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Lusby, Maryland 20657
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EXECUTIVE SUMMARY
Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Inspection Report Nos. 50-317/98-08 and 50-318/98-08

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

Plant Operations

Plant operators manually tripped Unit 2 and conducted a plant cooldown in an effective manner. The identification of a small steam leak in a pressurizer penetration during a containment walkdown was an excellent example of detailed plant walkdowns and problem identification by plant operators. (O1.2)

A return of Unit 2 to power operation was completed without problems. Throughout the various mode transitions, operators conducted extensive briefings and completed evolutions in a controlled manner in accordance with plant operating procedures. Engineering support for the restoration of plant systems was very good including direct support of the feedwater, main turbine, and reactor coolant systems' engineers. Reactor physicists provided an accurate expected critical position calculation and were in the control room during the approach to criticality and power escalation. (O1.1)

A conversion to Improved Standard Technical Specifications was done during the inspection period without apparent problems. (O1.1)

Maintenance

BGE conducted maintenance in an effective manner. Operational risk insights were effectively used in maintenance planning and scheduling. (M1.1)

The inspectors observed that the chemical treatment of the Unit 1 service water heat exchangers had limited success and unanticipated fouling of the heat exchanger surfaces was observed. As a result, additional cleanings of the heat exchangers were required and adjustments were made to the chemical treatment frequency. (M1.1)

The surveillance testing performed during this inspection period was completed in a well controlled manner with minimal risk. Plant supervision provided active oversight during testing. (M1.2)

Engineering

BGE erosion corrosion engineering personnel erred in judging that some piping segments in the Unit 2 steam plant were not susceptible to catastrophic failure due to flow accelerated corrosion. The result was a piping failure that led operators to manually trip Unit 2. The BGE engineering review of the failure was extensive and included examinations of piping and review of program assumptions. Some piping segments in the Unit 2 steam plant were replaced with alloy piping material not susceptible to flow accelerated corrosion prior to Unit 2 restart. (E2.1)

Executive Summary (cont'd)

BGE engineering personnel were effective in their involvement and responsiveness to a small leak on a pressurizer instrument connection. Engineering measures were taken to diagnose, document, and repair the leaking penetration. (E2.2)

The inspectors observed system engineers conduct structure and system walkdowns of risk significant systems and concluded that thorough and competent engineering walkdowns were routinely performed. The observed engineers were knowledgeable of their system deficiencies and the impact of the deficiencies on operational safety. The system engineers had a low threshold for identifying and recording new potential problems. The EDG system engineers trended system parameters and provided good support during surveillance testing of the EDGs. (E2.3)

Plant Support

BGE appropriately conducted radiological protection activities during the Unit 2 forced outage. The observed radiologically controlled area access check-ins were conducted in an acceptable manner and three-way communications were used. Pre-job briefings were thorough and comprehensive and the participants demonstrated good questioning attitudes. Radiation safety technicians provided good job coverage support including radiological surveys and worker monitoring. (R1.1)

Radiological assessments during emergency preparedness exercises were much improved over previous observations. Procedure improvements made since the last NRC inspection allowed for improved performance, but further procedure improvement was needed to address concerns raised by the procedure users. (P4.1)

Emergency response training was being conducted as specified in the emergency response plan and emergency response group supervisors provided close oversight of training. BGE procedures did not specify how to evaluate or track personnel performance in order to monitor the effectiveness of emergency response requalification training. (P5.1)

The BGE initiative to more formally track and verify emergency personnel response from offsite was considered an appropriate program enhancement. (P6.1)

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 Items Opened, Closed and Discussed
 List of Acronymns Used
 Emergency Response Plan and Implementing Procedures Reviewed

Report Details

Summary of Plant Status

Unit 1 operated throughout the inspection period with no significant power reductions.

Unit 2 was manually tripped from 100 percent power on July 23, 1998 due to a steam leak in the turbine building. The reactor was restarted on August 7 and returned to full power on August 9, 1998. Power was reduced on August 14, 19, and 29 to clean main condenser water boxes and on September 3 to complete repairs on a non-safety circulating water pump. Otherwise, the reactor operated without significant power reductions.

