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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. 50-317/99-01 and 50-318/99-01

This integrated inspection report summarizes aspects of BGE operations, maintenance, engineering and plant support. The report covers a seven week period of resident inspection and includes the results of a specialist inspection of BGE's radiological environmental monitoring program.

Plant Operations

BGE prepared for and performed a reactor shutdown and cooldown in an effective manner. The reactor was then taken to a reduced inventory condition for nozzle dam installation, again in an error free manner. Time in reduced inventory was minimized and required safety systems remained available while the reactor plant water level was reduced.

BGE identified that plant operators had missed a technical specification surveillance on a low pressure protection channel. BGE entered the issue in their corrective action program, submitted a License Event Report, and took appropriate corrective actions.

Maintenance

During post-installation testing, BGE identified that an incorrect replacement fuel oil pump had been installed on the 1A emergency diesel generator. The installation of the wrong pump demonstrated a weakness in BGE design control for the diesel engine. The correct pump was subsequently installed and the diesel satisfactorily returned to service within the technical specification time limit.

BGE completed detailed briefings and mockup training for radiation workers prior to installing steam generator nozzle dams in a high radiation environment. The nozzle dams were installed without problems.

BGE performed an a(3) assessment of the maintenance rule program, and concluded that it was functioning effectively. The assessment stated that corrective actions for systems designated a(1) were promoting improved performance. A number of recommendations were made in the BGE assessment and entered into the corrective action system. One recommendation requested a detailed review of systems experiencing difficulty in meeting performance criteria, such as the emergency diesel systems in order to determine whether additional actions were necessary.

Engineering

BGE engineering directed the on-line testing of main steam safety valves. The engineers assessed the test results and found that all of the valves tested were within technical specification ranges for operability. The testing was completed without problems.

BGE identified in 1998 that eight of sixteen main steam safety valves (MSSVs) on Unit 1 lifted above the setpoint required by technical specifications. This condition was significant because the design pressure of the steam generators could be exceeded in some transients. The discovery was documented in an LER. BGE completed an extensive evaluation, including a destructive metallurgical examination of one of the safety valves and determined the cause to be galling. BGE tested safety valves during each availability and following thermal cycling to ensure

Executive Summary (cont'd)

that galling did not occur. The BGE evaluation and corrective actions were appropriate for the identified problem.

Plant Support

BGE effectively performed sample collection activities according to the procedures, conducted the land use census, and maintained and calibrated the automatic sampling equipment. BGE provided program oversight and met the reporting requirements in the Offsite Dose Calculation Manual (ODCM). The radiological environmental monitoring program was effectively implemented in accordance with regulatory requirements.

The meteorological monitoring program was effectively maintained and implemented in accordance with regulatory requirements. BGE's performance with regard to maintaining the meteorological monitoring instrumentation reliable was effective.

The environmental and quality assurance laboratories conducted the Quality Assurance/Quality Control (QA/QC) programs in accordance with the appropriate procedures. BGE provided effective program oversight by monitoring the progress and quality of both the environmental and the quality assurance laboratories. The quality assurance program was effectively maintained and implemented in accordance with regulatory requirements.

BGE security identified contraband material in the possession of an individual attempting to gain entry into the protected area. State police were summoned and the individual was arrested. The inspectors considered the episode to be an example of effective access control.

Report Details

Summary of Plant Status

Except for minor power reductions for valve testing and routine maintenance, Unit 1 operated at full power through the entire inspection period. Unit 2 operated at full power until March 12 when the reactor was shutdown for a scheduled refueling and maintenance outage.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

a. Inspection Scope

The inspectors conducted routine operations inspection and assessment.

b. Findings and Observations

Plant operations were conducted safely with a proper focus on nuclear safety. On March 12, Unit 2 was shutdown for a scheduled refueling and maintenance outage. The shutdown and cooldown were conducted without problems. Shutdown planning was coordinated with engineering to ensure precise reactivity control during the evolution. The operating crew had been briefed and trained on the simulator prior to performing the shutdown. On March 13, Unit 2 was placed in Mode 5, as planned.

