U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos.:	50-317/92-15; 50-318/92-15
License Nos.:	DPR-53/DPR-69
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
Inspection conducted:	April 26, 1992, through June 6, 1992
Inspectors:	Peter R. Wilson, Senior Resident Inspector Allen G. Howe, Resident Inspector Carl F. Lyon, Resident Inspector Alfred Lohmeier, Senior Reactor Engineer, DRS
Approved by:	Larry E. Nicholson 6-24-92 Larry E. Nicholson, Chief — Date Reactor Projects Section No. 1A Division of Reactor Projects

Inspection Summary:

This inspection report documents resident inspector core, regional initiative, and reactive inspections performed during day and backshift hours of station activities including: plant operations; radiological protection; surveillance and maintenance; emergency preparedness; security; engineering and technical support; and safety assessment/quality verification.

Results:

See Executive Summary.

EXECUTIVE SUMMARY

Calvert Cliffs Nuclear Power Plant, Units 1 and 2

Inspection Report Nos. 50-317/92-15 and 50-318/92-15

Plant Operations: (Operational Safety Inspection Module 71707 and Engineering Safety Features Walkdown Module 71710) Overall, the facility was operated in a safe manner. There were no noteworthy operational events during the period. A detailed walkdown of the available emergency diesel generators and the fuel oil storage system found the systems properly aligned and operable. General plant housekeeping was satisfactory with notable improvement in the emergency diesel generator rooms.

Maintenance and Surveillance: (Maintenance Observations Module 62703, Surveillance Observations Module 61726) The inspectors identified three instances where foreign materials exclusion controls were not rigorously implemented. BG&E's response to these issues was appropriate. Previously identified concerns with welding implementation and the surveillance test procedure review process were resolved.

Emergency Preparedness: (Module 71707) The inspectors' review of facilities and personnel found an acceptable level of emergency preparedness. The inspectors toured the Emergency Operations Facility and found it in a suitable state of readiness. BG&E discussed their schedule and plans for upgrading the Emergency Action Levels with the inspectors.

Engineering and Technical Support: (Module 71707) Previously identified concerns with saltwater system biofouling were resolved.

Safety Assessment/Quality Verification: (Modules 71707, 30703) An information gathering review of BG&E's programs to ensure reliable decay heat removal was conducted in accordance with NRC Temporary Instruction (TI) 2515/113, "Reliable Decay Heat Removal During Outages." No safety concerns were noted. A review was performed in accordance with TI 2515/112, "Licensee Evaluations of Changes to the Environs Around Licensed Reactor Facilities." This review found that BG&E did not have a formal program to specifically review changes around the site to determine their effects on the safety of the plant. However, information derived from routine community awareness and other established review programs has been used to adequately reflect changes to the site environs in the UFSAR.

DETAILS

1.0 SUMMARY OF FACILITY ACTIVITIES

Unit 1 remained defueled and in a refueling outage during the period.

Unit 2 operated at power for the entire period.

2.0 PLANT OPERATIONS

2.1 Operational Safety Verification

The inspectors observed plant operation and verified that the facility was operated safely and in accordance with licensee procedures and regulatory requirements. Regular tours were conducted of the following plant areas:

- -- control room
- -- primary auxiliary building
- -- radiological control point
- -- electrical switchgear rooms
- -- auxiliary feedwater pump rooms
- -- security access point
- -- protected area fence
- -- intake structure
- -- diesel generator rooms
- -- turbine building

Control room instruments and plant computer indications were observed for correlation between channels and for conformance with technical specification (TS) requirements. Operability of engineered safety features, other safety related systems and onsite and offsite power sources was verified. The inspectors observed various alarm conditions and confirmed that operator response was in accordance with plant operating procedures. Routine operations surveillance testing was also observed. Compliance with TS and implementation of appropriate action statements for equipment out of service was inspected. Plant radiation monitoring system indications and plant stack traces were reviewed for unexpected changes. Logs and records were reviewed to determine if entries were accurate and identified equipment status or deficiencies. These records included operating logs, turnover sheets, system safety tags, and temporary modifications log. Plant housekeeping controls were monitored, including control and storage of flammable material and other potential safety hazards. The inspector also examined the condition of various fire protection, meteorological, and seismic monitoring systems. Control room and shift manning were compared to regulatory requirements and portions of shift turnovers were observed. The inspectors found that control room access was properly controlled and that a professional atmosphere was maintained.