I. Operations

O1 Conduct of Operations (IP 71707)

O1.1 General Comments

During a review of Unit 2 operations in cold shutdown on July 30, the inspector noted that an overpressure watch had been stationed in the vicinity of pressurizer controls while pressurizer level was maintained greater than 150 inches to facilitate maintenance. Plant procedures require an overpressure watch while filling the pressurizer to monitor reactor coolant system pressure and to take action if necessary, to prevent over pressurization. On questioning of shift personnel by the inspector, the actions to mitigate a pressure transient were not specified in the procedure and no special watch instruction had been prepared. The inspector raised a concern that protective actions to be taken, in event of a pressure transient, should be clearly specified and understood by watchstanders. Operations supervision agreed with the inspector concern and took action to clearly define and proceduralize over-pressure watch responsibilities. The inspector considered the BGE preparations for the over-pressure watch to be weak. Actions taken by BGE in response to the inspector concerns were timely and appropriate.

During a plant walkthrough on July 28, the inspectors noticed that the Unit 2 shutdown cooling purification flow was in excess of that allowed by the applicable operating procedure. The inspectors informed the control room and the auxiliary building operator was instructed to throttle the purification flow to the required flow rate. BGE documented the problem in an issue report (IR) and briefed shift personnel on purification flow rate requirements while in shutdown cooling. BGE considered the high flow condition was the result of increased shutdown cooling flow while reactor coolant system temperature was changed. Because the purification flow rate was being checked twice per shift, and had been satisfactory, the inspectors concluded that the high flow condition existed for only a short period of time. BGE engineering evaluated the flow condition and concluded that no adverse affects resulted.

The inspectors observed significant portions of the recovery of Unit 2 from cold shutdown to power operation on August 6 and 7. Throughout the various mode transitions, operators conducted extensive briefings and completed evolutions in a controlled manner and in accordance with plant operating procedures. Engineering support for the restoration of plant systems was very good including direct support

by the feedwater, main turbine, and reactor coolant systems' engineers. Reactor physicists provided an accurate expected critical position and were in the control room during the approach to criticality and power escalation. Plant systems functioned as designed and the return to full power operations was completed without problems.

During a plant tour on August 20, the inspectors identified that a locking device on the component cooling water supply isolation valve to the 13 HPSI pump outboard seal was in a condition where the valve could be operated without unlocking the lock. The valve was full open. The subject valve is a normally locked open valve which is verified locked open semi-annually. The inspectors informed BGE operations personnel of the locking problem and BGE promptly corrected the locking device installation. BGE documented the locking device problem in an issue report and verified the other valves in the local area had their locking devices installed correctly. BGE concluded that there was no indication of tampering and the valve had remained in its normal open position. The inspectors considered the locking device problem to be an isolated occurrence and the BGE response appropriate to the circumstances.

On August 28, BGE converted to Improved Standard Technical Specifications (ISTS). The transition occurred by physical changeout of operations procedures, technical specifications, and surveillance tests at noon. In preparation for the conversion, operators had used dual technical specification entries and tracking. A small number of technical specification interpretations remained in place after the conversion. However, action was in progress by BGE to eliminate all interpretations. At the close of the inspection period, the conversion to ISTS had been completed without apparent problems.

O1.2 Manual Reactor Trip

a. Inspection Scope

The inspectors responded to and reviewed the circumstances of a manual reactor trip of Unit 2.

b. Findings and Observations

On July 23, 1998 at approximately 6:30 p.m, plant operators observed a steam leak in the vicinity of Unit 2 main turbine moisture separator reheater piping. The steam leak had little affect on plant operating parameters such as pressurizer level and steam flow. Because the steam leak presented a personnel hazard and because the source and consequences of the leakage were unknown, Unit 2 was manually tripped from full power. Plant operators appropriately used emergency operating procedure, E-0, Reactor Trip, to stabilize the plant in hot shutdown. There were no complications to the trip and all equipment operated as designed.

Following the reactor trip, operators isolated the steam leak first by shutting the main steam isolation valves, then using local valves in the affected line. Subsequently, the main steam isolation valves were re-opened and the condenser was used as a heat sink, while the unit remained in hot shutdown for investigation and repair of the steam leak.