On March 19, an inspector observed the Calvert Cliffs Nuclear Operations Superintendent conduct a preparatory brief for a reduced inventory condition. The briefing was formal and included contingency planning in accordance with BGE procedures for higher risk evolutions. The briefing included discussions on necessary instrumentation, expected plant conditions and response, safety precautions, and past experience. The briefing was performed in a professional manner and appropriately communicated the safety significance of the evolution to the operating crew. The inspector verified the following plant conditions were established in preparation for the reduced inventory condition:

- Two offsite power circuits and two emergency diesel generators available
- Two redundant makeup sources available for reactor coolant inventory
- The pressurizer manway cover was removed to provide a hot leg vent path
- Two independent decay heat removal trains were available
- "Safe Shutdown Equipment" warning signs placed at designated areas
- Continuous reactor coolant level indication available
- Containment closure was established and maintained

On March 20, the Unit 2 reactor coolant system (RCS) level was lowered to the reduced inventory condition and the steam generator nozzle dams were installed. Prior to the drain down, operations personnel completed an extensive checklist verification that safety systems were ready, if needed. The reduced inventory evolution and nozzle dam installation was performed as planned, without problems. Time spent in the reduced inventory condition was minimized. The Unit 2 RCS inventory was later successfully

returned to just below the reactor vessel flange in order to accommodate detensioning the reactor vessel flange bolts and entry of Unit 2 into Mode 6.

c. **Conclusions**

BGE prepared for and performed a reactor shutdown and cooldown in an effective manner. The reactor was then taken to a reduced inventory condition for nozzle dam installation, again in an error free manner. Time in reduced inventory was minimized and required safety systems remained available while the reactor plant water level was reduced.

BGE identified that plant operators had missed a technical specification surveillance on a low pressure protection channel. BGE entered the issue in their corrective action program, submitted a License Event Report, and took appropriate corrective actions.

O8 Miscellaneous Operations Issues

O8.1 (Closed) LER 50-317/98-006: Action Time Exceeded Due to Failed Diesel Generator Governor

The Licensee Event Report (LER) described an occurrence on March 25, 1998, when an emergency diesel failed to start during a surveillance test. The cause was later found to be a small amount of material fouling a seating surface in the engine governor. An evaluation of the governor by a vendor determined the material to be a small piece of nylon that had broken loose from an elastic stop nut in the governor internals. This engine failure was previously discussed in NRC Inspection Report 50-317&318/98-02, Section O1.3. During the onsite inspection of the LER, the inspectors discussed the vendor assessment with the BGE diesel system manager and reviewed the BGE corrective actions. BGE had developed and implemented an engineering evaluation of the other emergency diesel governors to provide assurance that a similar problem did not exist. Based on operating history, BGE concluded that the occurrence of nylon fiber breaking from the nut was an isolated event. BGE stated in the LER that the event had no significant safety consequence, in part, because the affected EDG was only out of service for approximately five days and the redundant train equipment was available during the time the problem existed. BGE also determined that other governor problems during the time period of this failure were independent of the March 25, 1998 failure. The inspector found the BGE assessment and corrective actions to be appropriate to the circumstances of the failure. The inspectors concurred with the BGE assessment in the LER that diesel engine problems of December 23, 1997, and March 25 and 27, 1998 were independent of each other and there was no common cause. The LER is closed.

O8.2 (Closed) LER 50-317&318/99-001: Containment Penetration Room Ventilation System Inadequate Isolation Boundaries

On January 18, 1999, maintenance was scheduled for the containment penetration ventilation system. Prior to starting the work, BGE identified that the isolation and filtering function of the ventilation system could be degraded if certain design basis events were to occur while the system was in the maintenance lineup. BGE determined that the problem

was due to an incomplete system isolation during certain portions of the maintenance. During these portions, should certain engineered safety actuations occur, some radioactive material could bypass the ventilation system filters and be released to the environment. This situation was postulated and did not occur. During the onsite review of the LER, the inspectors discussed the situation with plant operators, reviewed the BGE root cause assessment, and reviewed the design drawings for the system. BGE actions in identifying and responding to the issue were prompt and appropriate. The corrective actions specified in the LER were being implemented at the time of the inspection. The inspector concurred with the BGE assessment that the likelihood and potential consequence of the postulated event were minimal. The LER is closed.

