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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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EXECUTIVE SUMMARY  
Calvert Cliffs Nuclear Power Plant, Units 1 and 2  
Inspection Report Nos. 50-317/97-08 and 50-318/97-08

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

**Plant Operations**

The inspectors conducted frequent reviews of control room operations and observed that the control room operators were attentive and responsive to plant conditions, and knowledgeable of the status of annunciators. Safety and risk significant systems and support systems were observed to be appropriately aligned during periodic main control panel walkdowns. Control room operators demonstrated appropriate use of self-checking, peer checking, and three-way communication techniques.

The inspectors concluded that BGE was slow to recognize that the secondary control element assembly (CEA) indication system was inoperable, the plant had operated outside technical specifications, and that this event was reportable. This was determined to be a violation of NRC requirements (**VIO 50-317/97-08-02**). Recent unreliability of the primary CEA indication system contributed to BGE's difficulty in determining which CEA indication system was inoperable.

Two examples of BGE's failure to develop adequate test procedures to ensure the operability of the CEA secondary position indicating systems were identified. This was also determined to be a violation of NRC requirements (**VIO 50-317&318/97-08-01**).

When the secondary position indicating system was replaced during the 1994 Unit 1 refueling outage, BGE's design control measures did not identify the need to change the variable power supply voltage and revise the applicable plant procedures and drawings. This was treated as a Non-Cited Violation (**NCV 50-317&318/97-08-03**).

The inspectors concluded that the non-licensed plant operators observed during two plant tours were experienced and knowledgeable. BGE established processes for problem identification, communications, and procedure adherence were well implemented.

**Maintenance**

The observed maintenance was conducted safely and in accordance with BGE approved procedures and controls. Workers were knowledgeable and performed work effectively. Quality verification personnel provided effective oversight of selected maintenance jobs.

The observed surveillances were conducted safely and effectively demonstrated system operability. Thorough and detailed pre-test briefings were a strength of the surveillance testing observed.

## Executive Summary (cont'd)

### Plant Support

The BGE Self-Assessment of compliance with Appendix R to 10 CFR 50 was found to be a good initiative and valuable tool for identifying areas for improvement. The results of the assessment will remain unresolved pending further NRC review of the specific issues and corrective actions taken.

A review of the fire protection program found excellent procedural guidance for the conduct of fire protection activities, an effective penetration seal program, appropriate control of fire brigade qualification, effective audits for identifying problems and initiating corrective actions, and good control of combustible materials.

Overall, the emergency preparedness (EP) facilities, equipment, supplies and instrumentation were being adequately maintained. Facility inventory verifications were adequately performed. BGE's changes to the Emergency Response Plan and Emergency Response Plan Implementing Procedures were made in accordance with §50.54(q) of NRC regulations.

The emergency planning training program implementation meets the requirements of the emergency response plan, the emergency response plan implementing procedures and the Emergency Response Training Program Manual. The qualifications of Emergency Response Organization members were being tracked. Continuing emergency response training is provided by the individual site departments. However, there was weak central oversight of emergency planning training activities. Continuing training exams may cover a broad range of department specific topics and may not adequately examine knowledge of emergency planning concepts.

Communication circuit testing was in violation of NRC requirements from September 1996 through September 1997 (**VIO 50-317&318/97-08-05**). The corrective actions which were taken prior to the inspection exit interview and which were presented in a meeting at the Region I offices on February 2, 1998, were adequate in response to this violation.

Two on-shift chemistry technicians were unable to correctly interpret the significance of simulated radiation readings for assuming the level of core damage in table top walkthroughs. They did not follow their procedure when they failed to consult with the interim Site Emergency Coordinator to develop this assumption (**VIO 50-317&318/97-08-06**). The inspectors noted that this training deficiency was similar to the exercise weakness observed in NRC Inspection Report 97-09. Due to the repetitive nature of this deficiency, these examples were cited as a violation of NRC requirements.

Senior site management is adequately involved in and informed about Emergency Planning Unit (EPU) activities. The inspectors concluded that the two most recent Nuclear Performance Assessment Department audits met all regulatory requirements. The 1997 audit report was thorough and detailed and was more detailed than previous audit reports. BGE's self-assessment program, with 127 self-assessments initiated in calendar year 1997, was a good initiative.



## Executive Summary (cont'd)

BGE was effectively maintaining and competently administering the security program. Alarm station operators were knowledgeable of their duties and responsibilities, and communications requirements were being performed in accordance with the NRC-approved physical security plan. Security training was being performed in accordance with the NRC-approved training and qualification T&Q plan.

Security equipment was being properly tested and maintained as evidenced by minimal compensatory posting. Assessment aids had good picture quality and excellent zone overlap. Detection aids were functional, effective and met regulatory requirements.

The access authorization program was being implemented in accordance with regulatory requirements, and personnel and packages were being properly searched prior to granting protected area (PA) access. Interviews with Nuclear Security Officers, inspector observations, and procedural reviews determined that visitor access was being controlled and maintained as required.

Security audits were thorough and in-depth. Effective controls were in place for identifying, resolving, and preventing programmatic security problems. These controls included an effective departmental self-assessment program.



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**ATTACHMENTS**

- Attachment 1:      Partial List of Persons Contacted  
                          Inspection Procedures Used  
                          Items Opened, Closed and Discussed  
                          List of Acronyms Used
  
- Attachment 2:      Fire Barrier Penetration Seals Inspected and Drawings Referenced
  
- Attachment 3:      Emergency Response Plan and Implementing  
                          Procedures Reviewed

## Report Details

### Summary of Plant Status

Unit 1 began the inspection report period at full power. Power was reduced to approximately 97 percent on January 2 and was returned to full power on January 4 after the completion of planned moderator temperature coefficient surveillance testing. On January 13, BGE initiated a plant shutdown in accordance with technical specification (TS) 3.0.3 when the both low pressure safety injection headers were determined to be inoperable due to a cracked weld on a seismic restraint in the common discharge header. Power was reduced to 98 percent before the systems were restored to an operable status. Power was reduced to approximately 85 percent for scheduled maintenance on January 30 and was returned to full power on January 31.

Unit 2 also began the inspection report period at full power. Power was briefly reduced to 99.5 percent after securing a heater drain pump in response to a level control valve failure. Unit 2 was operated at full power for the remainder of the inspection report period.

## I. Operations

### **O1 Conduct of Operations**

#### **O1.1 General Comments (71707)**

Plant operations were conducted safely with a proper focus on nuclear safety. On January 13, during the inspection of the common low pressure safety injection (LPSI) discharge line, engineering personnel identified a crack in the weld between a pipe support stanchion and the LPSI piping. Identification of this problem was not immediately communicated to Operations personnel. After notification of this problem approximately 3 hours later, Operations declared both LPSI headers inoperable. A unit shutdown was commenced in accordance with the requirements of TS 3.0.3. BGE removed the support with a temporary alteration and performed an engineering evaluation to support operability. The plant was subsequently returned to full power. An NRC engineering inspection team was onsite during this period and reviewed this issue. The details of engineering team's review will be documented in NRC Inspection Report 50-317&318/98-80.

Using Inspection Procedure 71707, "Plant Operations," the inspectors conducted frequent reviews of control room operations. In general, the conduct of operations was professional and safety conscious. The control room operators were attentive and responsive to plant conditions. Control panels were periodically walked down and safety and risk significant systems and support systems were observed to be appropriately aligned. During the inspection period, control room operators were knowledgeable of the status of annunciators. Control room operators demonstrated appropriate use of self-checking, peer checking, and three-way communication techniques.



## O1.2 Operability of Control Element Assembly Position Indication

### a. Inspection Scope

The inspectors reviewed the problems with the control element assembly (CEA) position indication systems.

### b. Observations and Findings

On January 4, Unit 1 was operating at 97 percent power with the group 5 CEAs partially inserted for moderator temperature coefficient testing (MTC). During the MTC testing, a CEA motion inhibit alarm was received. The operators determined that the pulse counting (primary) and voltage divider reed switch (secondary) CEA position indications deviated from each other by 5 to 6 inches for all the group 5 CEAs. The tertiary indication, the "full out" reed switch position indication, was not operable with the CEAs partially inserted. The operators determined that the position indicating systems did not meet the TS requirement for two of the three position indication systems to agree within 4.5 inches.

The operators investigated the problem and reviewed the issue with nuclear fuels and systems engineering personnel. Recently the primary position indicating system has been unreliable. The Unit 1 CEAs have been maintained at the "full out" position in lieu of the normal 132 inch position due to this system unreliability. BGE had identified computer cards that required replacement to improve the system reliability; however, this corrective action had not been completed prior to the Unit 1 MTC testing. Additionally, BGE had considered the secondary indication more accurate than the primary indication since the secondary indication determines position from reed switches spaced along the CEA housing whereas the primary indication infers position from counting pulses sent to the CEA magnetic jack mechanism. The operators concluded that the primary indication system was inoperable based on the results of their investigations, the system's accuracy and unreliability, and consultation with engineering personnel.

The operators promptly entered TS action 3.1.3.3.b, which allows continued operation for 24 hours with the primary position indication system and one of the remaining position indication systems inoperable. BGE personnel completed the MTC testing and proceeded to return the CEAs to the "full out" position. This action was completed, on January 5, within the 24 hour time allowed by the TS action statement. The deviation between the primary and secondary position indicating systems narrowed to approximately three inches, but remained until the CEAs reached "full out" indication on the tertiary indication. The TS action statement was exited when the "full out" indication became operable. Subsequent information indicated all of the CEAs in group 5 were maintained within 7.5 inches of each other as required by technical specifications. Therefore, this event was of low safety significance since assumed values for peaking factors, power distribution and shutdown margin were not exceeded by maintaining the CEA deviation within TS limits.

