling Building,
- Penetration Room Exhaust System,
- Containment Building, and
- ECCS Pump Room Exhaust System.

The inspectors reviewed the plant air balance for the following facilities as described in Section 9.8.2.3 of the UFSAR:

- Positive pressure for the Control Room,
- Negative pressure for the Waste Processing Area, and
- Negative pressure for the Spent Fuel Pool Ventilation.

b. Observations and Findings

All reviewed surveillance test results were within Calvert Cliffs technical specification acceptance criteria. During discussions with the responsible individual, the inspector noted that the individual had very good knowledge not only for technical specification requirements, but also for standard industry practices. As noted in inspection report no. 50-317/96-02 and 50-318/96-02, BGE previously identified a weakness concerning the test temperature (130°C) for the iodine collection efficiency test as specified by the TS. As a result, BGE tests the charcoal filter system at both 130°C and 30°C. The inspector determined that BGE maintained and implemented a good routine surveillance test program.

Maintaining positive and negative pressures for the above systems appeared to be acceptable, however, there were no pressure differences in the measurement devices for the above facilities. BGE verified appropriate positive/negative pressures by periodic smoke testing. The inspector noted that periodic smoke testing to verify positive/negative pressures for the above facilities was difficult because there were different ventilation system configurations. BGE was considering the installation of differential pressure gauges for the above systems.

BGE submitted a Licensee Event Report (50-318/97-001) to the NRC regarding the air balance between the Spent Fuel Pool (SFP) area and the auxiliary building while fuel was being moved in the SFP. There were no differential pressure measurement devices for the SFP and auxiliary building, and BGE did not identify air flow direction. Pressure of the auxiliary building was more strongly negative than that of the SFP, therefore, the air from the SFP leaked into the auxiliary building. The

inspector noted that air in the SFP was required to pass through the SFP ventilation system (charcoal and HEPA filters) in the event of a fuel handling accident.

BGE stated in the LER that procedures were being revised to ensure that the SFP ventilation remained operable when auxiliary building ventilation lineup changes were made.

c. Conclusions

Based on the above reviews, the inspector determined that BGE maintained and implemented a good routine surveillance test program. The responsible individual for ventilation had very good knowledge not only for technical specification requirements, but also for standard industry practices. BGE implemented action to ensure that ventilation system configuration changes did not affect ventilation design.

R2.3 Radiologically Controlled Area Access Control and Electronic Dosimeters (83750)

a. Inspection Scope

The BGE Radiologically Controlled Area (RCA) access control and electronic personal dosimeter (EPD) system was evaluated through discussions with radiation protection staff and the following documents:

- Enhanced Radiation Worker Training, General Orientation Training (GOT) Lesson Plan GOT-337-9, Revision 1, January 15, 1997
- GOT Annual Requalification, Lesson Plan GOT-337-27R, Revision 5
- GOT Initial Training, Lesson Plan GOT-337-27, Revision 11
- IR1-019-441, Issue Report, Improper RCA Entry, April 29, 1997
- First Quarter 1997 Exposure Evaluation Reports
- First Quarter Thermoluminescent Dosimeters (TLDs)/EPD Error Evaluation Reports
- Second Quarter 1997 Exposure Evaluation Reports
- First Quarter 1997 EPD Loss/Failure Reports
- Second Quarter 1997 EPD Loss/Failure Reports

b. Observations and Findings

The inspector found that GOT training emphasized how to properly use the EPD/access control system. The GOT initial test evaluated worker knowledge on EPD access control. GOT requalification tests asked several questions regarding RCA access control.

BGE informed the inspector that TLDs were the device of record used to measure dose. BGE stated that EPDs were used as a control device only. NRC regulation 10 CFR 20.1501(c)(1) required that processed dosimeters used to comply with 10 CFR 20.1201 were required to be National Voluntary Laboratory Accreditation Program (NVLAP) accredited. The BGE TLD program was accredited by NVLAP.

The inspector noted that TLD results demonstrated that worker exposures have been well within the federal regulatory limit of five rem in a year.

The inspector found that BGE programmed the EPD/access control system to provide both visual (CRT monitor) and audio (computer soundboard) warnings if the EPD was removed prior to completing the log-in access transaction. While it was possible for an individual to remove an EPD prior to the completion of the access transaction, visual and audible alarms sounded. An individual would have to ignore these warnings that RCA access had not been granted.