08.3 (Closed) LER 50-317/98-010: Failure to Complete Technical Specification Surveillance

a. Inspection Scope

A licensee event report was closed in an onsite inspection.

b. Findings and Observations

The LER described an occurrence on December 13, 1998, where plant operators failed to recognize that a Unit 1 reactor protection setpoint was outside of the technical specification allowed tolerance. The channel A, thermal margin low pressure protection setpoint had drifted due to a problem in the low pressure setpoint calculator. When the problem was discovered by BGE, on December 14, the channel was declared inoperable, repaired, and returned to service. During the review of the December 14 problem, BGE found that plant operators on December 13, 1998, missed a similar out-of-specification reading and therefore did not complete Technical Specification Surveillance 3.3.1.1, when they did not verify that the low pressure setpoint on reactor protection system channel A was less than the value calculated using the Core Operating Limits Report for Unit 1, Cycle 14. Because the condition was not identified on December 13, the channel was not declared inoperable and placed in bypass or trip within one hour as required by Technical Specification 3.3.1. The failure to complete the surveillance within 12 hours and place the channel in either trip or bypass when an out-of-specification condition existed was a violation of technical specification requirements.

The failure to perform the surveillance correctly resulted from weakness in written procedures, use of a computerized log taking system that was not fully programmed for low pressure setpoint checks, and weakness in log reviews conducted by senior reactor operators.

The inspectors discussed the occurrence with plant operators and operations supervisors and verified corrective actions given in the LER. BGE documented the occurrence in an Issue Report (IR3-039-164) and completed a causal analysis report. The causal report described and assessed the occurrence and specified additional corrective actions, including a future corrective actions effectiveness review. BGE specified a review of the operator log bases to assure that other technical specification limits were maintained. An assessment of senior reactor operator log reviews and training of licensed personnel on the event were also completed. BGE also revised procedures to specify instructions for interpreting recorded low pressure protection setpoints and made improvements to the

automated log system. The inspectors independently reviewed Technical Specification Surveillance 3.3.1.1 and verified that other reactor protection channel checks were being properly implemented. Because this occurrence was identified by BGE, could not have been prevented by corrective actions for a prior violation, and was appropriately entered into the BGE corrective action system, the failure of the operators to properly implement Technical Specification 3.3.1.1 for Channel A thermal margin low pressure on December 13, 1998 was a non-cited violation in accordance with Appendix C of the NRC Enforcement Policy. (NCV 50-317&318/99-01-01).

This occurrence was previously discussed in NRC Inspection Report 50-317&318/98-12, Section O1.1. A tracking item (EEI 50-317&318/98-12-01), created in that report is **Closed**. The Licensee Event Report is also closed.

c. Conclusions

BGE identified that plant operators had missed a technical specification surveillance check on a low pressure protection channel. BGE entered the issue in their corrective action program and took appropriate corrective actions.

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:

MO1199804297	Sample Oil on 11 Containment Spray Pump
MO1199803336	#12 Component Cooling Heat Exchanger Cleaning
MO2199700967	Unit 2 Service Water Heat Exchanger Modifications
MO1199804189	12A Service Water Heat Exchanger Cleaning
MO1199804424	12A Service Water Heat Exchanger Sample Line Modification
MO2199802009	Replace Spool Pieces on 22 Salt Water Header
MO2199800381	22 Salt Water Header Mini-flow Temporary Alteration
MO2199803341	#22 Component Cooling Heat Exchanger Cleaning
MO2199803545	Oil Addition to 22A Reactor Coolant Pump
MO1199803647	#11 Component Cooling Heat Exchanger Cleaning
MO1199804305	Oil sample from 11 Low Pressure Injection pump
MO1199804280	Clean and Inspect 11 ECCS Room Cooler and Duplex Strainer
MO1199804284	Replace anodes in 11 ECCS Room Cooler
MO1199900199	Unit 1 Saltwater System Spool Code Repair
MO2199800978	21 Saltwater Header Mini-flow Temporary Alteration