In addition to normal utility working hours, the review of plant operations was routinely conducted during portions backshifts (evening shifts) and deep backshifts (weekend and midnight shifts). Extended coverage was provided for 49 hours during backshifts and 13 hours during deep backshifts. Operators were alert and displayed no signs of inattention to duty or fatigue.

The inspectors observed an acceptable level of performance during the inspection tours detailed above. General plant housekeeping was satisfactory with notable improvement in the emergency diesel generator rooms.

2.2 Followup of Events Occurring During Inspection Period

There were no operational events during the period.

2.3 Engineered Safety Features System Walkdown

In addition to routine observations made during regular plant tours, the inspectors conducted walkdowns of the accessible portions of selected safety related systems. The inspectors verified system operability through reviews of valve lineups, control room system prints, equipment conditions, instrument calibrations, surveillance test frequencies and results, and control room indications.

The inspectors conducted detailed, independent valve and breaker alignment checks of the Nos. 12 and 21 emergency diesel generators (EDGs) including the jacket water cooling subsystems, the air start subsystems, lubricating oil subsystems, and fuel oil subsystems. The fuel oil storage system was similarly inspected. The inspectors reviewed component performance data recorded by BG&E during EDG surveillance testing to determine if any degradation in system operation was evident. EDG jacket cooling water and fuel oil chemical analyses were also reviewed.

When inspected the above systems were found to be properly aligned and fully operable. The inspectors did not identify any unacceptable or degrading performance of system components. Jacket cooling water and fuel oil chemistry were found to be within specification with no abnormal trends identified. The material condition was found to be satisfactory.

2.4 Improper Restoration of Reactor Protective System Channel

Previously, the inspectors identified an improper restoration of Unit 1 reactor protective system channel "B" and documented the concern as a violation (50-317 and 50-318/91-16-02). BG&E identified the root cause as personnel error. Corrective actions were taken to communicate management expectations and to provide training on the event to licensed operations personnel.

The inspectors discussed the event with the General Supervisor - Nuclear Plant Operations and selected senior reactor operators (SROs) and reviewed associated documentation. The circumstances of the event involved delays in processing engineering approvals for a part replacement. The SROs were aware that engineering requirements, as well as maintenance activities such as post maintenance testing must be verified complete before restoring a component to operation. The inspectors concluded that effective corrective actions had been taken. This issue is closed.

3.0 RADIOLOGICAL CONTROLS

During tours of the accessible plant areas, the inspectors observed the implementation of selected portions of the licensee's Radiological Controls Program. The utilization and compliance with special work permits (SWPs) were reviewed to ensure detailed descriptions of radiological conditions were provided and that personnel adhered to SWP requirements. The inspectors observed that controls of access to various radiologically controlled areas and use of personnel monitors and frisking methods upon exit from these areas were adequate. Posting and control of radiation areas, contaminated areas and hot spots, and labelling and control of containers holding radioactive materials were verified to be in accordance with licensee procedures.

Health Physics technician control and monitoring of these activities were determined to be adequate. Overall, an acceptable level of performance was observed.

4.0 MAINTENANCE AND SURVEILLANCE

4.1 Maintenance Observation

The inspector reviewed selected maintenance activities to assure that:

-- the activity did not violate Technical Specification Limiting Conditions for Operation and that redundant components were operable;

-- required approvals and releases had been obtained prior to commencing work;

-- procedures used for the task were adequate and work was within the skills of the trade;

-- activities were accomplished by qualified personnel;

-- where necessary, radiological and fire preventive controls were adequate and implemented;

-- QC hold points were established where required and observed; and

-- equipment was properly tested and returned to service.

Maintenance activities reviewed during the period are listed below. There were no notable observations.