Several cases were identified by BGE in which a worker received an error message upon exiting the RCA. BGE investigation into these cases indicated that the worker had failed to check the EPD for the HPID# (a self-check to insure that the electronic transaction was successful). The inspector reviewed one Issue Report detailing an event in which a worker entered the RCA without having properly completed the Real Time Exposure Management System (REMS) log-in. The Issue Report was generated on April 29, 1997, and the accompanying REMS transaction log indicated that the EPD had been removed prior to completion of the sign-in.

The inspector reviewed several EPD failure reports. The inspector assessed that the actions and assumptions taken by BGE to evaluate worker doses in these cases of lost or failed EPDs were reasonable (worker doses were evaluated and tracked as a temporary control measure until TLD results were acquired). The inspector found that individuals who failed to make proper RCA entries had received disciplinary action.

c. Conclusions

No issues other than some human performance problems were noted regarding the electronic access control and electronic dosimeter system. BGE reviewed cases in which EPDs were lost, failed, or provided anomalous readings. The actions taken and the assumptions made in these cases were reasonable.

R3 RP&C Procedures and Documentation

a. Inspection Scope (84570)

The inspection consisted of: (1) review of selected chemistry procedures to determine whether BGE could implement the routine radioactive liquid and gaseous effluent control programs and the emergency operations; (2) review of 1995 and 1996 Semiannual Radioactive Effluent Reports to verify the implementation of TS requirements; and (3) review of the contents of the ODCM for performing the effluent control programs, including methodologies for calculating projected dose to the public.

b. Observations and Findings

The inspector noted that effluent control procedures were detailed, easy to follow, and ODCM requirements were incorporated into the appropriate procedures. BGE had good procedures to satisfy the TS/ODCM requirements for routine and emergency operations.

The inspector reviewed the 1995 and 1996 Semiannual Radioactive Effluent Release Reports. These reports provided data indicating total radioactivity released for liquid and gaseous effluents. 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 inspector determined that there were no anomalous measurements, omissions, or adverse trends in the reports.

The ODCM provided descriptions of the sampling and analysis programs, which are established for quantifying radioactive liquid and gaseous effluent concentrations, and for calculating projected doses to the public. Methods for establishing effluent radiation monitor setpoints were listed in the ODCM. BGE adopted other necessary parameters from Regulatory Guide 1.109.

c. Conclusions

Based on the above reviews, the inspector made the following determinations:

- effluent control procedures were sufficiently detailed to facilitate performance of all necessary steps for routine and emergency operations,
- BGE effectively implemented the TS/ODCM requirements for reporting effluent releases and projected doses to the public, and
- BGE's ODCM contained sufficient specification, information, and instruction to acceptably implement and maintain the radioactive liquid and gaseous effluent control programs.

R5 Staff Training and Qualification in RP&C

The inspection consisted of: (1) discussions with a chemistry training instructor, (2) a review of the training manuals, and (3) a review of chemistry technicians training records.

The inspector reviewed a selected portion of the chemistry training manual for the chemistry technicians. The training manual contained good information about chemistry laboratory techniques and appropriate learning objectives and training sequences. The chemistry training instructor stated that the expectation was that the trainees were to clearly understand the importance of each laboratory analytical step and effectively perform the requirement. The annual training and as-needed

training (on-the-job) were required as part of the training. The passing grade was 80%. The inspector also reviewed the training records for chemistry technicians and verified that the training requirements were met.

Based on the above review and discussions, the inspector determined that the training department implemented an effective training program for chemistry technicians.

R6 RP&C Organization and Administration

The inspector reviewed the organization and administration of the radioactive liquid and gaseous effluent control programs and discussed changes made since the last inspection, conducted in February 1996.

There were no program changes since the last inspection. The chemistry department had the major responsibility to conduct the effluent control programs. Other groups (i.e., radiation controls, operations, I&C, and system engineers) had supporting responsibilities to the program. Staffing levels appeared to be appropriate for the conduct of routine and emergency operations.

R7 Quality Assurance (QA) in RP&C Activities

R7.1 Effluents and Chemistry Quality Assurance

a. Inspection Scope (84750)

The inspection consisted of: (1) review of the 1996 audit and its responses; (2) QA policy of the measurement laboratory; and (3) implementation of the measurement laboratory QC program for radioactive liquid and gaseous effluent samples.

b. Observations and Findings

The inspector reviewed QA audit report No. 96-16, "Chemistry." The inspector noted that the audit team also included other technical personnel. The 1996 audit team identified one finding. The finding was not safety-related, but rather recommended an enhancement to the effluent control programs. The response to this finding was completed in a timely manner. The inspector noted that the scope and technical depth of the audit was sufficient to assess the quality of the radioactive liquid and gaseous effluent control programs.