MO1199803886 Replace 1A1 Emergency Diesel Generator Fuel Oil Pump

b. Observations and Findings

During the maintenance activities, the inspectors observed that technicians were experienced and knowledgeable of their assigned duties. Maintenance personnel practiced peer checking and self-verification while doing work. The pre-job briefings included the important aspects of each maintenance task and were effective in ensuring the work was conducted in accordance with BGE requirements. Supervisory oversight was appropriate. Specific comments are below:

On February 3, BGE removed the 1A emergency diesel generator from service for planned preventive and corrective maintenance. One task was to replace the 1A1 engine driven fuel oil pump, which had developed a seal leak of about one drop every four seconds when the engine was running. The pump was replaced with a new pump supplied by the vendor. During testing, the pump failed to develop sufficient head. The system engineer was informed and an investigation was started. It was quickly determined that the pump had been installed backwards. The maintenance crew noted that the pump fit like the removed pump and matched the installation expectations, but rotated counter to an arrow on the pump casing. A check of warehouse pumps by BGE found that all of the available replacement pumps were reverse that of the needed application. To finish the work, BGE revised the work package and repaired the seals on the pump that had been removed, reinstalled this pump, completed testing, and returned the diesel to service within the technical specification 72 hour action time. BGE documented the improper pump installation in an issue report (IR3-015-261). Plant risk was not affected because the problem occurred and was corrected within the allowed out-of-service time. The inspectors walked down the installation with the diesel system engineer, reviewed the work documents, and discussed the problem with mechanical maintenance and engineering personnel. The inspectors considered that although the problem was identified prior to returning the diesel to service, the improper pump installation could be a precursor to a more serious design control problem with the diesel generator. It was noted that the 1A diesel generator had been in service for two years, was a different design than the older diesels, and the vendor was in France, making communications with the vendor difficult. BGE trained their diesel mechanics on the problem and intended to take additional actions for closeout of the issue report. The inspectors noted that BGE engineering personnel were reviewing the problem and intended to take additional corrective actions. Also, BGE had initiated an collective significance review of problems with emergency diesel generators to determine what common causes were apparent and to specify corrective actions, if problems were identified.

On February 24, the inspector observed BGE personnel installing a temporary alteration providing a mini flow path for the salt water pumps in preparation of the Unit 2 service water heat exchanger replacements. The assigned craft personnel were knowledgeable of the assigned maintenance. Heavy rigging was required to remove and position various components in the course of the maintenance. The inspector observed an alert and safety conscious team led by a team leader and work group supervisor. The inspector verified the on-scene workers had attended the pre-job briefing as listed on the pre-job briefing

sheet included with the maintenance order. The inspector reviewed the tag out associated with the work and found the boundaries to be appropriate.

On March 2, the inspector observed BGE personnel entering the Unit 2 containment to add oil to the 22A reactor coolant pump motor. The job was considered radiologically high risk due to the high radiation levels in the vicinity of the reactor coolant pump during power operations. The inspector observed the reactor safety technician and maintenance personnel entering and exiting the personal airlock and practicing good self checking and peer checking. The observed communications were excellent with clear three way repeat back dialog. The job was completed with no problems or adverse conditions noted in the containment by BGE.

On March 18, the inspector observed BGE preparing for steam generator nozzle dam installation including mock up training. A briefing was performed as a prerequisite to performing the maintenance activity. The brief was well organized and conducted in a professional manner with radiation control's, operations, maintenance, engineering, and projects personnel in attendance. The briefing leader stated the objectives, plant conditions, individual responsibilities, past problems, expected communications, and associated radiation control requirements to those involved. Following the brief, the inspector observed nozzle dam training at a full scale steam generator bowl mock up. The participants were observed installing and removing nozzle dams from the mock up in a realistic time sensitive environment. The inspector observed that the individuals were experienced and knowledgeable of the evolution and performed the training with no difficulties noted. On March 20, the nozzle dams were installed without problems.

c. Conclusions

During post-installation testing, BGE identified that an incorrect replacement fuel oil pump had been installed on the 1A emergency diesel generator. The installation of the wrong pump demonstrated a weakness in BGE design control for the diesel engine. The correct pump was subsequently installed and the diesel satisfactorily returned to service within the technical specification time limit.