MO 19200598 Replace HPSI flow indicators and add a total HPSI flow indicator

MO 19200419	Install new instrument tubing, supports, solenoids, and air regulators to support FCR 89-26 (install 2" bypass CV-4070A and CV-4071A for AFW steam supply)
MO 19105503 & MO 19105502	Inspect and re-coat, as required, flanges DP 373 and 374 in the SW piping at the discharge of the CCHXs
MO 19105498	Inspect and repair SW inlet nozzle flange for 11 CCHX
MO 19201086	Remove flow element 1-FE-1121 and replace with new spool piece
MO 19104165	Install helical spacers in 12 SDCHX per FCR 91-271
MO 19106209	Overhaul actuator on 1-SW-5165-CV, the 12 CCHX SW auxiliary outlet valve
MO 19106015	Overhaul actuator on 1-SW-5163-CV, the 12 CCHX SW normal outlet valve
MO 19107026	Replace 1-PS-302X and 1-PS-302Y with pressure transmitters 1-PT-304 and 1-PT-305 (LPSI pump)
MO 19103533	Replace 1-CV-5160, the 11 CCHX SW normal inlet valve
MO 29200948	Sample and change oil in 23 AFW pump
MO 19200255	Replace 1-SI-245 with new Atwood and Morrill swing check valve per FCR 89-14
MO 19107137	Replace 11 steam generator blowdown piping
MO 29200735	Calibration of 21, 22, and 23 AFW pump suction and discharge PIs
MO 19107244	SW piping modifications to Unit 1 SRWHX room
MO 29201913	Swap TCB 9 from Unit 1 to Unit 2
MO 19104165	Install tube stiffeners in 11 SDCHX
MO 19105870	Repair slip on flange at IP445 upstream of 1-CV-5206
MO 29200545	Measure voltages for 125VDC buses 21 and 22

MO 19107030	Replace 13 CAC internal expansion joint between fan cowl and cooler enclosure
MO 19203671	Repair ends of 11 ECCS pump room air cooler
MO 19106712	Inspect and perform routine preventive maintenance on 1-MOV-655
MO 29201231	Replace 2-FT-212
MO 19106360	Disassemble and overhaul 11 AFW pump
MO 19202733	Install new 1-SRW-1640-CV

4.2 Surveillance Observation

The inspectors witnessed/reviewed selected surveillance tests to determine whether properly approved procedures were in use, details were adequate, test instrumentation was properly calibrated and used, Technical Specifications were satisfied, testing was performed by qualified personnel, and test results satisfied acceptance criteria or were properly dispositioned. The following surveillance testing activities were reviewed:

STP O-73I-2	HPSI pump performance test
STP O-8C-2	Semi-annual test of 21 diesel generator and 24 4Kv bus LOCI sequencer
STP M-152-2	21 battery pilot cell check
STP M-150-2	22 battery pilot cell check
STP M-212A-2	RPS channel A functional test

There were no notable observations, except as documented below.

STP O-8C-2 was performed on May 15. Revision 6 of the procedure was used for the first time. Operators were unable to complete the Surveillance Test Procedure (STP) as written when they realized during its performance that the steps for operating the Engineered Safety Features Actuation System (ESFAS) logic and sensor modules were out of order. The steps as written would not allow test lights to actuate as required by the STP. The operators immediately informed the control room and backed out of the procedure in a controlled manner. Issue report 010-229 was written to document the problem and track it to resolution. The surveillance requirement was subsequently performed satisfactorily using a different STP.

4.3 Weaknesses in STP Post Performance Review

Inspectors reviewed the corrective actions taken by BG&E in response to concerns over weaknesses in STP review which allowed an STP on the reactor protection system to complete the post performance review process with out-of-tolerance readings that were not noted by the reviewers. These concerns were documented as an unresolved item (50-317 and 50-318/91-21-02) pending the results of a plant operating experience review (POER) unit root cause analysis, implementation of corrective action, and subsequent NRC review.