The source of the leak was determined to be a ruptured two-inch steam line between the 21 moisture separator reheater and the 25 low pressure feedwater heater. The failure was subsequently determined to be the result of flow accelerated corrosion (FAC) in the carbon steel piping segment. (See E2.1)

As part of the post trip actions, and as a prerequisite to the return to power operations, a containment walkdown and inspection was conducted on July 24 by plant operations. This inspection included a search for deficient conditions such as evidence of leakage, adequate lighting, and a check that no foreign material was present in containment. During this inspection, a plant operator identified a small reactor coolant leak coming from a reference leg penetration into the pressurizer. The leak was identified by a hissing sound and was verified by direct observation by engineering and maintenance personnel. Following verification of the pressurizer leak, Unit 2 was placed in cold shutdown as required by technical specifications.

c. Conclusions

Plant operators manually tripped Unit 2 and conducted a plant cooldown in an effective manner. The identification of the small steam leak in a pressurizer penetration during a containment walkdown was an excellent example of detailed plant walkdowns and problem identification by plant operators.

08 Miscellaneous Operations Issues

08.1 (Closed) Violation 50-317&318/96-10-01, Failure to Assure that Fuel Handling Procedures were Adequate

The violation involved three problems identified during fuel movements in the spent fuel pool, including a lack of assurance that the fuel handling ventilation system was properly aligned and two procedure adherence problems. BGE responded to the violation in a letter dated April 4, 1997. To assure that during a fuel handling accident the ventilation system would be capable of filtering fuel handling area exhaust, BGE revised their fuel handling procedures and instituted a plant modification that provided indication of negative pressure in the spent fuel area. The inspectors verified that the procedure compliance issues were corrected by appropriate procedure changes and training of responsible personnel. During the 1998 refueling outage, procedure compliance was observed during routine inspections of fuel handling and found to have been appropriate. BGE actions in response to the violation were appropriate. The violation is closed.

08.2 (Closed) Licensee Event Report 50-318/98-004; Manual Plant Trip Due to Moisture Separator Reheater Vent Line Rupture

The Licensee Event Report (LER) described the manual reactor trip of Unit 2 as discussed in Section O1.2 and E2.1 of this report. The inspectors observed or reviewed the short term corrective actions described in the LER prior to restart of the unit, including repair of affected piping, augmented piping inspections, and additional repairs. Also, there was a detailed BGE management review of the corrective actions prior to unit restart to verify that the actions taken were reasonable. The BGE actions in responding to the reactor trip were appropriate, including reporting in accordance with 10 CFR 50.72. The LER is closed.

II. Maintenance

M1 Conduct of Maintenance (IP 62707)

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 and the maintenance rule program was being appropriately administered. Also, the inspectors directly observed all or portions of the following work activities:

MO2199802274	Cut Out Tubing for Replacement Pressurizer Level 2-LT-110X Instrument Nozzle
IR3-039-389	Replace Power Supply (Steam Generator Pressure)
MO1199803372	11B Service Water Plate Heat Exchanger Clean & Inspect
MO1199803369	11A Service Water Plate Heat Exchanger Clean & Inspect
MO0199401590	Spent Fuel Cask Transfer Preparation
MO2199702282	Spent Fuel Pool Hoist Box Decontamination
MO1199803370	12 Service Water Plate Heat Exchanger Clean & Inspect

b. Observations and Findings

The inspectors found that the selected maintenance activities were performed safely and in accordance with approved maintenance orders. Daily and weekly plant trip and core damage precursor risk assessments were completed for maintenance activities. Periods of higher risk were eliminated by revising the maintenance and testing sequence. For example, switchyard work was delayed during maintenance on an auxiliary feedwater pump to minimize the risk of loss of offsite power when equipment used to mitigate this event was out of service.

Due to the leak in the Unit 2 pressurizer level instrument nozzle weld (2-LT-110X), the inspectors reviewed the maintenance rule status of the Unit 2 reactor coolant system (RCS) pressure boundary. The leak did not exceed the system level criteria that would place the RCS pressure boundary in 10 CFR 50.65 a(1) status; however, the plant level criteria for equipment forced outage rate was exceeded. An issue report was written to document in the BGE corrective action system that the Unit 2 RCS pressure boundary function was moved to 10 CFR 50.65 a(1) status.