BGE completed detailed briefings and mockup training for radiation workers prior to installing steam generator nozzle dams in a high radiation environment. The nozzle dams were installed without problems.

M1.2 Routine Surveillance Observations

a. Inspection Scope (61726)

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

STP-O-73A-1	Salt Water Pump & Check Valve Operability Test
STP-O-73I-2	High Pressure Safety Injection Pump Operability Test
STP-O-47B-2	Main Steam Isolation Valve Partial Stroke Testing
STP-O-5A-1	12 Auxiliary Feedwater Pump Operability Test
STP-O-73K-1	Containment Spray Pump Operability Test
STP-O-8A-1	1A Emergency Diesel Generator Test

STP-O-73B-2	Service Water Pump Operability Test
STP-O-5A-2	22 Auxiliary Feedwater Pump Operability Test
STP-F-77-0	Diesel Driven Fire Pump Test

b. Observations and Findings

The inspectors found that the selected surveillance activities were performed safely and in accordance with approved procedures. Test details were discussed at pre-test briefings followed by a question and answer sessions attended by all test participants. The test participants appeared knowledgeable of their assigned responsibilities. Supervisory and engineering personnel participation was clearly observed in the conduct of the surveillance tests. Minor test discrepancies were appropriately documented in the BGE corrective action program and corrected.

c. Conclusions

Surveillance testing was thorough and consistent with industry standards. The inspectors observed that minor discrepancies noted during the tests were entered into the corrective action system.

M1.3 Maintenance Rule 10 CFR 50.65 a(3) Review

a. Inspection Scope

The inspectors reviewed the BGE 10 CFR 50.65 a(3) assessment report, discussed the report with appropriate BGE engineering staff, and attended a BGE expert panel review of the report.

b. Findings and Observations

During the inspection period, BGE completed a 10 CFR 50.65 a(3) assessment of their maintenance rule activities for the period October 1996 through October 1998. The assessment concluded that the BGE maintenance rule program was functioning effectively. Existing performance criteria were appropriate to ensure that a(2) structures, systems, and components were being effectively maintained by preventive maintenance and movement of systems and components between a(1) and a(2) reflected positively on the program health. The assessment stated that corrective actions for systems designated a(1) were promoting improved performance as demonstrated by a decreasing unavailability and failure rate as well as overall good unit performance.

The assessment included the nine recommendations and each of these issues was entered into the BGE corrective action program. One recommendation was to provide additional review for systems that were demonstrating difficulty in meeting performance criteria for reliability and unavailability, such as the emergency diesel generator systems. Specifically, the assessment recommended that performance criteria for these systems be evaluated against validated performance criteria to define additional actions to improve system performance. To improve performance, the assessment recommended a multi-disciplined review that included operations, maintenance, and engineering to consider appropriate additions to preventive maintenance, operational changes, possible

modifications, and improved use of industry information to improve operational performance. BGE started this review during this inspection report period.

The assessment found overall consideration of operating experience was good, but recommended additional emphasis on considering operating experience when setting a(1) goals. Further, the assessment stated that the BGE process for evaluating risk before removing systems from service was a program strength.

The inspector attended a maintenance rule expert panel meeting and observed extensive system manager and system engineer participation in discussions of system performance and performance monitoring. Discussions focused on setting corrective actions for systems entering a(1). The BGE assessment found that the inclusion of principal engineers and system managers in expert panel deliberations was a strength of the program. The expert panel reviewed the recommendations of the a(3) evaluation and stated an intent to review the disposition of each issue during future deliberations.

c. **Conclusions**

The BGE maintenance rule a(3) assessment found that maintenance rule program was functioning effectively. The assessment stated that corrective actions for systems designated a(1) were promoting improved performance. A number of recommendations were made in the assessment and entered into the BGE corrective action system. One recommendation requested a detailed review of systems experiencing difficulty in meeting performance criteria, such as the emergency diesel systems to determine whether additional action was necessary.