The root cause analysis done by POER was thorough and addressed all of the inspectors' concerns. Inspectors reviewed completed corrective actions, including a revision to Calvert Cliffs Instruction 104, "Surveillance Test Program," which prohibits re-performance of isolated, previously completed steps within an STP without a technical procedure change. The revision also provides that the reviewing supervisor shall be independent of the test performer. Additional corrective actions are being tracked by the site action item tracking system. Inspectors also reviewed issue reports and the independent safety evaluation unit trend reports for the last three quarters and found no evidence of subsequent weaknesses in STP post-performance review. The inspectors concluded that BG&E's response to this issue was appropriate and further NRC review is not warranted.

4.4 Followup of Welding Concerns

During the previous inspection period, the inspectors identified concerns regarding several issue reports (IRs) related to problems with welding and welding processes. The concerns were characterized as an unresolved item (50-317 and 50-318/92-12-01). During this inspection, the inspectors reviewed the welding concerns, BG&E's evaluation, and the corrective actions. Additionally, the welding program and program training was reviewed.

The Independent Safety Evaluation Unit (ISEU) had recognized the growing trend of welding problems as the previous period ended. In coordination with the maintenance department, the ISEU performed a formal evaluation of the issues for root causes, corrective actions, and potential generic implications. No welding program weaknesses were identified. No actual safety significant conditions were identified (i.e. rejectable welds placed into service). The predominant cause of the errors was work practice.

BG&E identified some potential generic issues regarding inspection processes. The evaluations were not complete as the period ended but they were appropriately prioritized and tracked for resolution.

The inspectors independently reviewed seven IRs to assess the deficiencies and the corrective actions. The deficiency causes included inattention to detail, worker errors such as missing hold points, and incorrect or incomplete Weld Authorization Travellers (WATs). Corrective actions for the individual IRs included additional training and counseling of workers. The inspectors determined that an underlying contributor to the worker errors was that supervision was not fully effective in ensuring that WATs were followed and that they were correctly written.

The inspectors additionally reviewed three welding packages and four WATs. The quality of these documents was high. The requirements of the WATs were completed.

To address current trend of welding concerns, the mechanical maintenance department implemented augmented training regarding welding program issues to WAT coordinators, welding supervisors, welders, and inspection personnel. The training included a program overview, WAT issues, and management expectations for attention to detail and supervisory responsibilities. The inspectors observed one training session and concluded that the training effectively presented the issues and management expectations. Additionally, annual refresher training to discuss welding program changes and issues and changes to initial training was planned.

The inspectors reviewed BG&E Program 6 "Welding Program." The program manual contained documents, procedures, and instructions which controlled and provided direction for welding and brazing activities. The inspectors found that the program was comprehensive and that it satisfied regulatory requirements.

The inspectors reviewed the initial basic training program given the welding coordinators and supervisors. The training program comprehensively reviewed welding and brazing theory, technology, non-destructive examination, codes and standards, quality assurance, and program and administrative requirements. This training program was given by experts in welding technology. The scope and quality of this training course was excellent for the training of nuclear welding supervisory personnel.

In summary, the inspectors concluded that the welding deficiencies were self identified and individual corrective actions taken. The overall review of the trend of welding issues resulted in the assignment of suitable corrective actions. Further surveillance and trending of the welding issues to ascertain that the corrective action has been effective may be appropriate. This issue is closed.

4.5 Foreign Material Exclusion

During tours of maintenance areas, the inspectors identified three instances where foreign material exclusion controls were not rigorously implemented. BG&E also found similar occurrences. The inspectors were concerned that the introduction of foreign material could adversely affect safety related components if left undetected following maintenance. These concerns were discussed with BG&E's Superintendent-Nuclear Maintenance and members of his staff.

On a tour of the Unit 1 containment, the inspectors found that the barrier to prevent foreign material from falling into the No. 13 containment air cooler (CAC) fan was inadequate. The foreign materials controls checklist (FMCC) associated with the maintenance activity (MO 19107030) required the CAC fan to be covered. The maintenance supervisor responsible for the activity had determined that the permanently installed mesh screen above the fan provided an adequate barrier. The inspectors found some items near the fan that were small enough to fall through the screen. A subsequent BG&E inspection found no foreign material had entered the fan.