On January 5, the inspectors observed that instrument maintenance technicians were performing troubleshooting and adjusting the power supply voltage to the secondary position indication system voltage divider. The voltage had drifted from the setting specified in a once per refuel cycle instrument maintenance procedure for aligning the CEA position indicating system. The inspectors questioned why troubleshooting was being performed on the secondary system when the primary system had previously been identified as the inoperable system. The inspectors further noted that no specific TS action existed for the previous simultaneous inoperability of the secondary position indication and the "full out" indication. The inspectors questioned whether the plant was operated outside of technical specifications since TS 3.0.3 had not been entered on January 4. BGE personnel indicated that investigations and troubleshooting were ongoing.

On January 6, the inspectors discussed the secondary position indication troubleshooting plan development with system engineering and instrument maintenance personnel. These personnel indicated that a three inch deviation would still remain if the CEAs were reinserted. For example, if the rods were reinserted from the "full out" position of 135 inches, the secondary would not indicate that the CEAs were moving until they were inserted below 132 inches. The deviation was suspected to have resulted from incorrectly setting the voltage for the variable power supply to the secondary position indicating system. The BGE personnel believed that the voltage setting had been incorrect and undetected since the system was modified in 1994 to install a new viewing screen that applied a smaller resistance to the voltage divider network. BGE personnel also identified that there was no periodic surveillance test of this power supply voltage setting that was critical to the accuracy of the secondary position indicating system. BGE personnel indicated that this issue would be reviewed for generic implications. Failure to establish a test procedure to verify that the voltage divider network power supply voltage was at the acceptance limit specified by the applicable design documents is the first example of a violation of 10 CFR 50, Appendix B, Criterion XI, "Test Control" (VIO 50-317&318/97-08-01).

Technical Specification Limiting Condition for Operation (LCO) 3.1.3.3 requires the CEA voltage divider reed switch position indication channel to be capable of determining the absolute CEA position within  $\pm 1.75$  inches. With three inches of suspected deviation between the primary and secondary, the inspectors questioned whether TS LCO 3.1.3.3 was being met. Operations personnel stated that all the position indicating systems met this requirement at the "full out" position. However, the inspectors commented that the system must be able to meet the TS LCO and perform its design function throughout the full travel of the CEA.

BGE assembled a cross section of plant operations, maintenance, and engineering personnel to discuss and finalize a troubleshooting and repair plan for the secondary CEA position indicating system. These personnel concluded that the secondary indicating system was not capable of determining CEA position within 1.75 inches and was therefore not operable. The secondary indicating system had not been operable since January 4. After declaring the secondary position

indicating system inoperable, BGE promptly increased the surveillance of CEA position from every 12 hours to every 4 hours as required by TS surveillance requirements 4.1.3.1.1, 4.1.3.3.2, and 4.1.3.6. The increased surveillances were required since the deviation circuit, CEA motion inhibit, and power dependent insertion limit alarm functions were also rendered inoperable. BGE personnel also concluded that Unit 1 had been operated outside TS on January 4 when both the secondary position indication and the "full out" indication were simultaneously inoperable. This was a violation of NRC requirements **(VIO 50-317/97-08-02)**.

BGE personnel concluded that the deviation resulted from a combination of an incorrect setting and a drift in the setting of the voltage for the variable power supply to the secondary position indicating system. During the 1994 Unit 1 refueling outage (and 1995 for Unit 2), the secondary position indicating system was replaced with a CEA voltage divider position indication system which has a lower voltage resistance load. At that time, BGE's design control measures did not identify the need to change the variable power supply voltage and revise the applicable plant procedures and drawings. This non-repetitive, licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of the NRC Enforcement Policy **(NCV 50-317&318/97-08-03)**.

On January 6, BGE personnel calculated a new voltage setting for the Unit 1 variable power supply. The troubleshooting included adjusting the voltage to the new setting and testing the secondary position indicating system to ensure that the system was then accurate to within the LCO specifications. This new voltage setting was then made permanent. The troubleshooting was subsequently extended to Unit 2 to determine if a generic concern existed. The Unit 2 CEAs were located at their normal partially inserted position of 132 inches. No significant deviation between position indicating systems was observed. BGE troubleshooting determined that the variable power supply for the Unit 2 CEA position indicating system had drifted down to a value approximately equal to the new permanent voltage setting. The power supply was reset and the system was satisfactorily tested.

Through investigation and discussion with BGE personnel, the inspectors determined no surveillance test existed to verify the TS 3.1.3.3 LCO requirement for the CEA voltage divider reed switch position indication channel to be capable of determining the absolute CEA position within  $\pm 1.75$  inches. BGE personnel identified that there may be additional instances where TS surveillance alone are not sufficient to verify that LCO requirements are met and no additional surveillance test exists. BGE personnel submitted an issue report to the corrective action system to investigate this issue further. This review was not completed during the inspection period. Failure to establish a test procedure to verify that the CEA voltage divider reed switch position indication channel was capable of determining the design acceptance limit of absolute CEA position is the second example of a violation of 10 CFR 50, Appendix B, Criterion XI, "Test Control" **(VIO 50-317&318/97-08-01)**.



The inspectors reviewed the updated final safety analysis report (UFSAR) and noted that. UFSAR figure 7-12 also indicates that the setpoint for the upper electrical limit or the "full out" position was at 136 inches. Additionally, the Operating Instructions specify aligning the primary CEA position indicating system to 135 inches when the CEAs are at the "full out" position. This figure was discussed with BGE personnel who stated that the "full out" position was actually located at between 135 and 135.75 inches. BGE personnel initiated an issue report to investigate and resolve these apparent conflicts. This issue is discussed further in Report Section X.1.

c. Conclusions

During CEA manipulations for MTC testing the primary and secondary CEA position indications for all the group 5 CEAs deviated from each other by more than allowed by technical specifications. The tertiary indication, the "full out" reed switch position indication, was not operable with the CEAs partially inserted. The inspectors concluded that BGE was slow to recognize that the secondary CEA indication system was inoperable, the plant had operated outside technical specifications, and that this event was reportable. This was determined to be a violation of NRC requirements (**VIO 50-317/97-08-02**). Recent unreliability of the primary CEA indication system contributed to the BGE's difficulty in determining which CEA indication system was inoperable.

Two examples of BGE's failure to develop adequate test procedures to ensure the operability of the CEA secondary position indicating systems were identified. The NRC inspectors identified one example. This was also determined to be a violation of NRC requirements (**VIO 50-317&318/97-08-01**). BGE personnel identified that the inoperability of the secondary position indicating system resulted from a combination of an incorrect setting and a drift in the setting of the voltage for the variable power supply to the secondary position indicating system. When the secondary position indicating system was replaced during the 1994 Unit 1 refueling outage, BGE's design control measures did not identify the need to change the variable power supply voltage and revise the applicable plant procedures and drawings. This was treated as a Non-Cited Violation (**NCV 50-317&318/97-08-03**). However, throughout this event, all of the CEAs in group 5 were maintained within 7.5 inches of each other as required by technical specifications. Therefore, this event was of low safety significance since assumed values for peaking factors, power distribution and shutdown margin were not exceeded by maintaining the CEA deviation within TS limits.

**02 Operator Knowledge and Performance**

**02.1 Observation of Auxiliary Operator Rounds**

a. Inspection Scope (71707)

The inspectors observed non-licensed nuclear plant operators (NPOs) conduct tours of the Unit 1 auxiliary and turbine buildings.

b. Observations and Findings

The inspectors noted that the NPOs were experienced, and knowledgeable of their duties and plant equipment for the areas assigned. The NPOs identified several deficiencies during the plant tours. The control room was promptly notified of out-of-specification readings and local alarms. Three-way communication techniques were implemented. The NPOs initiated Issue Reports (IR) to enter the minor deficiencies into the corrective action program. The inspectors noted that the NPOs used appropriate personal and radiation safety techniques. Applicable procedures, including "memory use" procedures were brought to the operating stations and followed step-by-step.

c. Conclusions

The inspectors concluded that the non-licensed plant operators observed during two plant tours were experienced and knowledgeable. BGE established processes for problem identification, communications, and procedure adherence were well implemented.

## II. Maintenance

**M1 Conduct of Maintenance**

M1.1 General Comments

a. Inspection Scope (62707)

The inspectors reviewed maintenance activities and focused on the status of work that involved systems and components important to safety. Component failures or system problems that affected systems included in the BGE maintenance rule program were assessed to determine if the maintenance was effective. Also, the inspectors directly observed all or portions of the following work activities:

IR3-002-228	22 Component Cooling HX Outlet Gage Calibration
IR3-003-684	2B Emergency Diesel Speed Switch Adapter Replacement
MO1199800103	Remove SG Blowdown Piping and Hand Valve 104
MO1199800117	Replace 2" SG Blowdown Piping and Valve
MO1199800006	CEAPDS Position Indication Troubleshooting
MO1199705396	Leak Repair Unit 1 HP Turbine

b. Observations and Findings

The inspectors found that the selected maintenance activities were performed safely and in accordance with approved procedures. Technicians were experienced and knowledgeable of the assigned duties. Pre-job briefings were effective in ensuring that the work was conducted in accordance with BGE work protocols and plans. The work instructions provided in the maintenance order

packages were adequate in scope and detail. Additions and changes to the maintenance work order instructions were properly documented and approved. When applicable, appropriate radiation control measures were in place and foreign material exclusion controls were practiced. The inspectors noted that an appropriate level of supervisory attention was given to the work. Quality verification personnel were seen providing effective oversight for some maintenance work observed.

c. Conclusions

The observed maintenance was conducted safely and in accordance with BGE approved procedures and controls. Workers were knowledgeable and performed work effectively. Quality verification personnel provided effective oversight of selected maintenance jobs.