BGE experienced fouling of the newly installed service water heat exchangers. BGE intended that chemical treatment of the saltwater prior to entering the heat exchanger would limit fouling. As a result of the fouling, cleaning has been required to remove barnacles and marine growth on the saltwater side heat exchanger plates. The observed cleaning activities were performed using approved maintenance orders and vendor instructions. Pre-evolution briefs were performed and attended by all those individuals participating in the maintenance activity. Foreign material exclusion considerations were implemented. Good communications were observed during the work. The inspectors observed that the heat exchanger chemical treatments had limited success and some unanticipated fouling of the heat exchanger surfaces was observed. As a result, additional cleaning of the heat exchangers was performed and BGE made adjustments to the chemical treatment frequency.

c. Conclusions

BGE conducted maintenance in an effective manner. Operational risk insights were effectively used in maintenance planning and scheduling.

The inspectors observed that the chemical treatment of the Unit 1 service water heat exchangers had limited success and unanticipated fouling of the heat exchanger surfaces was observed. As a result, additional cleanings of the heat exchangers were required and adjustments were made to the chemical treatment frequency.

M1.2 Routine Surveillance Observations (IP 61726)

a. Inspection Scope (61726)

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

STP-O-29	Unit 2 Control Element Assembly Partial Movement Test
OI-30	Nuclear Instrument Calibration
STP-O-5	Unit 1 Auxiliary Feedwater System Monthly Surveillance Test

STP-O-8A	1A EDG and 11 4kV Bus Testing
STP-O-73C	Unit 1 Component Cooling Pumps Surveillance Test
STP-M-171	Unit 2 Containment Air Lock Test
STP-O-73D	Unit 2 Charging Pumps Surveillance Test
STP-O8A	2A Diesel Surveillance Test
STP-O8B	1B Diesel Surveillance Test
STP-F-77	Test of the Diesel Fire Pump

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 a pre-test briefing followed by a question and answer session. The sessions were attended by all test participants and included clearly stated test expectations, past problems, and industry experience. The test participants demonstrated good work practices and good knowledge of their assigned responsibilities. Operations personnel demonstrated good peer-checking and independent verification practices when performing calculations and during the manipulation of switches and valves. Plant supervision provided active monitoring during testing. Applicable limiting conditions of operation (LCO) were entered and exited correctly in accordance with technical specifications. Test equipment was verified by the inspectors to be properly calibrated and sized according to the approved test procedures. When appropriate, testing sequence was coordinated with plant maintenance and operations activities to minimize core damage risk and trip risk.

c. Conclusions

The surveillance testing performed during this inspection period was completed in a well controlled manner with minimal risk. Plant supervision provided active monitoring during testing.

M8 Miscellaneous Maintenance Issues (IP 92902)

M8.1 (Closed) LER 50-318/96-01, Automatic Plant Trip Due to Partial Loss of Offsite Power

The LER described the circumstances of a partial loss of offsite power on Unit 2 caused by poor work coordination in the plant switchyard. During troubleshooting of a switchyard breaker problem, a stuck breaker protection relay was inadvertently activated, causing a partial loss of offsite power to Unit 2, a loss of forced circulation on the reactor, and an automatic reactor trip on low reactor coolant flow. Immediate corrective actions were discussed in NRC Inspection Report 50-317&318/96-02. The inspectors verified that the short term and long term corrective actions discussed in the LER were completed. On a number of occasions, the inspectors observed briefings and work coordination for switchyard activities and verified that adequate controls were being used to prevent recurrence of the problem. Procedural controls were developed and implemented to assure

adequate oversight of switchyard work by non-nuclear division, BGE workers. BGE actions in response to the reactor trip were appropriate. The LER is closed.