The inspectors also identified two instances where foreign material barriers were not installed as required by the associated FMCC when the job site was unattended. This included an open feedwater pipe in the Unit 1 containment (MO 19201086) and an open service water pipe in the Unit 1 service water pump room (MO 19202733). BG&E took prompt corrective action in both instances.

The inspectors reviewed several Issue Reports documenting similar BG&E identified occurrences. This included the discovery of a piece of tape and paper floating in the refueling pool, a foreign materials control zone. In addition, safety related heat exchangers were found open without barriers installed. The inspectors found that appropriate corrective actions were taken in each instance.

In response to the above concerns, the Superintendent-Nuclear Maintenance informed the inspectors of additional measures implemented to ensure foreign material controls were properly followed. These included an additional required walkdown of all contractor job sites by the assigned foreman and the addition of a requirement to assess cleanliness controls during the BG&E maintenance manager walkdown inspections.

The inspectors questioned whether training was conducted concerning BG&E's foreign material controls program. The inspectors were informed that all site personnel including contractors received cleanliness control training as part general employee training. Additionally, demonstrated familiarity with the foreign material control program was required for a maintenance worker's qualification.

The inspectors concluded that the above occurrences were of minimal safety significance. The inspectors found that BG&E's foreign material controls program was being properly implemented at most job sites. With the exception of the material found in the refueling pool, no foreign material was subsequently discovered as a result of the above lapses in the control program. BG&E's response to these concerns was appropriate.

5.0 EMERGENCY PREPAREDNESS

The inspectors toured the onsite emergency response facilities to verify that these facilities were in an adequate state of readiness for event response. The inspectors discussed program implementation with the applicable personnel. The resident inspectors had no noteworthy findings in this area.

On May 19, the inspectors toured the Emergency Operations Facility with the Supervisor of the Emergency Planning Unit. The inspectors noted that the facility was maintained in a state of readiness. No discrepancies were observed during this tour.

On May 20, the Supervisor of the Emergency Planning Unit briefed the inspectors on the tentative schedule for upgrading the Emergency Action Levels (EALs). Revisions are planned in response to concerns documented in NRC Inspection Report 50-317 and 50-318/92-06 and discussed by BG&E and the NRC in a management meeting at the Region I office on April 17. State and local officials were briefed on May 14 by BG&E on the available options and tentative schedule for revising the EALs. The decision was then made to develop a new EAL scheme using proposed Revision 3 to Regulatory Guide 1.101 rather than revising the existing EAL scheme using NUREG 0654. The licensee will begin development of the new EALs in the near future.

6.0 SECURITY

During routine inspection tours, the inspectors observed implementation of portions of the security plan. Areas observed included access point search equipment operation, condition of physical barriers, site access control, security force staffing, and response to system alarms and degraded conditions. These areas of program implementation were determined to be adequate. No unacceptable conditions were identified.

7.0 ENGINEERING AND TECHNICAL SUPPORT

-- Resolution of Salt Water System Biofouling Concerns

The NRC had previously identified concerns with salt water system biofouling as unresolved item (50-317/90-17-01 and 50-318/90-15-01). The specific issues regarded the potential clogging of heat exchangers such as the service water heat exchanger and the emergency core cooling pump room cooler strainers. BG&E actions to resolve short term issues and plans to implement further corrective actions were reviewed and found acceptable. The NRC review of this issue was documented in NRC Inspection Report 50-317 and 50-318/91-25. This issue is closed.

8.0 SAFETY ASSESSMENT AND QUALITY VERIFICATION

8.1 Plant Operations and Safety Review Committee

The inspector attended several Plant Operations and Safety Review Committee (POSRC) meetings. TS 6.5 requirements for required member attendance were verified. The meeting agendas included procedural changes, proposed changes to the TS, Facility Change Requests, and minutes from previous meetings. Items for which adequate review time was not available were postponed to allow committee members time for further review and comment. Overall, the level of review and member participation was adequate in fulfilling the POSRC responsibilities. No unacceptable conditions were identified.