M1.2 Routine Surveillance Observations

a. Inspection Scope (61726)

The inspectors observed all or portions of the following surveillance tests:

STP-O-73D-1 Charging Pump Performance Test  
STP-O-73A-1 Saltwater Pump and Check Valve Quarterly Operability Test  
STP-O-29-1 Monthly CEA Partial Movement Test  
STP-O-8A-1 1A EDG and 11 4Kv Bus Testing

b. Findings and Observations

The pre-test briefings performed by the control room operators were detailed and thorough. Pre-test briefings included review of procedural steps, special precautions, means of communication, special test equipment, and contingency actions. As applicable, past problems experienced during the performance of the tests were discussed. Excellent questioning attitudes were displayed during the pre-test briefs and all questions were satisfactorily resolved prior to commencing the test evolutions. The observed surveillance testing was performed safely and in accordance with approved procedures. The inspectors observed that an appropriate level of supervisory attention was given to the testing including direct observation of test steps. The test equipment used met procedure and calibration requirements. The inspectors observed that the details of the approved procedures in use were clear and technically adequate. The inspectors noted that the testing was performed by qualified personnel, and the test results satisfied the acceptance criteria.

c. Conclusions

The observed surveillances were conducted safely and effectively demonstrated system operability. Thorough and detailed pre-test briefings personnel have continue to be a strength of the surveillance testing observed.



### III. Plant Support

#### **F1 Control of Fire Protection Activities**

##### **F1.1 Control of Combustibles**

###### **a. Inspection Scope**

The inspector reviewed Section 5.2, "Controlling Transient Combustibles," of procedure SA-1-100, Rev. 4, "Fire Prevention," and observed the in-plant conditions during plant tours.

###### **b. Observations and Findings**

The controls in SA-1-100, Section 5.2 required no special controls of transient combustibles in an area that are less than that amount assumed present in the Combustible Loading Analysis. Should the transient combustible loading exceed that amount, the job supervisor was responsible for obtaining guidance from the fire protection engineer (FPE), and implementing any additional measures specified by the FPE.

During tours of the facility, the inspector did not observe accumulations of combustible materials in the plant. In addition, the gas cylinder storage cages, located outdoors, at the south-east corner of the services building, maintained 25 feet separation between oxygen and fuel cylinders.

###### **c. Conclusions**

The inspector determined that there was good control of combustible materials and oxidizers, and that housekeeping in the plant was excellent.

#### **F2 Status of Fire Protection Facilities and Equipment**

##### **F2.1 Fire Suppression System Walkdown**

###### **a. Inspection Scope**

The inspector conducted a walkdown of the Unit 2 Service Water Pump room Sprinkler System (Sprinkler System 205), in company of the Fire Protection Engineer (FPE). The inspector also reviewed Drawing No. 12261-28, Sheet 7, Rev. 11, "Calvert Cliffs Nuclear Plant, Lusby, Maryland, Unit 2 - Elev. 5'-0", the Automatic Sprinkler Corporation of America (ASCOA) design drawing, and Drawing 60714SH0003, Rev. 24, "Plant Fire Protection System, Turbine and Service Bldgs. & Intake Structure," the fire protection water system piping and instrumentation drawing (P&ID).

b. Observations and Findings

The Unit 2 Service Water pump room was served by a wet pipe sprinkler system, with local and remote alarms. The system was designed by ASCOA based on hydraulic calculations. Local alarm was provided by a water driven bell. During the walkdown, the inspector observed that the piping was in good repair, and conformed to the design configuration. In addition, the sprinkler heads were of the type, and in the locations and orientations, specified by the ASCOA design. The FPE pointed out to the inspector the location where a sprinkler head had been removed after obtaining certification of the room's watertight door for a fire barrier door. This was performed to ease moving equipment into and out of the room, without the need to disable the sprinkler system for removal of the sprinkler head.

c. Conclusions

Based upon the observed condition of the Unit 2 Service Water pump room sprinkler system and a review of the design drawings, the inspector concluded that the system was in conformance with its design, and was in good condition.

F2.2 Fire Barrier Penetration Seals

a. Inspection Scope

The inspector, in company of the FPE, performed an inspection of fire barrier penetration seals between the Unit 2 45' switchgear room and the Unit 2 B cable chase. The specific penetrations inspected are listed in Attachment 2 to this report. The inspector also reviewed the drawings listed in Attachment 2 to determine the design of the seals which should be present. The inspector also reviewed Section 5.4, "Controlling Fire Barrier Penetrations," of procedure SA-1-100, Rev. 4, "Fire Prevention."

b. Observations and Findings

The fire barrier penetrations at Calvert Cliffs Nuclear Power Plant (CCNPP) used grout to seal the blockout around the original cable trays and conduits. The areas inside the cable trays were sealed using a packing of ceramic fiber, and a covering of flamemastic at both ends of the penetration. Seals were required to be flush with the face of the barrier, or not more than six inches from the face of the barrier. For those cases where shrinkage of the grout, or sagging of the metal covers of the cable tray has created a gap, the gap is sealed using a nominal 3" ceramic fiber and ½" of approved silicone sealant. For new installations, the space between the blockout and the penetrant may be sealed with room temperature vulcanizing (RTV) silicone foam. The need for internal conduit seals was based on the specifics of the conduit (size, cable fill, distance of termination from barrier) and where an enclosure was considered part of the conduit run, the enclosure must be so marked.

The cable tray penetrations between the Unit 2 45' elevation switchgear room and the Unit 2 B cable chase all used ceramic fiber (kaowool) and flamastic to seal the tray interior. The inspector observed that both sides of the penetrations were sealed. Penetration 2-BARR-2B/407-T0002 showed evidence of having been disturbed on the cable chase side. It was apparent to the inspector that the flamastic had been reapplied at one place on the face of the seal. The FPE indicated that this was a repair after installing a new cable.

All the conduits inspected were appropriately plugged at the wall, or extended beyond the qualified minimum length, and the enclosures (junction boxes and condulets) were marked as part of the qualified penetration barrier.

Section 5.4 of procedure SA-1-100 permits temporary seals to be installed during the conduct of modification work. The opening must be packed with ceramic fiber, and an impairment must be processed, and compensatory actions specified by the FPE in place for the duration of the temporary seal.

c. Conclusions

Based upon the observed condition of the fire barrier penetration seals, and a review of the design documents and procedural controls, the inspector concluded that the penetration seal program has been effective in maintaining the integrity of the fire barrier penetration seals.

**F3 Fire Protection Procedures and Documentation**

F3.1 Fire Protection Program procedure

a. Inspection Scope

The inspector performed a review of procedures SA-1, Rev. 2, "Fire Protection Program," and SA-1-100, Rev. 4, "Fire Prevention," in their entirety, to determine what administrative controls have been imposed on plant activities to control the risk of fires.

b. Observations and Findings

Procedure SA-1, "Fire Protection Program," provided the general requirements, and assigns responsibilities for the CCNPP fire protection program. Procedure SA-1-100, "Fire Prevention," provided all the specific guidance for the various functions of the fire protection program. All facets of the program were covered in the single procedure, with specific guidance for compensatory measures when impairments were identified or planned. For planned impairments (such as breaching a fire wall, disabling a suppression system, bringing in transient combustibles), compensatory actions were required to be in place prior to the impairment being implemented.



Procedure SA-1-100 also included step by step guidance for administrative processing of permits and impairments, and provided detailed instructions for hot work fire watches and compensatory measures fire watches.

c. Conclusions

The inspector concluded that procedure SA-1-100 provided excellent guidance for the conduct of fire protection activities at the station. The inspector considered having all the guidance in one procedure a strength, since plant staff personnel can find the guidance for any activity affecting fire protection in the one procedure.

**F5 Fire Protection Staff Training and Qualification**

F5.1 Fire Brigade Training Records

a. Inspection Scope

The inspector reviewed the monthly Fire Brigade Status Reports for 1997, the monthly Fire Brigade Reports for 1997, attendance sheets from several 1997 fire brigade training sessions, and reviewed six lesson plans for fire brigade training. In addition, the inspector discussed the training and qualification program with the Fire Brigade Training Coordinator.

b. Observations and Findings

BGE had committed to the 1975 edition of National Fire Protection Association (NFPA) Standard 27, which required monthly training for fire brigade members. BGE was conducting training for the fire brigade on a monthly basis. The monthly topics were presented by the fire and safety technicians (FASTs). Attendance records were entered into the computer tracking system for training. A printout was generated monthly showing the training status of each person qualified as a fire brigade member. The fire brigade training coordinator used that report to generate a monthly fire brigade report, which was a matrix showing each person's training status. Training which will expire during the month was shown in blue, and training which expired was shown in red. The monthly fire brigade report was used by the FASTs to check the designated fire brigade members at the beginning of each shift to ensure that their qualifications were up to date.

Physical examinations were conducted annually by the medical department. Physicals were currently conducted by physicians or physician's assistants from Johns Hopkins University. On several occasions during the past five years, BGE has had the physician or physician's assistant attend, and participate in, the annual fire school to give them a better perspective on what constitute the physical requirements for fire fighters. Physical qualification status was automatically down-loaded to the "Training Server" software which was used to generate the monthly status report.

The training plans the inspector reviewed are listed in Attachment 2. Each lesson plan included discussion topics, lists of demonstration equipment needed for the lesson, and a set of questions for the students.

c. Conclusions

Based on the review of the monthly fire brigade reports, the computer printouts of individuals' training status, and review of several lesson plans, the inspector concluded that the fire brigade qualification was appropriately tracked and controlled. In addition, the inspector considered the color coding of expired, and soon to expire, training on the monthly reports an excellent aid to the supervisors for identifying training needs, and for the FASTs to identify qualified fire brigade members.

**F7 Quality Assurance in Fire Protection Activities**

**F7.1 Quality Assurance Audits of Fire Protection Program**

a. Inspection Scope

The inspector reviewed audits of the fire protection program conducted since the last inspection, to evaluate the depth of review, and whether identified deficiencies were being appropriately addressed. Specific audits reviewed were:

- Audit Report 96-13, Triennial Fire Protection, dated January 20, 1996
- Report of Audit No. 95-4, Fourth Quarter 1995, dated December 19, 1995
- Report of Audit No. 95-2, Second Quarter 1995, dated July 7, 1995
- Report of Audit No. 95-1, First Quarter 1995, dated April 19, 1995

b. Observations and Findings

BGE had included fire protection in the routine audit program performed by Nuclear Performance Assessment, rather than performing only a single audit each year. Experienced fire protection personnel from an outside entity were included in one of the assessments performed each year. In addition, Nuclear Performance Assessment performs a triennial review of the program, which includes an outside auditor.