M8.2 (Closed) LER 50-318/98-03. Relays Out of Calibration Due to Bumped Dial

The LER described an event where a undervoltage protection for a safety bus was inadvertently made inoperable when a protective cover was installed upside down, causing a setpoint dial to be bumped out of position. Another of the four channels of undervoltage protection was being tested when the dial mispositioning was identified. As a result, two channels were inoperable for a period of 49 minutes and technical specification 3.0.3 was not entered, although no actions to initiate shutdown of the reactor were required for one hour. The inspector walked down the vital bus relays with the unit electrical supervisor and reviewed the corrective actions described in the LER. All of the technicians qualified to work on the affected equipment were trained on the event and provided instructions to prevent recurrence. Also, actions to mark the relay covers and enhance procedures were in progress at the time of this inspection. The inspector found the BGE actions in response to the event to be appropriate. The LER is closed.

M8.3 Closure of Violations Involving 1997 Fuel Handling Activities

a. Inspection Scope

The following fuel handling activity violations were reviewed. The violations were documented in NRC Inspection Report 50-317&318/97-02 and responded to by a September 11, 1997, BGE letter to the NRC.

Violation EA06014, Corrective Actions for a Missing Capscrew
 Violation EA07014, Corrective Actions for Metallic Debris
 Violation EA08014, Corrective Actions for a Failed Grapple Closed Light
 Violation EA09014, Corrective Actions for a Stuck Relief Valve on the Upender
 Violation EA10014, Corrective Actions for a Damaged CEA Cable
 Violation EA11014, Failure to Follow Procedures Regarding Spent Fuel Pool Ventilation

b. Findings and Observations

The inspector verified through discussions with the BGE refueling system manager that a process to conduct material condition inspections and testing of refueling equipment, prior to each refueling outage, had been implemented. The process included either a video camera inspection or a diver inspection of equipment not normally accessible from the refueling floor. Also, BGE had emphasized the material condition of refueling equipment in maintenance planning.

As discussed in NRC Inspection Report 50-317&318/98-06, the inspectors observed fuel handling activities during the 1998 refueling outage of Unit 1, during which a complete core off-load and reload were completed. Overall, the conduct of the fuel handling was good and no significant fuel handling equipment or procedure problems were observed.

c. Conclusions

The inspectors found the BGE actions regarding each violation to be acceptable and each issue is closed.

M8.4 (Closed) Violation 50-317&318/96-10-04, Incomplete Corrective Actions for Electrical Separation Barriers

The violation involved a failure to update design documents and fourteen examples where the as-built configurations for electrical separation did not meet design criteria due to missing or damaged separation barriers. As corrective action, BGE assigned responsibility for electrical separation to a system engineer who implemented a plan for regular walkdowns of system components to identify deficient electrical separation conditions. A list of all identified deficiencies, including the apparent cause and corrective action taken was used by the engineer to track and resolve problems. The inspector verified that operations and maintenance personnel had been trained on electrical separation methods to identify problems and prevent inadvertent damage to separation materials. Following the 1998 refueling outage on Unit 1 and at other times, the inspectors have conducted walkdowns to assess electrical separation and no problems were identified. The BGE actions were determined to be appropriate and the violation is closed.

M8.5 (Closed) LER 50-317/97-09, Automatic Reactor Trip Due to Condenser Vacuum Breaker Opening

The LER described the circumstances of the Unit 1 automatic trip on low condenser vacuum when a condenser vacuum breaker unexpectedly opened. The condenser vacuum breaker opening was caused by a failure to properly terminate a non-safety related electrical lead on the condenser vacuum breaker hand switch during maintenance. Immediate corrective actions were discussed in NRC Inspection Report 50-317&318/97-06. The inspectors verified that the long term corrective actions discussed in the LER were completed. A BGE significant issue finding team had been created to determine the cause of the event and formulate corrective actions to prevent recurrence. Approximately 200 connections on similar switches in the Unit 1 control room were inspected and no similar deficiencies were identified. A thorough and detailed root cause analysis was completed. A review of records verified that maintenance personnel were provided training on the event details and the importance of self-checking during maintenance. The BGE actions were appropriate and the LER is closed.