8.2 Reliable Decay Heat Removal During Outages

The inspectors performed an information gathering review of BG&E's programs and activities to ensure reliable decay heat removal during outages. The review was performed in accordance with NRC Temporary Instruction (TI) 2515/113 "Reliable Decay Heat Removal During Outages." During the review, Unit 1 was shutdown in a refueling outage and Unit 2 was operating at power.

The inspectors reviewed technical specifications, administrative procedures, operating procedures, abnormal operating procedures, outage schedules, outage status reports, pre-evolution briefing packages, 10 CFR 50.59 evaluations, and assorted other documents. Outage safety issues were also discussed with outage and operations personnel.

The inspection encompassed a review of BG&E's controls for shutdown operations. Specifically, the procedures and practices to ensure the continued removal of decay heat from the reactor and the supply and distribution of electric power to the decay heat removal system and supporting systems were reviewed. The inspection also encompassed the process for review and approval of any special test procedures and operations that had the potential to contribute to a loss of decay heat removal capability. The following paragraphs describe the specific programs and activities that were reviewed.

The overall controls for safe shutdown activities were described in Calvert Cliffs Instruction (CCI) 314 "Conduct of Lower Mode Operations," Revision 0. CCI-142 " Outage Management," Revision E, contained requirements that supported the controls described in CCI-314. Key management philosophies were established for shutdown safety and described in CCI-314. These philosophies maximized the availability of systems and components including electrical power supplies for decay heat removal and fission product barriers. They also included the reduction of vulnerable periods such as reduced inventory conditions.

The following program requirements for the control of shutdown safety were described in CCI-314 and/or CCI-142:

-- The structure and function of the outage management organization was described. The outage management organization included the temporary assignment of an operations outage coordinator who was a senior reactor operator (SRO) to ensure oversight of reactor safety during outage planning and execution.

-- A detailed outage safety summary schedule that tracked the availability of safety equipment was required. This schedule must be reviewed by two SROs, one of whom was the operations outage coordinator. The results of these reviews were approved by outage and operations management prior to the start of the outage. In addition, the Plant Operations Safety Review Committee reviewed the schedule. Any significant changes required the same level of review.

-- The outage schedule specifically considered periods of increased vulnerability such as reduced inventory conditions. The schedule was prepared to ensure that electrical power supplies and shutdown cooling systems were maximized during these periods. Additionally, the schedule considered the impact of testing on outage safety.

-- On each shift, essential equipment for shutdown safety such as low pressure safety injection systems and electrical supplies was required to be maintained and tracked by operators on the minimum essential equipment list. In some cases, this list required equipment availability above the requirements of the technical specifications to ensure redundant means of decay heat removal. Deviations to the list required a contingency plan and approval by operations management.

-- Management briefings of operations personnel were required prior to entering a reduced inventory condition.

Operating Procedure (OP) 5 " Plant Shutdown From Hot Standby to Cold Shutdown," Revision 32, described the overall controls for operating the unit in a shutdown condition. OP-5 included Appendix 5 that specifically directed operations while in reduced inventory conditions.

The inspectors determined that OP-5 specified the requirements for the operation of shutdown cooling (forced circulation decay heat removal). Appendix 5 of OP-5 contained specific criteria for the control of shutdown cooling and requirements to minimize perturbations that could affect shutdown cooling while the reactor coolant system was in a reduced inventory condition. Maintenance that could affect the reliability of the shutdown cooling system was restricted and required authorization of operations management.

Abnormal operating procedure (AOP) 3B "Loss of Shutdown Cooling," Revision 8, contained actions to restore decay heat removal if a loss of shutdown cooling occured. AOP-3E "Loss of Flow/ Natural Circulation" and AOP-3F "Natural Circulation Cooldown" contained instructions for natural circulation decay heat removal including temperature criteria to verify that natural circulation has been established.