The audits found the program to be generally well implemented, with only minor findings. The triennial review performed in 1996 found an issue of some import. The review of training and qualification found a computer programming problem which affected updating the Calvert Cliffs Site Training Matrix for BGE offsite employees. BGE formed a "Focus" group to identify the cause, and extent of the problem and to work out a solution. The FPE stated that the problem did not resurface during the 1997 outage.

c. Conclusions

Based on the lack of repeat findings, and the issuance of Issue Reports and Programmatic Deficiency Reports (PDRs) for significant findings, the inspector concluded that the fire protection program audits were effective in identifying problems and initiating corrective actions.

**F8 Miscellaneous Fire Protection Activities**

**F8.1 BGE Self-Assessment of Compliance with Appendix R to 10 CFR 50**

a. Inspection Scope

The inspector reviewed the report of the BGE self-assessment of compliance with Appendix R to 10 CFR 50, which was conducted during October and November 1996, and the Appendix R/HVAC Project Plan and Scoping Document, issued in August 1997. In addition, the inspector reviewed Issue Report (IR) 1-010-010, dated September 6, 1996, IR1-011-955, dated September 6, 1996, and Priority 3 Root Cause Analysis for PDR 96029, dated March 7, 1997.

b. Observations and Findings

In response to escalated enforcement relating to switchgear room ventilation issues in 1996, BGE performed a self-assessment of compliance with Appendix R to 10 CFR 50. The assessment was conducted in October and November of 1996, and was led by Nuclear Performance Assessment personnel, with technical expertise augmentation by personnel from Engineering and Planning Management, Inc. (EPM). The assessment focused on Appendix R, safe shutdown, fire protection regulatory framework, and key related programs. The team identified 34 specific issues for additional evaluation and correction, as appropriate.

Self-assessment team findings were broken down into three groups as follows:

- Group I Concerns - Corrective Actions Recommended  
These concerns consisted of issues which were regarded by the team as potentially not in compliance with regulatory guidance, and not currently active in BGE's corrective action program.
- Group II Concerns - Actions to be Completed  
These concerns consisted of issues which the team considered might be not in compliance with regulatory guidance, but which were currently under review or in the design process for correction.
- Group III Concerns - Recommendations for Improvements  
These concerns were areas considered by the team to be in compliance with regulations, but where improvements to the fire protection and safe shutdown programs were warranted.



Pending further review of the specific issues, corrective actions already taken, and evaluation under the criteria in NRC's Enforcement Policy (NUREG-1600), the potential for a number of these issues to be not in compliance with NRC regulatory requirements is unresolved (URI 50-318&318/97-080-08)

c. Conclusions

Based upon the results of the BGE self-assessment, and the project plan for addressing the issues raised, the inspector determined that the self-assessment was a good initiative, and valuable tool for BGE to identify areas for improvement in their fire protection and post-fire safe shutdown programs.

F8.2 (Closed) Violation 50-317&318/97-05-04, Emergency Lighting Units

a. Inspection Scope

The inspector reviewed NRC Integrated Inspection Report 50-317;318/97-05, and its associated Notice of Violation (NOV), BGE's response to the NOV dated November 17, 1997, discussed emergency lighting unit (ELU) history with the FPE and the system engineer, and observed the condition of ELUs during plant tours and a walkdown of Unit 2 technical procedure AOP-9J, Rev. 3, "Safe Shutdown Due to a Severe Fire in Room 311 Unit 2 Switchgear Room 27'."

b. Observations and Findings

ELU maintenance was not well tracked in the past at CCNPP. In 1995, the system engineer initiated tracking and trending of the ELU corrective maintenance, to identify high failure items. Recurring failures in batteries was found, especially in high temperature and high vibration environments. Several ELU battery boxes in the turbine buildings have been relocated to reduce vibration effects, and the main steam isolation valve room battery boxes have been relocated to a lower temperature area outside the room. BGE has begun replacing the lead-acid batteries with gel-cells, which should have a better life. All future battery replacements will use gel-cells.

In addition, BGE has conducted "black-out" tests in most areas of the plant to evaluate the positioning and effectiveness of the emergency lights. These tests confirmed the adequacy of the lights to provide sufficient illumination to perform required post-fire safe shutdown tasks.

During the field walkdown of AOP-9J, the inspector observed the condition of the emergency lights, and evaluated the aiming of the light heads. The inspector found that the paths to all the safe shutdown equipment requiring local manual operation were illuminated, and that the equipment was also illuminated. All the accessible lights on the routes were verified to be functioning by the FPE depressing the test switch, and the inspector observing the illuminated areas.

By letter dated October 6, 1997, BGE requested two specific exemptions to the requirements of Section III.J of Appendix R to 10 CFR 50. These exemptions relate to using the diesel generator backed security lights for exterior areas of the plant, and the use of portable lights in high radiation areas and switchgear cabinet interiors. At the time of the inspection, the request had not received final action by NRC.

To improve the reliability of the ELUs, BGE has entered them into the maintenance rule program. At the time of the inspection, the performance criteria and goals for ELUs were under development. BGE intends to run the ELUs to failure.

Additional actions taken by BGE to ensure the ability of plant operators to perform post-fire safe shutdown manual actions included the purchase of helmet-mounted lamps with eight-hour battery packs. These lamps will supplement the installed battery-backed ELUs and compensate for any failures which do occur. The battery packs for the helmet-mounted lamps will be tested for eight hour discharge capability each quarter.

c. Conclusions

Based on observations of the condition of the emergency lighting units in the plant, discussions with the FPE, discussions with the system engineer, review of maintenance trending data, and review of the response to the notice of violation 50-317, 50-318/97-05-04 regarding emergency lighting, the inspector determined that the emergency lights were in good condition, and that BGE was taking actions to improve the reliability of the ELUs and to compensate for any ELU failures which may occur. This violation is closed.

**P1 Conduct of EP Activities**

The inspectors reviewed the documentation for a Notification of Unusual Event (UE) that occurred on May 29, 1997 to verify whether the response was in accordance with NRC regulations and BGE's emergency response plan (ERP). The UE was declared for a small reactor coolant leak requiring the shutdown of the plant. The event was properly classified in accordance with BGE's procedures. BGE made all the required notifications, including that made to the NRC operations center, within the required time periods. The inspectors concluded that BGE's response to this event was made in accordance with NRC regulations and the ERP.

**P2 Status of EP Facilities, Equipment, and Resources**

a. Inspection Scope (82701)

The inspectors toured the emergency operations facility (EOF), the emergency news center (ENC) and the farm demonstration building to ensure that these facilities were being maintained in accordance with the approved ERP and procedures. The inspectors also inspected a survey team vehicle to ensure that it was adequately supplied. The inspectors discussed habitability issues for the



technical support center (TSC) with the EP Director and the licensing engineering staff; and, reviewed equipment inventory and communication circuit testing surveillances to verify compliance with the ERP and NRC regulations.

b. Observations and Findings

The EOF is a dedicated facility located just outside of the 10-mile emergency planning zone. The inspectors observed that the facility had all of the required equipment with only a few minor discrepancies. Two of the telephones used for notification of offsite authorities were not operating properly. BGE investigated, and corrected the problem.

The Emergency News Center (ENC) is not a dedicated facility. The equipment and supplies used for its operation are kept in carts in a locked closet. There were only minor discrepancies in the supplies listed on the checklists for the ENC. The equipment checklists were posted on the carts, but these posted checklists were not the current revision. BGE removed the outdated checklists. The inspectors did not identify any deficiencies at the farm demonstration building, where responders entering the site under adverse radiological conditions would be staged and outfitted in protective clothing and respiratory protection.

The TSC is located above the control room and is part of the control room ventilation envelope. Because of design inadequacies of the control room ventilation system, which have already been documented in an NRC Letter dated August 28, 1997, BGE provides for self-contained breathing apparatus (SCBA) usage by the control room staff in the event of a serious loss of coolant accident. BGE also credits the use of potassium iodide (KI) tablets for blocking the uptake of radioactive iodine in the event of an iodine release following an accident.

There are adequate SCBAs for use by all control room personnel and all are qualified and trained in the use of SCBAs. There are not adequate SCBAs for the TSC responders who would be recalled following an accident. Nor are all TSC responders qualified for SCBA use. BGE takes credit for KI blocking of radioactive iodine for the majority of TSC responders. BGE has not, however, determined if all TSC responders are able to either wear a SCBA or ingest KI tablets (i.e., they are not allergic to iodine). Based on the inspectors' concerns, BGE has initiated a survey to determine which TSC responders are unable to take either of the above protective actions. BGE also initiated an issue report to document this problem and initiate corrective action.

A survey team vehicle was inspected and had all of the supplies required. The vehicle was operationally ready except for a dead battery. The inspectors expressed concern over the ability of the teams to rapidly mobilize with a vehicle in such a condition. BGE replaced the battery and the inspectors verified that the vehicle was operational the next day. The inspectors reviewed the records for facility inventories. All facility inventories except one are completed by a technician in BGE's emergency planning unit (EPU). Inventories are completed



quarterly and following equipment use. The inspectors noted no significant discrepancies.

The EPU turned over responsibility for communication circuit testing to the Telecommunications Department (TCD) in September 1996. The TCD conducted tests of the circuits quarterly, despite the fact that NRC regulations require monthly testing of communication links to the NRC and to the contiguous State and local governments. The TCD had tested these circuits quarterly instead of monthly from September 1996 through September 1997. BGE's audit 97-10, of the emergency planning (EP) program, identified the failure to perform monthly tests of the communication circuits used to communicate with the NRC. This audit was performed in September 1997 and an issue report (IR) was written to document this fact. BGE responded to the IR, performed corrective action and closed it out.