BGE maintained a good QA policy and implemented the policy throughout the chemistry department, including analytical measurement laboratory. The inspector reviewed the QC data for intra/interlaboratory comparisons. When discrepancies were found, effective resolutions were determined and implemented.

c. Conclusions

Based on the above reviews, the inspector determined that BGE's QA audit was sufficient to effectively assess the radioactive liquid and gaseous effluent control programs. BGE implemented a very good QA/QC program to validate measurement results for effluent samples.

R7.2 Radiation Protection Department Problem Reporting

a. Inspection Scope

The inspector reviewed problem reporting activities in the Calvert Cliffs radiation protection department.

b. Findings and Observations

A number of BGE and contractor radiation protection technicians were asked how problems were reported and the receptiveness of BGE management to problem reports. All of the selected individuals stated that issues were documented on gold cards, which were available at the radiation protection control desk. Issue reports were typically only initiated by supervisors after reviewing the gold cards. Of the individuals interviewed, some stated that supervision was generally receptive to worker concerns and would take appropriate action to resolve concerns when identified. However, some workers stated that concerns sometimes were not promptly answered.

As followup to the worker concerns, the inspector reviewed gold cards collected during the Unit 2 outage to determine if identified deficiencies were being dispositioned in accordance with BGE policy and procedures. Approximately 200 gold cards were reviewed. The inspector found that most issues were appropriate for gold card documentation, such as good performance by technicians in the field or suggestions for process improvements. All of the gold cards had been reviewed by supervisory and management personnel in the radiation protection department. Most of the gold cards had not been entered into radiation protection department computer based trending system. The filing and entering into the tracking system was in progress at the time of the inspection. A number of gold cards identified procedure or process deficiencies and these were upgraded to issue reports by the reviewing supervisor. Issues in this group included:

- On April 5, a small spill of potentially contaminated water from a tank truck occurred due to an improper valve lineup.

- On April 10, an air sampler was found out-of-calibration. The sampler had been used four times prior to identification of the problem.

The inspector found one gold card that identified a personnel safety issues that had not been upgraded to an issue report. Although the issue was entered in the

radiation controls tracking system, resolution of the concerns was not apparent. The issue was as follows;

- On March 22, an individual observed personnel attaching safety tethers improperly, doubling tethers, and working without tethers on the edge of the refuel pool.

No investigation had been conducted into the observations even though the observations of working without tethers and doubling tethers were contrary to both BGE and United States Occupational Safety and Health Administration Guidelines. Maintenance and radiation protection department management informed the inspector that they did not believe that work was conducted without tethers and that the observer was likely in error; however, no investigation had been conducted at the time of the observation and the concerns were unanswered until questions were raised by the inspector.

The inspector found four additional gold cards that involved procedure compliance issues. None of these issues were documented as issue reports and corrective actions were not documented:

- On March 15, technicians responded to a personnel contamination. The decontamination effort was not done in accordance with BGE procedure RSP-1-107.

- On April 4, an unused ty-wrap was found floating in the refuel pool. (The refuel pool was a foreign materials exclusion zone.)

- On April 8, BGE identified that personnel were changing alarming dosimeter calibration setpoints in the field. One reason was that the radiation safety procedure RSP-1-129 was not being followed.

- On April 13, three Cobalt-60 sources were returned to Calvert Cliffs by a vendor as a limited quantity shipment. The receipt survey showed up to 1 millirem per hour on contact, which is greater than limited quantity. The package may not have considered Department of Transportation regulations.

The inspector reviewed these issues and found that some corrective actions had been implemented for each of the concerns. For example, for the April 8 issue, field personnel were re-trained on setting SAIC dosimeter setpoints. However, the inspector considered the BGE practice of using gold cards to document procedure compliance issues to be a poor practice because interdisciplinary review and station wide trending were not done. Also none of the issues received review by management outside of the radiation protection department.

The inspector discussed these concerns with BGE management. The radiation protection department manager stated that the radiation protection staff would be retrained on Calvert Cliffs problem reporting and this training was completed for all radiation protection supervisors and managers. Also issue reports were written for

all procedure compliance issues, including past issues identified during the outage using the gold card system. Additionally, the radiation protection department weekly staff meeting began to include a review of all issue reports and gold cards written for the week, and gold cards were to be evaluated by management to determine if an issue report was appropriate.