The inspectors reviewed the practices for maintenance and testing of the DC power supplies to the emergency diesel generator field flash circuit. CCI-112 "Safety Tagging," Revision M, required operations to consider the effects that tagouts had on the plant. The inspectors discussed a postulated tagout of a power panel that would affect the field flash power supply and determined that the diesel would be considered inoperable. During the outage, no testing was planned that affected the field flash power supplies. However, due to the availability of a reserve battery as a substitute, battery testing can be accomplished without loss of the DC power supply.

The inspectors reviewed nonstandard electrical system line-ups developed for the current Unit 1 outage to support the cleaning and inspection of vital AC bus work and a dual saltwater header outage. The work was done with Unit 1 in a defueled status. A contingency plan was developed to promptly restore a 4160 volt bus and return battery charger capability if needed. Procedure changes, system and electrical line ups, and a temporary power supply for a spent fuel pool cooling pump were established to support this work. The procedure changes, temporary power supplies and supporting analyses were reviewed by the inspectors. The analyses considered emergency diesel generator loading where applicable. No safety concerns were identified.

The inspectors discussed operator actions and verified that operators had been trained and were familiar with procedures to operate electrical systems while in these nonstandard configurations. Management briefings and required reading training were also reviewed.

As an enhancement at the beginning of the current Unit 1 outage, BG&E maintained a condenser vacuum while the containment equipment hatch was removed to ensure that a diverse means of decay heat removal was available. Also, during the outage, the schedule was revised to drain the reactor coolant system to support maintenance while in a defueled condition. This change eliminated a planned period of reduced inventory after refueling and thus reduced vulnerability to a loss of decay heat removal. During periods of increased vulnerability, controls were imposed on the movement of vehicles in the site switchyard and the offsite switchyard. Controls were also implemented to restrict maintenance on onsite and offsite power supplies.

BG&E has undertaken several initiatives in its approach to shutdown safety. The initial implementation of CCI-314 has received considerable self and independent assessment. Concerns that were raised were corrected immediately if warranted or entered into the established feedback system for post outage review. A task force has been chartered to review industry guidance in detail and develop plant specific policy and guidance regarding shutdown safety. This task force will continue its activities until late 1992.

8.3 Licensee Evaluations of Changes to the Environs

The inspectors performed a review to determine if BG&E has implemented a program to periodically review, identify, and evaluate changes in site proximity hazards and demography to determine their effect on the safety of Calvert Cliffs. The review was performed in accordance with NRC Temporary Instruction (TI) 2515/112, "Licensee Evaluations of Changes to the Environs Around Licensed Reactor Facilities."

The inspectors reviewed the following reports and instructions as part of the evaluation:

- updated final safety analysis report (UFSAR)
- safety evaluation report for the operating license
- Calvert Cliffs Instruction (CCI) 177, "Administrative Control of Changes to the UFSAR"
- Radiological Environmental Monitoring Program (REMP) Annual Reports for 1980, 1985, and 1991
- Land Use Surveys for 1985 and 1991
- BG&E Operating Procedures for Environmental Monitoring Activities at Calvert Cliffs Nuclear Power Plant (OP) 18, "Administrative Procedure for the REMP"
- OP 17, "Land Use Survey"
- BG&E Calvert Cliffs Nuclear Power Plant Emergency Response Plan

In addition, the issue was discussed with BG&E licensing, environmental programs, and emergency planning personnel.

The inspectors determined that BG&E does not have a formal program with the specific purpose of routinely identifying and evaluating changes to the area around the reactor site to determine their effects on the safety of the plant. Instead, they depend on information derived from the routine community awareness of employees residing in the surrounding counties and from other established review programs to forewarn them of changes to the area around the site which may affect the protection of the plant.

Examples of established review programs are the Radiological Environmental Monitoring Program (REMP) and the land use survey, which are conducted on an annual basis as required by TS 6.9.1.7 and 4.12.2, respectively. The land use survey is conducted in accordance with BG&E Operating Procedure for Environmental Monitoring Activities at Calvert Cliffs Nuclear Power Plant (OP) 17. In addition to an annual survey of land use, OP 17 requires a population survey every five years to ensure that current population densities are used in dose calculations. The survey estimates the population density per sector within distances out to 200 km from the plant. The land use survey report and the population survey are provided to the Emergency Planning Unit for reference. The REMP is conducted in accordance with OP 18. OP 18 also requires that each year, following the issuance of the REMP report, environmental programs personnel shall review chapter 2 of the UFSAR for accuracy.