The inspectors noted that the communication circuits used to communicate with State and local governments had not been tested monthly during the same interval (September 1996 through September 1997). Monthly tests were being conducted from September 1997 through December 1997. Discussions with TCD staff revealed that BGE was unaware that these circuits required the same monthly testing as the NRC communication links. These circuits were tested monthly during October to December 1997 due to workups and/or troubleshooting for the biennial exercise of November 1997. Further discussions with the EP Director revealed that BGE's self assessment of the problems noted in an issue report were ongoing, despite the closure of IR; i.e., the EPU was planning to investigate the regulatory compliance of all communication circuit testing.

In a February 2, 1998, meeting between BGE and NRC Region I management, the EP Director presented BGE's actions taken for correction of the communications circuit testing problems described above. These actions were: (1) the reinstatement of monthly testing requirements for the circuits in question, (2) the resumption of tracking the communication surveillances by the EPU, and (3) the addition of a step to the EPU task tracking schedule to evaluate changes to that schedule for potential decreases of effectiveness of the emergency plan. Additional details concerning this meeting are documented in report section X3.

c. Conclusions

Overall, the inspectors concluded that the EP facilities, equipment, supplies and instrumentation were being adequately maintained despite the deficiencies noted. These facilities, equipment, and supplies would be able to perform their intended functions in the event of a radiological accident.

The inspectors considered BGE's failure to screen TSC responders for KI sensitivity to be an oversight worthy of corrective action. They noted that BGE was aggressively pursuing this corrective action by the initiation of the IR and the responder questionnaire. The inspectors are tracking this item as an inspector follow-up item to assess BGE's corrective actions to ensure protection of TSC

responders while the control room ventilation system is still degraded. (IFI 50-317&318/97-08-04)

The inspectors considered the facility inventories to be adequately performed. The inspectors concluded that the failure to do monthly communication circuit testing with the NRC, and State and local governments, from September 1996 through September 1997, was a violation of NRC requirements (VIO 50-317&318/97-08-05). Despite the fact that BGE self-identified their failure to perform adequate testing of circuits for communication with the NRC, the corrective actions taken by BGE were not effective in identifying the failure to perform communication circuit testing with State and local governments for four months after the initial identification of the violation.

The inspectors reviewed BGE's corrective actions which were taken prior to the inspection exit interview and which were presented in the February 2, 1998 meeting, and considered them to be adequate in response to the violation.

### **P3 EP Procedures and Documentation**

#### **a. Inspection Scope (82701)**

The inspectors reviewed recent changes BGE made to its ERP and the Emergency Response Plan Implementing Procedures (ERPIPs). The inspectors performed this review in the NRC regional office to verify that BGE's changes to these documents were made in accordance with §50.54(q) of NRC regulations; i.e., that the changes did not reduce the effectiveness of the approved ERP and the ERP, as changed, continued to meet the requirements of §50.47(b) and Appendix E to Part 50 of NRC regulations. A list of the specific ERP and ERPIP changes reviewed is included as Attachment 3 to this report. The inspectors reviewed the 50.54(q) evaluations performed for selected changes during the onsite inspection.

#### **b. Observations and Findings**

Based upon BGE's determination that the changes did not decrease the overall effectiveness of the ERP and after limited review of the changes, the inspectors determined that no NRC approval was required, in accordance with 10 CFR 50.54(q).

BGE's 50.54(q) evaluations were adequately written to address the elements of emergency preparedness that would indicate potential decrease of effectiveness of the emergency plan.

#### **c. Conclusions**

The inspectors concluded that BGE's changes to the ERP and ERPIPs listed in Attachment 3 and reviewed onsite were made in accordance with §50.54(q) of NRC regulations.

**P4 Staff Knowledge and Performance in EP****a. Inspection Scope (82701)**

The inspectors conducted tabletop walkthroughs with two on-shift chemistry technicians who perform interim radiological assessment until the activation of the offsite dose assessment staff. Each technician was given two scenarios involving hypothetical gaseous releases of radioactive material offsite. These scenarios were conducted in the simulated control room under static conditions. The technicians were evaluated to determine if they were able to gather information for use in generation of accurate offsite dose consequence assessments.

**b. Findings and Observations**

Both technicians demonstrated familiarity with the location and reading of the radiation monitor displays in the simulated control room. They both knew where the computer for the automated dose assessment model was located and knew how to start up the automated dose assessment program. Both technicians assumed an incorrect isotopic concentration for their first scenario. They assumed an isotopic breakdown based on reactor coolant activity instead of gap activity, as would be required based on the radiation monitors' indications. This error yielded non-conservatively low dose projections compared to the intended values for the scenarios.

Step 1.E in the procedure the technicians were using, ERPIP 107 (Interim Radiological Assessment), requires the technician to obtain concurrence of the interim Site Emergency Coordinator (SEC) on the type of accident to select for the dose projection. Neither technician performed this step properly.

This error in choosing the wrong isotopic assumptions in calculating the offsite doses is similar to that noted during the last full participation emergency preparedness exercise, held on November 18, 1997, (NRC Inspection Report 50-317&318/97-09). In that exercise, the NRC assessed the EOF staff's failure to use the proper isotopic mix as a causal factor in their inability to effectively use the computer-based dose assessment model to give reliable offsite dose projections. The NRC classified this issue as an exercise weakness, requiring corrective action.

**c. Conclusions**

The inspectors concluded the technicians were adequately trained in most of their duties as interim radiological assessment personnel. They were not adequately trained to implement the procedure to obtain the concurrence of the SEC. Nor were they trained adequately to qualitatively interpret the significance of the radiation monitor readings as far as the level of core damage they were indicating. This training deficiency raised concern on the part of the inspectors as to the effectiveness of BGE's training of the on-shift dose assessment staffs to be able to provide consistently accurate dose projections. This deficiency is a violation of NRC requirements (ViO 50-317&318/97-08-06).



**P5 Staff Training and Qualification in EP**a. Inspection Scope (82701)

The inspectors interviewed EP and security training administrators to determine the level of oversight of the training program for emergency responders. The inspectors also reviewed the ERP, the ERPIP describing EP training administration (ERPIP 904), the Emergency Response Training Program Manual (ERTPM) and continuing training examinations for selected members of the emergency response organization (ERO).

b. Observations and Findings

The EP training program is administered in accordance with the ERP, ERPIP 904 and the ERTPM. The EP Director and the EP training coordinator, who works in the Technical Training Unit, coordinate closely to oversee the program of providing training and tracking the qualifications of ERO members.

The responsibilities for conduct of EP training rest with several groups, including emergency planning, technical training unit staff, general orientation training staff, operations training, the safety and fire protection unit, the security training and support unit, and the facilities management communications staff. The EP training coordinator is a central coordinating point for these groups and maintains many of the EP training records in a central location. A certain amount of records, most notably lesson plans and examinations for some continuing EP training are maintained by the individual organizations. Additionally, training for the responders at the ENC is not within the scope of the ERP, and the EP training coordinator does not review or comment on its quality or effectiveness.

Through their discussions with the EP and security training coordinators, the inspectors learned that certain groups evaluate their students' knowledge of EP within the context of the students' overall continuing training programs. For example, a small percentage of the questions on the annual requalification examinations for security guards cover EP concepts. These EP questions are not separately analyzed to evaluate a guard's knowledge of his or her EP duties. Therefore, it is possible for a guard to miss all the EP questions on an exam and still pass. That guard's lack of EP knowledge would go undetected. The inspectors learned that the same situation existed with the basic emergency response training that is given as part of general orientation refresher training. The inspectors discussed this issue with the training staff and the EP Director. BGE indicated plans to review, and modify if necessary, their method of examination to evaluate if conditions like the ones described above could occur.

The inspectors also learned that there is only one generic lesson plan for all EP training administered by the EP training coordinator. All students are trained to the ERPIP they follow in performing their emergency response duties, because the essential tasks the students perform are all described in the procedures. Under this arrangement, students are tested on their knowledge of procedures, but the

test questions are based on explicit procedural references and the procedures are provided when the tests are administered. In such a situation, the students are tested on their ability to look up answers to the questions in the procedures.

The inspectors interviewed the EPU clerk who is tasked with ERO roster maintenance to determine the level of oversight of ERO member qualifications. The inspectors learned that the ERO qualification records are maintained in an electronic data base that is sortable to identify impending or recent qualification lapses. The inspectors' review of the ERO roster did not reveal any serious shortages of responders.

c. Conclusions

The inspectors concluded that the EP training program meets the requirements of the ERP, the ERPIPs and the ERTPM. The inspectors further concluded that the qualifications of ERO members were being closely tracked. However, there was weak central oversight of EP training activities. The inspectors consider the fact that EP continuing training is "hidden" in overall requalification training for some groups to warrant increased attention by the EP Director to ensure that the EP training is being properly administered to, and evaluated for, these groups. The inspectors considered the method of training to the ERPIPs to be valid, assuming the ERPIPs contain all the tasks that responders will perform. However, the inspectors consider the method of testing this training, with ERPIPs provided to the examinees, not to be a good indicator of the trainees' knowledge of concepts

**P6 EP Organization and Administration**

a. Inspection Scope (82701)

The inspectors interviewed the Manager-Nuclear Site Support Services and the Vice President-Nuclear Energy to determine their involvement and knowledge of the administration of the EP organization at the site. The inspectors also interviewed the EP Director to discuss recent changes to the EPU staff and activities.

b. Observations and Findings

The Manager-Nuclear Site Support Services and the Vice President-Nuclear Energy were knowledgeable of the activities of the EPU. They were aware of recent changes at the site in the area of EP. They were conscious of the position of their organization relative to the industry in the area of staffing. They held regular meetings with the EP Director.