III. Engineering

E1 Conduct of Engineering

E1.1 General Comments

a. **Inspection Scope**

The inspectors observed steam generator safety valve testing and reviewed the testing with engineering personnel.

b. **Findings and Observations**

On March 10, the inspectors observed BGE engineering brief Unit 2 steam generator safety valve testing to be conducted with the unit at power. The BGE secondary systems principal engineer stated the required plant conditions, summarized special precautions, prerequisites, and contingency plans to those involved. The brief was attended by all involved organizations and included supervisory oversight. On March 12, the inspectors observed Unit 2 steam generator safety valve testing as performed. The test was controlled by BGE engineering with maintenance, operations, and contracted support. The inspector verified that the reactor power trip set points and power level were lowered as specified in the test. BGE engineering was observed directing the testing and

performing on-the-spot assessment of the test results. All of the valves tested were within technical specification ranges for operability. The testing was completed without problems.

c. Conclusions

BGE engineering directed the on-line testing of main steam safety valves. The engineers assessed the test results and found that all of the valves tested were within technical specification ranges for operability. The testing was completed without problems.

E8 Miscellaneous Engineering Issues

E8.1 (Closed) 50-317&318/98-01-01: Violation of 10 CFR 72.11 for the Independent Spent Fuel Storage Installation (ISFSI) License Application

This violation documented the failure of BGE to document in their original ISFSI license submittal an issue regarding the behavior of the Dry Shielded Canisters (DSC). Specifically, the vertical top end drop accident scenario for the Transfer Cask with the DSC inside was not complete when discussing clip angles and failures. The inspectors reviewed BGE's root cause analysis report and corrective actions provided in a response letter to the NRC, dated June 2, 1998. The corrective actions included: (1) TransNuclear West (TNW) reviewed its design process and performed tests as witnessed by BGE during a DSC guide sleeve clip design test. (2) BGE completed the owner acceptance review of all the ISFSI calculations. (3) BGE contracted an independent third-party technical review of BGE's commitment bases and ISFSI documents respectively. As a result of BGE's reviews, over 40 action items have been assigned to BGE engineering with a scheduled completion date of December 1999. Most of the new action items are administrative and none were identified as operability issues. The inspectors verified the documentation of the above actions and concluded that the corrective actions were adequate to resolve the violation. The violation is closed.

E8.2 (Closed) 50-317&318/98-01-02: Violation of 10 CFR 72.48 for making a change to a design evaluation for the DSC vertical drop accident, without prior NRC approval

This violation was the failure of BGE to identify as an unreviewed safety question, in safety evaluation, ES 199601368, supplement 2, revision 0, that a malfunction was created in that the DSC guide sleeve clip angles would fail by bending vice shearing and possibly impinge on the installed spent fuel assemblies. The inspectors reviewed BGE's follow up activities and corrective actions which resulted from this violation. The actions were documented in BGE's response to the violation, dated June 2, 1998. The corrective actions included: (1) training guidance incorporating the lessons learned from this issue added to the periodic and initial qualification programs, (2) BGE reviewed all other 72.48 safety evaluations and a 10 percent sampling of 50.59 safety evaluations conducted in 1998 to identify any similar cases; (No new unreviewed safety questions were identified.) (3) BGE intended to perform an effectiveness review after approximately one year (December 1999). The inspectors verified the documentation of the above actions and concluded that the corrective steps were adequate to resolve the violation. The issue had limited safety significance due to the low probability of a vertical top end drop accident. The violation is closed.

E8.3 (Closed) Licensee Event Report 50-317/98-007: Main Steam Code Safety Valves As-Found Setpoints Out-of-Specification

a. Inspection Scope

An LER was reviewed during an onsite inspection.

b. Findings and Observations

Licensee Event Report (LER) 50-317/98-007 described, that eight of sixteen main steam safety valves (MSSVs) on Unit 1 lifted above the setpoint required by technical specifications. Following the discovery during scheduled testing on April 4, 1998, BGE engineering determined that the peak steam generator pressure during a design basis transient could have exceeded the steam generator design pressure by approximately five pounds per square inch. Although the maximum postulated pressure would have exceeded the design by 5 psig this pressure would remain less than that used for the maximum allowable stress calculation for the steam generators.