BGE procedure QL-2-100, "Issue Reporting and Assessment," stated that "All personnel at CCNPP are responsible for identifying and promptly documenting deficiencies and nonconformances on issue reports." Further, QL-2-100 specified an issue report for an actual or suspected process or program deficiency or nonconformance. The issue resolution sponsor for the issue report shall be responsible for evaluating the issue, initiating corrective actions, and verifying completion of all actions necessary to fully resolve the issue described on the issue report. Upon completion of all required actions, the sponsor shall provide a resolution document to describe actions taken to resolve the issue. The document shall provide sufficient detail to ensure a reasonable understanding of the issue, its cause, and its resolution. For the March 15, April 8 and 13 problems, issue reports were not written and corrective actions were not documented as specified by Calvert Cliffs procedure QL-2-100. These failures were considered a violation of NRC requirements. **(VIO 50-317&318/97-03-01)**

c. Conclusions

The inspector found that the radiation protection department did not generate issue reports for some worker concerns and some concerns were not promptly resolved. Among the unresolved concerns were personnel safety and procedure compliance issues. The BGE practice of using gold cards to document some procedure compliance and personnel safety concerns was considered poor and could prevent proper resolution and tracking of the concern.

V. Management Meetings

X1 Exit Meeting Summary

During this inspection, periodic meetings were held with station management to discuss inspection observations and findings. On June 19, 1997, an exit meeting was held to summarize the conclusions of the inspection. BGE management in attendance acknowledged the findings presented.

X2 Review of UFSAR Commitments

A recent discovery of a licensee operating its 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 to verify that the UFSAR wording was consistent with the observed plant practices, procedures and/or parameters. No discrepancies were identified.

ATTACHMENT 1

PARTIAL LIST OF PERSONS CONTACTED

BGE
P. Katz, Plant General Manager
K. Cellers, Superintendent, Nuclear Maintenance
K. Neitmann, Superintendent, Nuclear Operations
P. Chabot, Manager, Nuclear Engineering
T. Pritchett, Director, Nuclear Regulatory Matters
B. Watson, General Supervisor, Radiation Safety
C. Earls, General Supervisor, Chemistry
L. Gibbs, Director, Nuclear Security
T. Sydnor, General Supervisor, Plant Engineering
T. Forgette, Director - Emergency Preparedness
G. Detter, Design Engineer

NRC
S. Adams, Reactor Engineer, Region I

INSPECTION PROCEDURES USED

IP 62707: Maintenance Observation
IP 71707: Plant Operations
IP 93702: Prompt Onsite Response to Events at Operating Power Reactors
IP 61726: Surveillance Observations
IP 37550: Engineering
IP 37551: Onsite Engineering
IP 71750: Plant Support Activities
IP 84750: Radioactive Waste Treatment, and Effluent and Environmental Monitoring

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened		
50-317&318/97-03-01	VIO	Multiple examples of failure to document and report to management significant conditions adverse to quality
Closed		
50-317/96-04-00	LER	Two ASI Channels OOS Due to Reversed Nuclear Instrumentation Leads
50-317&318/96-06-02	URI	Two ASI Channels OOS Due to Reversed Nuclear Instrumentation Leads
50-317/96-03	LER	Discovery of Holes in the Containment Sump Screen to Field Run Tubing
Updated		
50-317&318/96-06-03	URI	Salt Water and Service Water Systems Continued Operability

LIST OF ACRONYMS USED

ASI	Axial Symmetry Index
ALARA	As Low As Reasonably Achievable
RCA	Root Cause Analysis
UFSAR	Updated Safety Analysis Report
EDG	Emergency Diesel Generator
IR	Issue Report
ASME	American Society of Mechanical Engineers
PASS	Post-Accident Sample System
URI	Unresolved Item
ALARA	As Low As is Reasonably Achievable
HEPA	High Efficiency Particulate
HPSI	High Pressure Safety Injection
MSIV	Main Steam Isolation Valve
ODCM	Offsite Dose Calculation Manual
QA	Quality Assurance
QC	Quality Control
RMS	Radiation Monitoring System
RP&C	Radiological Protection and Chemistry
SFP	Spent Fuel Pool
UFSAR	Updated Final Safety Analysis Report
TS	Technical Specifications
OOS	Out of Service
EPD	Electronic Personal Dosimeter

GOT	General Orientation Training
NVLAP	National Voluntary Laboratory Accreditation Program
RCA	Radiologically Controlled Area
RP	Radiological Protection
REMS	Real Time Exposure Management System
TLD	Thermoluminescent Dosimeter
WMS	Warehouse Management System
BIS	Business Information System
SRW	Service Water
SRWHX	Service Water Heat Exchanger
CAC	Containment Air Cooler
SRV	Safety Relief Valve