The EPU was decreased by one position as of the beginning of calendar year 1998. An EP technician left the unit. The technician was utilized in a less-than-full-time capacity while with the EPU, spending a significant amount of time on loan for outage management tasks. The EP Director does not plan to fill this vacancy, but rather intends to use his available staff, two of which spend

significant fractions of their time working for offsite state agencies. The EP Director plans to use these persons for a greater percentage of the time to handle the additional work, relying on the other nuclear utility with radiological emergency preparedness obligations to the State of Maryland to assume a greater share of the work for the State. The EP Director stated that this re-alignment of tasks has been agreed to by all parties concerned.

c. Conclusions

Senior site management was adequately involved in and informed about EPU activities. The EP Director had evaluated the reduction in his staff and compensated for it by realignment of resources. The inspectors concluded that no reduction of emergency response capability is likely to occur from the recent changes in the EPU organization.

**P7 Quality Assurance in EP Activities**

a. Inspection Scope (82701)

The inspectors reviewed reports of the last two annual EP audits - (Audits 96-17 and 97-10) conducted by the Nuclear Performance Assessment Department (NPAD) and interviewed the lead auditors for these reports. The inspectors also reviewed the EPU's self-assessment program and discussed the self-assessment effort with the EP Director.

b. Observations and Findings

The two audit reports that the inspectors reviewed, as well as the two audit plans used in their formulation, were very different in their level of detail. Audit report 97-10 was much more comprehensive than audit report 96-17, which was completed the previous year. The auditors explained the recent adoption of a Master Assessment Plan (MAP) by the Nuclear Performance Assessment Department (NPAD) as the reason for the change in methodology and level of detail. This program established a more uniform method of program audits, using standardized checklists to audit such attributes as organization and administration, and self-assessments. Both audit reports met all the requirements of §50.54(t) of NRC regulations, including the evaluation of licensee interface with offsite agencies. Audit report 97-10 generated seven issue reports. The audit also identified an example of licensee non-compliance with NRC regulations regarding testing of communication circuits for NRC notification. The inspectors' assessment of this finding was documented in report section P2.

The EPU was extensively involved in self-assessment during the past year. They performed 127 formal self-assessments that resulted in fourteen issue reports. One of these self-assessments was for the licensee-identified failure to test communication circuits used to notify the NRC within the required frequency. This self-assessment was still ongoing at the time of the NRC inspection, and had not



yet identified the fact that the circuit used to notify state and local agencies was similarly affected.

c. Conclusions

The inspectors concluded that the NPAD audits met all regulatory requirements. They considered the 97-10 audit report, written after the implementation of the Master Assessment Plan, to be a substantial improvement over the 96-17 audit report in both methodology and scope. The inspectors concluded that BGE's self-assessment program, with 127 self-assessments initiated in calendar year 1997, was a good initiative.

**P8 Miscellaneous EP Issues**

**P8.1 (Closed): Unresolved Item 50-317&318/96-06-04**

Inspectors conducting the last EP program inspection in 1996 opened this item because BGE had self-identified a deviation from its UFSAR and had not taken corrective action to resolve the deviation. The UFSAR described the emergency radios onsite as having digital voice protection, but BGE had removed this feature to improve reception quality. BGE revised its ERPIP for making changes to the EP program to include a review of proposed changes against the UFSAR, but failed to correct the identified deviation. This item was classified as an unresolved item.

The inspectors performing this inspection verified that BGE had removed the reference to the digital voice protection from the UFSAR. The inspectors reviewed BGE's evaluations of the change both to the EP program and the UFSAR as required in §50.54(q) and §50.59 of NRC regulations.

The inspectors also reviewed BGE's ERPIP 900, which governs BGE's preparation and control of the ERP and ERPIPs. The inspectors noted that the step for checking the change against the UFSAR had been removed from this procedure but that the requirement to review the UFSAR had been retained by reference to procedure EN-1-102, Safety Evaluation Screenings and Safety Evaluations, in Step 5.3.E.1 of ERPIP 900.

Based on their review of the above items, the inspectors concluded that BGE had failed to update the UFSAR in a timely fashion for a change affecting the UFSAR. BGE had also completed all corrective actions to remedy the problem and prevent recurrence of the problem. This failure constitutes a violation of minor significance and is being treated as a Non-Cited Violation, consistent with Section IV of the NRC Enforcement Policy (**NCV 50-317&318/97-08-07**).

**S1 Conduct of Security and Safeguards Activities****a. Inspection Scope (81700)**

Determine whether the conduct of security and safeguards activities met BGE's commitments in the NRC-approved physical security plan (Plan) and NRC regulatory requirements. Areas inspected included: access authorization program; alarm stations; communications; protected area access control of personnel and packages.

**b. Observations and Findings**

Access Authorization Program. The inspectors reviewed implementation of the Access Authorization (AA) program to verify implementation was in accordance with applicable regulatory requirements and Plan commitments. The review included an evaluation of the effectiveness of the AA procedures, as implemented, and an examination of AA records for 10 individuals. Records reviewed included both persons who had been granted and had been denied access. The AA program, as implemented, provided assurance that persons granted unescorted access did not constitute an unreasonable risk to the health and safety of the public. Additionally, the inspectors verified by reviewing access denial records and applicable procedures, that appropriate actions were taken when individuals were denied access or had their access terminated which included a formalized process that allowed the individuals the right to appeal BGE's decision.

Alarm Stations. The inspectors observed operations of the Central Alarm Station (CAS) and the Secondary Alarm Station (SAS) and verified that the alarm stations were equipped with appropriate alarms, surveillance and communications capabilities. Interviews with the alarm station operators found them knowledgeable of their duties and responsibilities. The inspectors also verified, through observations and interviews, that the alarm stations were continuously manned, independent and diverse so that no single act could remove the plants capability for detecting a threat and calling for assistance, and the alarm stations did not contain any operational activities that could interfere with the execution of the detection, assessment and response functions.

Communications. The inspectors verified, by document reviews and discussions with alarm station operators, that the alarm stations were capable of maintaining continuous intercommunications, and communications with each nuclear security officer (NSO) on duty, and were exercising communication methods with the local law enforcement agencies as committed to in the Plan.

Protected Area (PA) Access Control of Personnel and Hand-Carried Packages. On February 4 and 5, 1998, the inspectors observed personnel and package search activities at the personnel access portal. The inspectors determined, by observations, that positive controls were in place to ensure only authorized

individuals were granted access to the PA and that all personnel and carried items entering the PA were properly searched.

c. Conclusions

BGE was conducting its security and safeguards activities in a manner that protected public health and safety and that this portion of the program, as implemented, met BGE's commitments and NRC requirements.

**S2 Status of Security Facilities and Equipment**

a. Inspection Scope (81700)

Areas inspected were: Testing, maintenance and compensatory measures; PA assessment aids; PA detection aids and personnel search equipment.

b. Observations and Findings

Testing, Maintenance and Compensatory Measures. The inspectors reviewed testing and maintenance records for security-related equipment and found that documentation was on file to demonstrate that BGE was testing and maintaining systems and equipment as committed to in the Plan. A priority status was being assigned to each maintenance request and repairs were normally being completed within the same day a maintenance request necessitating compensatory measures was generated. The inspectors reviewed security event logs and maintenance work requests generated over the past six months. These records indicated that the need for establishing compensatory measures due to equipment failures was minimal and when implemented, the compensatory measures did not reduce the effectiveness of the security systems as they existed prior to the failure. Additionally, BGE is in the process of developing and implementing an automated tracking system for security equipment maintenance requests.

Assessment Aids. On February 3, 1998, the inspectors evaluated the effectiveness of the assessment aids, by observing on closed circuit television (CCTV), a NSO conducting a walkdown of the PA. The assessment aids had good picture quality and excellent zone overlap. Additionally, to ensure the Plan commitments are satisfied, BGE has procedures in place requiring the implementation of compensatory measures in the event the alarm station operator is unable to properly assess the cause of an alarm.

PA Detection Aids. On February 3, 1998, the inspectors observed testing of all the intrusion detection systems in the plant protected area and the independent spent fuel storage installation (ISFSI) and determined they were functional and effective, and met the requirements of the Plan.

Personnel and Package Search Equipment. The inspectors observed both the routine use and the daily performance testing of BGE's personnel and package search equipment. The inspectors determined, by observations and procedural



reviews, that the search equipment performed in accordance with licensee procedures and Plan commitments.

c. Conclusions

BGE's security facilities and equipment were determined to be well maintained and reliable and were able to meet BGE's commitments and NRC requirements.

**S3 Security and Safeguards Procedures and Documentation**

a. Inspection Scope (81700)

Areas inspected were implementing procedures and security event logs.

b. Observations and Findings

Security Program Procedures. The inspectors verified that the procedures were consistent with the Plan commitments, and were properly implemented. The verification was accomplished by reviewing selected implementing procedures associated with PA access control of personnel, testing and maintenance of personnel search equipment and visitor processing.

Security Event Logs. The inspectors reviewed the Security Event Log for the previous eight months. Based on this review, and discussion with security management, it was determined that BGE appropriately analyzed, tracked, resolved and documented safeguards events that BGE determined did not require a report to the NRC within 1 hour.

c. Conclusions

Security and safeguards procedures and documentation were being properly implemented. Event logs were being properly maintained and effectively used to analyze, track, and resolve safeguards events.

**S4 Security and Safeguards Staff Knowledge and Performance**

a. Inspection Scope (81700)

Area inspected was security staff requisite knowledge.

b. Observations and Findings

Security Force Requisite Knowledge. The inspectors observed a number of NSO's in the performance of their routine duties. These observations included alarm station operations, personnel and package searches, visitor processing and requalification range instruction. Additionally, the inspectors interviewed NSOs and based on the responses to the inspector's questioning, determined that the

NSOs were knowledgeable of their responsibilities and duties, and could effectively carry out their assignments.

c. Conclusions

The NSOs adequately demonstrated that they have the requisite knowledge necessary to effectively implement the duties and responsibilities associated with their position.