The inspector reviewed the BGE evaluation of the event, root cause, and corrective actions. BGE completed an extensive evaluation, including a destructive metallurgical examination of one of the safety valves and found that the valve seat and disc had been galled during thermal cycling. BGE contracted an independent review which confirmed the root cause. Long term corrective actions to address the galling were under development at the time of the inspection. The Calvert Cliffs Plant Operational Safety Review Committee reviewed the event and root cause determination. As a corrective action, BGE tested the Unit 2 MSSVs during an August 1998 availability, and although some setpoints were greater than that allowed by technical specifications, the safety function had been maintained. BGE also intended to test both units MSSVs during each availability and following thermal cycling to ensure that galling did not occur.

The inspectors observed Unit 2 MSSV testing on March 12, 1999 and observed that the eight tested MSSVs were within the technical specification limits. BGE informed the inspector that since Unit 2 MSSVs would be thermally cycled during the plant heatup following the refueling outage, the valves would be lifted after normal temperature was reached to preclude galling. These actions and testing results demonstrated that interim BGE corrective actions were comprehensive and effective. The inspector found the BGE evaluation and corrective actions to be appropriate to the problem. The LER is closed.

c. Conclusions

BGE identified in 1998 that eight of sixteen main steam safety valves (MSSVs) on Unit 1 lifted above the setpoint required by technical specifications. This condition was significant because the design pressure of the steam generators could be exceeded in some transients. The discovery was documented in an LER. BGE completed an extensive evaluation, including a destructive metallurgical examination of one of the safety valves and determined the cause to be galling. BGE tested safety valves during each availability and following thermal cycling to ensure that galling did not occur. The BGE evaluation and corrective actions were appropriate for the identified problem.

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 Implementation of the Radiological Environmental Monitoring Program

c. Inspection Scope (84750-2)

The implementation of (REMP), relative to program oversight; sample collection methodology; material condition, operation, and calibration of automatic sampling equipment; Land Use Census; and reporting requirements, was evaluated for the period between January 1998 and January 1999.

d. Observations and Findings

The automatic air sampling equipment were operable and calibrated. The REMP samples were collected from the locations described in the Offsite Dose Calculation Manual (ODCM). Sampling was performed according to the procedures and the schedule. The land use census for 1998 was performed as required in the ODCM. The annual report for 1997 provided a comprehensive summary of the results of the REMP around the site and met the TS reporting requirements. BGE provided program oversight by performing periodic reviews of sampling technicians and contract personnel, and periodically reviewing the sample data to ensure the program is implemented effectively. Self assessments were performed periodically. Any significant issues were addressed through the corrective action process.

e. Conclusion

BGE effectively performed sample collection activities according to the procedures, conducted the land use census, and maintained and calibrated the automatic sampling equipment and analysis equipment. BGE provided program oversight and met the reporting requirements in the ODCM. The radiological environmental monitoring program was effectively implemented in accordance with regulatory requirements.

R1.2 Implementation of the Meteorological Monitoring Program

a. Inspection Scope (84750-2)

The implementation of the Meteorological Monitoring Program, relative to maintenance and calibration of the monitoring instrumentation, channel and functional checks, and the limiting condition for operation log, was reviewed for the period between January 1998 and January 1999.

b. Observations and Findings

Daily and biweekly surveillances were performed as required by procedures. Semiannual calibrations were also performed as required by the calibration procedure with the coordination of Instrument & Controls (I&C) and System Engineering. A self assessment

was conducted to identify and address improvement opportunities. From this assessment, the responsible system engineer improved the calibration methodology. The calibration methodology was appropriate and the calibration results were within the acceptance criteria.

c. Conclusion

The meteorological monitoring program was effectively maintained and implemented in accordance with regulatory requirements. Instrument and Controls, together with the support of System Engineering, calibrated and maintained the meteorological monitoring instrumentation in accordance with the appropriate procedures. BGE's performance with regard to maintaining the meteorological monitoring instrumentation reliable was effective.