In addition, the Emergency Response Plan is reviewed on an annual basis and estimates of evacuation times are concurred on by the civil defense directors of Calvert, St Mary's, and Dorchester Counties. Evacuation times are analyzed on a five year basis using the land use survey population survey and estimates are modified according to demography and transportation route changes. One result of the population survey review by the Emergency Planning Unit was the siren upgrade program begun last year due to the changing demographics of the counties.

Inspectors reviewed the UFSAR and determined that it adequately reflected the current site environs. Population increases and shifts are adequately monitored by the annual land use survey and the five year population survey and have not exceeded those predicted by the UFSAR. There have been no major changes to the environs that are not reflected in the UFSAR.

The safety evaluation report for the operating license was reviewed for accuracy. One significant change to the environs was noted. The Cove Point Liquified Natural Gas (LNG) Terminal, which is located approximately 3.5 miles south southeast of the plant, has been shut down for several years. The terminal has recently changed ownership and it is expected to be placed back in operation by March 1994. While the potential effect on the plant of an accident at the terminal or aboard an LNG tank ship was analyzed as part of the original operating license, BG&E has hired a contractor to re-analyze the accident effects using updated methods and computer codes. The analysis is expected to be completed by the contractor, reviewed by BG&E, and then submitted to the NRC for review in September 1992.

BG&E does not have a formal program for the specific purpose of periodically reviewing, identifying, and evaluating changes in site proximity hazards and demography to determine their effects on the safety of the plant. The inspectors concluded, however, that the information derived from routine community awareness and other established review programs has been used to adequately reflect changes to the site environs in the UFSAR.

9.0 FOLLOWUP OF PREVIOUS INSPECTION FINDINGS

Licensee actions taken in response to open items and findings from previous inspections were reviewed. The inspectors determined if corrective actions were appropriate and thorough and previous concerns were resolved. Items were closed where the inspector determined that corrective actions would prevent recurrence. Those items for which additional licensee action was warranted remained open. The following items were reviewed.

9.1 (Closed) Violation 50-317 and 318/91-16-02: Improper Restoration of Reactor Protective System Channel

The inspectors identified an improper restoration of Unit 1 reactor protective system channel "B" and documented the concern as a violation. This issue was reviewed and closed as discussed in section 2.4.

9.2 (Closed) Unresolved Item 50-317 and 50-318/91-21-02: Weaknesses in STP Review

This item concerned weaknesses in the post performance review of STPs which allowed out-of-tolerance readings on a reactor protection system STP to go through the review process without question. The issue is discussed in section 4.3.

9.3 (Closed) Unresolved Item 50-317 and 50-318/92-12-01: Welding Concerns

The inspectors identified concerns regarding several problems related to welding and welding processes. These issues were reviewed and closed as discussed in section 4.4.

9.4 (Closed) Unresolved Item 50-317/90-17-01 and 50-318/90-15-01: Resolution of Salt Water System Biofouling Concerns

The NRC had previously identified concerns with salt water system biofouling. The specific issues regarded the potential clogging of heat exchangers such as the service water heat exchanger and the emergency core cooling pump room cooler strainers. This issue is discussed in section 7.1.

10.0 MANAGEMENT MEETING

During this inspection, periodic meetings were held with station management to discuss inspection observations and findings. At the close of the inspection period, an exit meeting was held to summarize the conclusions of the inspection. No written material was given to the licensee and no proprietary information related to this inspection was identified.

-- Attendance at Management Meetings Conducted by Region Based Inspectors

Date	Subject	Inspection Report No.	Reporting Inspector
5/1/1992	ODCM	50-317/92-14 50-318/92-14	J. Jang
5/1/1992	Initial Exam	50-317/92-11 (OL) 50-318/92-11 (OL)	L. Briggs