**S5 Security and Safeguards Staff Training and Qualification (T&Q)**

a. Inspection Scope (81700)

Areas inspected were security training and qualifications, and training records.

b. Observations and Findings

Security Training and Qualifications. On February 4, 1998, the inspectors randomly selected and reviewed T&Q records of 14 NSOs. Physical and requalification records were inspected for armed, unarmed, and supervisory personnel. The results of the review indicated that the security force was being trained in accordance with the approved T&Q plan. Additionally, the inspectors observed requalification range instruction, performed by the training staff. The training included a demonstration of the penetration capabilities of ammunition and the significance of selecting proper cover in the event of a weapons engagement. The instructors were knowledgeable of the course material and presented it in an effective manner.

Training Records. The inspectors was able to verify, by reviewing training records, that the records were properly maintained, accurate and reflected the current qualifications of the NSOs.

c. Conclusions

Security force personnel were being trained in accordance with the requirements of the Plan. Training documentation was properly maintained and accurate and the training provided by the training staff was effective.

**S6 Security Organization and Administration**

a. Inspection Scope (81700)

Areas inspected were management support, effectiveness and staffing levels.

b. Observations and Findings

Management Support. The inspectors reviewed various program enhancements made since the last program inspection, which was conducted in June 1997.

These enhancements included the procurement of cellular phone capability in the security vehicles for enhanced communication capability and the security screening database system was updated to improve efficiency and reduce the potential for human error.

Management Effectiveness. The inspectors reviewed the management organizational structure and reporting chain. The Director-Nuclear Security's position in the organizational structure provides a means for making senior management aware of programmatic needs. Senior management's positive response to requests for equipment, training and resources, in general, has contributed to the effective administration of the security program.

Staffing Levels. The inspectors verified that the total number of trained NSOs immediately available on shift meets the requirements specified in the Plan.

- c. Conclusions. The level of management support was adequate to ensure effective implementation of the security program, and was evidenced by adequate staffing levels and the allocations of resources to support programmatic needs.

#### **S7 Quality Assurance (QA) in Security and Safeguards Activities**

- a. Inspection Scope (81700)

Areas inspected were audits, problem analyses, corrective actions and effectiveness of management controls.

- b. Observations and Findings

Audits. The inspectors reviewed the 1997 QA audit of the security program, conducted August 18 through September 23, 1997, (Audit No. 97-13) and the 1997 QA audit of the fitness-for-duty (FFD) program, conducted April 16 through May 21, 1997, (Audit No. 97-06). The audits were found to have been conducted in accordance with the Plan and FFD rule. To enhance the effectiveness of the audits, both audit teams included an independent technical specialist.

The security audit report identified one finding and four recommendations. The finding was associated with security equipment not being listed on the current Controlled Materials List. The FFD audit identified one finding and three recommendations. The FFD finding was associated with employees exceeding overtime limits and the potential for fatigue to impact an individual's fitness-for-duty. The inspectors determined that the findings were not indicative of programmatic weaknesses, and the findings would enhance program effectiveness. Inspector discussions with security management and FFD staff revealed that the responses to the findings were completed, and the corrective actions were effective.



Problem Analyses. The inspectors reviewed data derived from the security department's self-assessment program. Potential weaknesses were being properly identified, tracked, and trended.

Corrective Actions. The inspectors reviewed corrective actions implemented by BGE in response to the QA audit and self-assessment programs. The corrective actions were effective, evidence by a reduction in personnel performance issues and loggable safeguards events.

Effectiveness of Management Controls. The inspectors observed that BGE has programs in place for identifying, analyzing and resolving problems. They include the performance of annual QA audits, a departmental self-assessment program and the use of industry data such as violations of regulatory requirements identified by the NRC at other facilities, as a trigger for performing a self-assessment.

c. Conclusions

The review of BGE's Audit program indicated that the audits were comprehensive in scope and depth, that the audit findings were reported to the appropriate level of management, and that the program was being properly administered. In addition, a review of the documentation applicable to the self-assessment program indicated that the program was effectively implemented to identify and resolve potential weaknesses.

## V. Management Meetings

### **X1 Review of UFSAR Commitments**

While performing the inspections discussed in this report, the inspectors reviewed the applicable portions of the UFSAR that related to the areas inspected. Since the UFSAR does not specifically include security program requirements, the inspectors compared licensee activities to the NRC-approved physical security plan, which is the applicable document. While performing the inspection discussed in this report, the inspectors reviewed Section 5.5(D) of the Plan, titled "Visitor Access". The inspectors determined, by interviews with Nuclear Security Officers (NSOs), observations, and procedural reviews, that visitor access was being controlled and maintained as required in the Plan.

The following inconsistency was noted between the UFSAR and the plant practices, procedures and/or parameters observed by the inspectors. As described in Report Section O1.2, UFSAR figure 7-12 also indicates that the setpoint for the upper electrical limit or the "full out" position was at 136 inches. Additionally, the Operating Instructions specify aligning the primary CEA position indicating system to 135 inches when the CEAs are at the "full out" position. This figure was discussed with BGE personnel who stated that the "full out" position was actually located at between 135 and 135.75 inches. BGE personnel initiated an issue report to investigate and resolve these apparent conflicts. BGE has an UFSAR

Review Project in progress. Enforcement action regarding design issues identified during the BGE review have been Unresolved (**URI 50-317&318/96-10-03**) pending completion of the BGE initiative and NRC inspection of the completed review.

**X2 Exit Meeting Summary**

During this inspection, periodic meetings were held with station management to discuss inspection observations and findings. On March 9, 1998, an exit meeting was held to summarize the conclusions of the inspection. BGE management in attendance acknowledged the findings presented.

**X3 Management Meeting Summary**

On February 2, 1998, BGE's Manager of Nuclear Site Support Services, the Site Security Manager and the EP Director met with inspectors and the Chief of the Emergency Preparedness and Safeguards Branch of the Division of Reactor Safety at the NRC Region I office. This meeting was scheduled to introduce licensee plant support area management to the Region I Branch Chief. At the end of the meeting, the EP Director presented additional corrective actions taken in response to NRC-identified violation 97-08-05 that deals with communication circuit testing.

## ATTACHMENT 1

### PARTIAL LIST OF PERSONS CONTACTED

#### BGE

C. Cruse, Vice President- Nuclear Energy Division  
P. Katz, Plant General Manager  
P. Spina, Acting Superintendent, Nuclear Maintenance  
K. Neitmann, Superintendent, Nuclear Operations  
T. Pritchett, Acting Manager, Nuclear Engineering  
S. Sanders, General Supervisor, Radiation Safety  
T. Sydnor, General Supervisor, Plant Engineering  
J. Lemons, Manager Nuclear Support Services Department  
A. Edwards, Director Nuclear Security  
J. Holleman, Fitness-for-Duty Administrator  
J. Alvey, Supervisor Security Training and Support  
M. Burrell, Supervisor Security Screening, Training and Support  
J. Frost, Nuclear Security Supervisor  
D. Dean, Security Program Specialist  
P. Hines, Security Training Specialist  
T. Roxey, Senior Engineer Nuclear Regulatory Matters  
C. Sly Senior Engineer  
T. Forgette, Director- Emergency Planning  
J. Hardison, Emergency Response Training Coordinator  
J. Osborne, Nuclear Regulatory Analyst  
J. Phifer, Senior Assessor- Nuclear Performance Assessment Department  
P. Pringle, Emergency Planning Analyst  
W. Ramstedt, Assessor- Nuclear Performance Assessment Department  
M. Tonacci, General Supervisor- Chemistry  
C. Sinopoli, Appendix R & Fire Protection Engineer  
J. Wood, Fire Protection Design Engineer  
L. Williams, Emergency Lighting System Engineer  
D. Buffington, Fire Protection System Engineer  
L. Nuse, Fire Protection Specialist  
W. Hale, Senior Technical Instructor  
G. Cooper, Sr. Electrical Engineer  
E. Mc Cann, Electrical Engineer

#### NRC

A. Dromerick, Project Manager, NRR  
T. Hoeg, Reactor Engineer  
F. Laughlin, Resident Inspector- Salem  
G. Meyer, Chief, Civil, Mechanical, and Materials Engineering Branch, DRS  
L. Nicholson, Deputy Director, Division of Reactor Safety  
J. Wiggins, Director, Division of Reactor Safety  
K. Kolaczyk, Operations Engineer



## INSPECTION PROCEDURES USED

IP 61726: Surveillance Observations  
 IP 62707: Maintenance Observation  
 IP 71707: Plant Operations  
 IP 82701: Operational Status of the Emergency Preparedness Program  
 IP 92904: Followup - Plant Support  
 IP 81700: Physical Security Program for Power Reactors  
 IP 64704: Fire Protection Program  
 IP 64150: Triennial Postfire Safe Shutdown Capability Reverification

## ITEMS OPENED, CLOSED AND DISCUSSED

Opened

50-317,318/97-08-01	VIO	Failure to establish adequate test procedures for the secondary CEA position indicating system
50-317/97-08-02	VIO	Failure to meet TS 3.1.3.3 when two CEA position indications systems were inoperable
50-317,318/97-08-03	NCV	Inadequate design control of variable power supply voltage settings
50-317,318/97-08-04	IFI	Follow up on licensee actions to identify and protect TSC responders from thyroid exposure during accidents
50-317,318/97-08-05	VIO	Failure to test communication circuits in accordance with Part 50, appendix E, par. IV.E.9
50-317,318/97-08-06	VIO	Training deficiencies in on-shift dose assessment staff use of automated dose assessment model
50-317,318/97-08-07	NCV	Survey team radios not compliant with UFSAR (URI)
50-317,318/97-08-08	URI	Potential for issues identified during Appendix R self assessment to be not in compliance with regulatory requirements.