R7 Quality Assurance in RP&C Activities

R7.1 Quality Assurance of Analytical Measurements

a. Inspection Scope (84750-2)

The implementation of the QA/QC program of the contract laboratories, including the Interlaboratory Comparison (cross-check) Program and BGE's oversight of the laboratories, was evaluated for the period between January 1998 and January 1999.

b. Observations and Findings

The quality assurance program consisted of measurements of blind duplicate, spike, and split samples. The program also included participation in the in the Environmental Protection Agency (EPA) Cross-Check Program and the Interlaboratory Comparison Program provided by a vendor laboratory (Analytics, Inc.). BGE monitored the progress and quality of both the environmental and the quality assurance laboratories. Each sample result was reviewed for accuracy and precision. The results of these programs were within the established acceptance criteria.

c. Conclusion

The environmental and quality assurance laboratories conducted the QA/QC programs in accordance with the appropriate procedures. Results were within acceptance criteria. BGE provided effective program oversight by monitoring the progress and quality of both the environmental and the quality assurance laboratories. The quality assurance program was effectively maintained and implemented in accordance with regulatory requirements.

S1 Conduct of Safeguards and Security Activities

S1.1 Conduct of Pre-entrance Search Identifies Controlled Substance

On March 11, 1999, during the entrance processing of a contracted individual, BGE security identified a package containing an unidentified substance on the person. The package was inside a sock, tucked inside the hat of the individual attempting to gain

access to the protected area. Upon questioning, the individual informed BGE security personnel that the substance was "contraband." The individual was not allowed to enter the protected area and Maryland State Police were summoned. The state police quickly responded and arrested the individual after finding additional contraband material on the individual. The inspectors considered the entrance processing of the individual to be an example of effective security access control.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results Mr. Katz and others of BGE management at the conclusion of the inspection on March 30, 1999. BGE acknowledged the findings presented. An interim exit meeting was held on February 26, 1999 to discuss the radiological environmental monitoring program inspection results. BGE acknowledged the findings presented.

ATTACHMENT 1

Partial List of Persons Contacted

BGE

C. Cruse, Vice President, Nuclear Energy Division
P. Katz, Plant General Manager
K. Cellars, Manager, Nuclear Engineering
L. Wechbaugh, Superintendent, Nuclear Maintenance
M. Navin, Superintendent, Nuclear Operations
B. Montgomery, Director, Nuclear Regulatory Matters
S. Sanders, General Supervisor, Plant Engineering
T. Sydnor, General Supervisor, Plant Engineering
D. Holm, General Supervisor, Plant Operations
T. Pritchett, Superintendent, Technical Support
L. Smialek, Radiation Protection Manager
C. Earls, General Supervisor, Radiological/Chemistry
A. Kaupa, Senior Chemist, Fossil Support Services, Chemistry Unit
R. Stattel, Meteorological System Engineer

INSPECTION PROCEDURES USED

IP 71707	Plant Operations
IP 62707	Maintenance Observation
IP 61726	Surveillance Observation
IP 37551	Onsite Engineering
IP 84750-02	Radioactive Waste Treatment and Environmental Monitoring
IP 71750	Plant Support Activities

LIST OF ACRONYMS USED

EPA	Environmental Protection Agency
DSC	Dry Shielded Canisters
I&C	Instrument and Controls
IR	Issue Report
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MMP	Meteorological Monitoring Program
MSSV	Main Steam Safety Valve
ODCM	Offsite Dose Calculation Manual
PDR	Public Document Room
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
REMP	Radiological Environmental Monitoring Program
RCS	Reactor Coolant System
RPC	Radiological Protection & Chemistry
ISFSI	Independent Spent Fuel Storage Installation
TNW	TransNuclear West

ITEMS OPENED, CLOSED, AND DISCUSSEDOpened / Closed

50-317&318/99-01-01NCV Failure of operators to complete technical specification surveillance for low pressure protection

Closed

50-317&318/98-12-01EEI Failure of operators to complete technical specification surveillance for TMLP

50-317&318/99-001 LER Containment Penetration Room Ventilation System Inadequate Isolation Boundaries

50-317/98-007 LER Main Steam Code Safety Valves As-Found Setpoints Out-of-Specification

50-317/98-006 LER Action Time Exceeded Due to Failed Diesel Generator Governor

50-317/98-010 LER Failure to Complete Technical Specification Surveillance

50-317&318/98-01-02 VIO Failure to identify unreviewed safety question for a change to a design DSC vertical drop accident

50-317&318/98-01-01 VIO Failure to provide accurate information for the Independent Spent Fuel Storage Installation