Closed

50-317,318/96-06-04	URI	Survey team radios not compliant with UFSAR (NCV)
50-317,318/97-08-03	NCV	Inadequate design control of variable power supply voltage settings

50-317,318/97-08-07      NCV    Survey team radios not compliant with UFSAR

Discussed

50-317,318/96-10-03      URI    Old design issues identified during the BGE UFSAR review

LIST OF ACRONYMS USED

AA	Access Authority
ASCOA	Automatic Sprinkler Corporation of America
BGE	Baltimore Gas and Electric
CAS	Central Alarm System
CCNPP	Calvert Cliffs Nuclear Power Plant
CCTV	Closed Circuit Television
CDA	Containment Dose Assessment
CEA	Control Element Assembly
CFR	Code of Federal Regulations
CR/TSC	Control Room/Technical Support Center
ELU	Emergency Lighting Unit
EOF	Emergency Operations Facility
ENC	Emergency News Center
EPZ	Emergency Planning Zone
ERO	Emergency Response Organization
ERP	Emergency Response Plan
ERPIP	Emergency Response Plan Implementing Procedure
ERTPM	Emergency Response Training Program Manual
FAST	Fire and Safety Technician
FFD	Fitness For Duty
FPE	Fire Protection Engineer
HX	Heat Exchanger
IFI	Inspector Follow-Up Item
IR	Issue Report
ISFSI	Independent Spent Fuel Storage Installation
KI	Potassium Iodide
LCO	Limiting Condition for Operation
LPSI	Lower Pressure Safety Injection
MAP	Master Assessment Plan
MTC	Moderator Temperature Coefficient
NCV	Non-Cited Violation
NEF	Nuclear Energy Facility
NFPA	National Fire Protection Association
NOV	Notice of Violation
NPAD	Nuclear Performance Assessment Department
NPO	Nuclear Plant Operations
NRC	United States Nuclear Regulatory Commission
NSO	Nuclear Security Officer

OSC	Operations Support Center
PA	Protected Area
PDR	Public Document Room
P&ID	Piping and Instrumentation Drawing
QA	Quality Assessment
QS	Quality Services
RTV	Room Temperature Vulcanizing
SAS	Secondary Alarm System
SCBA	Self-Contained Breathing Apparatus
SEC	Site Emergency Coordinator
SG	Steam Generator
T&Q	Training and Qualification
TCD	Telecommunications Department
TSC	Technical Support Center
TS	Technical Specification
UE	Unusual Event
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved item
VIO	Violation



## ATTACHMENT 2

### Fire Barrier Penetration Seals Inspected and Drawings Referenced

Penetration Seal 2-BARR-2B/407-S0001  
Penetration Seal 2-BARR-2B/407-S0002  
Penetration Seal 2-BARR-2B/407-S0003  
Penetration Seal 2-BARR-2B/407-S0004  
Penetration Seal 2-BARR-2B/407-S0005  
Penetration Seal 2-BARR-2B/407-S0006  
Penetration Seal 2-BARR-2B/407-T001  
Penetration Seal 2-BARR-2B/407-T002  
Penetration Seal 2-BARR-2B/407-T003  
Penetration Seal 2-BARR-2B/407-T004  
Penetration Seal 2-BARR-2B/407-T005  
Penetration Seal 2-BARR-2B/407-C010  
Penetration Seal 2-BARR-2B/407-C011  
Penetration Seal 2-BARR-2B/407-C012  
Penetration Seal 2-BARR-2B/407-C013  
Penetration Seal 2-BARR-2B/407-C015  
Penetration Seal 2-BARR-2B/407-C016  
Penetration Seal 2-BARR-2B/407-C017  
Drawing No. 62152SH0024, Rev. 3, Barrier Segment Drawing for Plant Elevation 45'-0"  
Drawing No. 61-406-A, SEC. 108.0, Sheet 1, Rev. 2, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.0, Sheet 2, Rev. 0, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.1, Sheet 1, Rev. 3, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.1, Sheet 2, Rev. 3, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.1, Sheet 3, Rev. 4, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.1, Sheet 4, Rev. 2, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.1, Sheet 5, Rev. 3, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.1, Sheet 6, Rev. 3, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.1, Sheet 7, Rev. 3, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.1, Sheet 8, Rev. 2, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.1, Sheet 9, Rev. 2, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.1, Sheet 10, Rev. 2, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.3, Sheet 1, Rev. 4, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.3, Sheet 2, Rev. 2, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.3, Sheet 3, Rev. 1, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.3, Sheet 4, Rev. 1, Fire Barriers / Stops  
Drawing No. 61-406-A, SEC. 108.3, Sheet 5, Rev. 4, Fire Barriers / Stops

### Emergency Lighting Drawings Reviewed

Drawing No. 63401SH0028, Rev. 13, Emergency Lighting & Communication Elevation 45'-0" Unit 2 Auxiliary Building  
Drawing No. 63402SH0027, Rev. 9, Emergency Lighting & Communication Elevation 27'-0" Unit 2 Auxiliary Building  
Drawing No. 61402SH0036, Rev. 9, Emergency Lighting & Communication Elevation 45'-0" Turbine Bldg. & Service Building Unit 1 & 2

Drawing No. 61402SH0034, Rev. 13, Emergency Lighting & Communication Elevation  
12'-0" Turbine Bldg., Service Bldg. & Intake Structure Unit 1 & 2

Drawing No. 61402SH0030, Rev. 12, Emergency Lighting & Communication Elevation  
27'-0" Unit 1 Auxiliary Building

Drawing No. 61402SH0029, Rev. 12, Emergency Lighting & Communication Elevation  
45'-0" Unit 1 Auxiliary Building

**Fire Brigade Lesson Plans Reviewed**

Emergency Operations for the SCOTT 4.5 Pressure-Pak

Fire Fighting Foam and Equipment

NFPA 704 Haz-Mat Identification System

Incident Command System

Fire Fighting Strategies

Emergency Elevator Operations

### ATTACHMENT 3

#### Emergency Response Plan and Implementing Procedures Reviewed

DOCUMENT NO.	DOCUMENT TITLE	REVISION /CHANGE NO.
ERPIP-005	Recovery Organization Notification	2
ERPIP-201	Technical Support Center Director	2/5
ERPIP-202	Plant General Manager	2/1
ERPIP-208	Plant Parameters Communications	1/1
ERPIP-301	Operational Support Center	4
ERPIP-401	Nuclear Engineering Facility (NEF)	3
ERPIP-105	Control Room Communicator	3/2
ERPIP-108	Interim Radiation Protection	0/1
ERPIP-209	Technical Support Center Communicator	3/2
ERPIP-303	Radiation Protection Director	1/3
ERPIP-310	Maintenance Team Leaders	2
ERPIP-312	First Aid Team Leader	1/3
ERPIP-315	Plant Parameters Communications-OSC	0/5
ERPIP-322	First Aid Team Members	1/1
ERPIP-832	Emergency Work Permits	2/1
ERPIP-900	Preparation of Emergency Response Plan and Implementation Procedures	5
-----	Emergency Response Plan	23
ERPIP-005	Canceled	2
ERPIP-105	Control Room Communicator	3/3
ERPIP-209	TSC Communicator	3/3
ERPIP-509	EOF Communicator	3/3
ERPIP-750	Security	4/2
ERPIP-760	Plant Parameters Communications, Media Center	2/0
ERPIP-B.1	Equipment Checklist	19/3



DOCUMENT NO.	DOCUMENT TITLE	REVISION /CHANGE NO.
ERPIP-105	Control Room Communicator	3/4
ERPIP-3.0	Immediate Action	18/9
ERPIP-102	Superintendent-Nuclear Operations	2/1
ERPIP-107	Interim Radiological Assessment	2/1
ERPIP-201	Technical Support Center Director	2/6
ERPIP-203	Chemistry Director	2/0
ERPIP-301	Operational Support Center	4/1
ERPIP-311	Chemistry Team Leader	1/3
ERPIP-401	Nuclear Engineering Facility (NEF) Director	4/0
ERPIP-501	Site Emergency Coordinator	3/1
ERPIP-503	Emergency Operations Facility (EOF) Director	3/0
ERPIP-511	Radiological Assessment Director	½
ERPIP-840	Canceled	3/0
ERPIP-841	Canceled	2/0
ERPIP-842	Canceled	2/0
E-Plan	Attachment 1-2 (MAP)	24
E-Plan	Facilities and Equipment Section (#5)	24
ERPIP-3.0	Immediate Action	18/9
ERPIP 801	CDA Using Containment Rad. Dose Rates	½
ERPIP 803	CDA Using Hydrogen	½
ERPIP 810	Main Steam System Radioactivity Release Est.	2/0
ERPIP 308	Onsite Monitoring Team Leader	0/3
ERPIP 309	Dosimetry Team Leader	2/1
ERPIP 319	Dosimetry Team Members	½
ERPIP 506	Offsite Monitoring Team Leader	0/3
ERPIP 507	Offsite Monitoring Team	0/7

DOCUMENT NO.	DOCUMENT TITLE	REVISION /CHANGE NO.
ERPIP 720	Technical Representatives	2/2
ERPIP 750	Security	4/3
ERPIP B.1	Equipment Checklist	19/4
ERPIP 201	Technical Support Center Director	3/0
ERPIP 319	Dosimetry Team Members	½
ERPIP 105	Control Room Communicator	3/5
ERPIP 209	TSC Communicator	3/4
ERPIP 509	EOF Communicator	3/4
ERPIP 900	Preparation of Emergency Response Plan and Implementation Procedures	6/0
ERPIP 210	CR/TSC Monitor	3/0
ERPIP 308	Onsite Monitoring Team Leader	1/0
ERPIP 316	Operational Support Center Monitor	3/0
ERPIP 403	NEF Monitor	3/0
ERPIP 703	Nuclear Security Facility Monitor	1/0
ERPIP 750	Security	4/5