M8.6 (Closed) LER 50-317&318/98-02, Fire Hose Stations and Room Sprinkler Systems Out-of-Service

The LER described the circumstances of fire hose stations and room sprinkler systems in the Auxiliary Building that were discovered out of service with no compensatory actions established. Due to a previously undiscovered valve labeling error, an incorrect valve had been shut while establishing the tagout boundary. The inadvertently isolated components were returned to service within approximately 35 minutes. BGE performed an appropriate root cause analysis of the event and determined that a mislabeled valve had been operated. BGE identified the problem and completed the corrective actions for this event prior to submitting the LER. The completed corrective actions included correcting the incorrect valve label, and performing a walkdown of selected accessible portions of the fire water systems to verify that the drawings and valve labels were correct. The isolation of the incorrect valve in establishing the tagout boundary was a failure of minor safety significance and was not subject to formal NRC enforcement action. The LER is closed.

M8.7 (Closed) Violation 50-317&318/97-05-02, Inadequate Corrective Actions for Problems Identified with Compression Fittings

The violation was cited when BGE did not promptly identify and correct problems with the installation of compression fittings used in plant systems. The specific event involved a fitting that had been improperly installed in 1996 on a pressurizer instrument line which had failed on May 29, 1997. BGE responded to the Notice of Violation by letter, dated November 10, 1997. The response noted that the immediate corrective actions had been discussed in LER 317/97-005. The LER was closed by the inspectors in NRC Inspection Report 97-05. The inspectors observed that the BGE root cause report was thorough and comprehensive. The inspectors reviewed a sample of the corrective action recommendations and determined that the recommendations were properly dispositioned. Additionally, BGE performed an effectiveness review for the corrective actions taken. In the nine months after the corrective action implementation, 170 maintenance orders involving tubing and compression fittings were performed. No examples of tubing or fitting type failures were identified. The BGE actions in response to the violation were appropriate and the violation is closed.

III. Engineering

E2 Engineering Support of Facilities and Equipment (IP 37551)

E2.1 Moisture Separator Vent Piping Failure

a. Inspection Scope

The inspectors reviewed the BGE corrective actions following a vent piping failure on Unit 2.

b. Findings and Observations

Following the Unit 2 moisture separator vent line piping failure (See O.2), BGE assembled an engineering team to determine the root cause and recommend corrective actions. The team determined that the rupture was the result of flow accelerated corrosion (FAC) of two-inch, carbon steel piping downstream of an elbow in a high pressure to lower pressure steam vent. An inspection of the failed segment showed thinning of the piping in the vicinity of the failure.

The BGE engineering reviewed the approximate 3700 small bore (less than or equal to two-inch) and large bore (greater than two-inch) piping inspection points in the FAC program for Unit 2. Since the inception of the BGE FAC program, there were about 830 small bore inspections; however, there remained about 800 points that had never been inspected. Points were not inspected because of engineering judgement that failure of the piping at that location would: 1) not directly cause a reactor trip; 2) would not present a personnel hazard; or 3) would not otherwise present safety consequences. The engineering judgement also included an expectation that the piping would exhibit a small leak before a catastrophic failure, as had been the general BGE experience with small bore piping. The piping failure did not directly effect plant operating parameters; however, it could have posed a personnel safety hazard had an individual been in the vicinity of the pipe at the time of the failure.

As part of the investigation, BGE reviewed all of the 800 points that had not been inspected and screened each point for immediate inspection. Of the 800 points, over fifty points were examined to check for FAC. One of these examinations revealed a point where the wall thickness was below an allowable minimum value. This point was in the same line as the failure and the entire piping segment was replaced with a Chrome-Molybdenum alloy that is not susceptible to the observed corrosion mechanism.

The BGE review team also evaluated Unit 1 and found that moisture separator configurations similar to the failed piping did not exist. BGE intended to complete a review of the large bore piping program on both Units 1 and 2. BGE informed the inspectors that following completion of the BGE engineering review, an independent review of the BGE erosion corrosion program would be conducted.

c. Conclusions

BGE erosion corrosion engineering personnel erred in judging that some piping segments in the Unit 2 steam plant were not susceptible to catastrophic failure due to flow accelerated corrosion. The result was a piping failure that led operators to manually trip Unit 2. The BGE engineering review of the failure was extensive and included examinations of piping and review of program assumptions. Some piping segments in the Unit 2 steam plant were replaced with alloy piping material not susceptible to flow accelerated corrosion prior to Unit 2 restart.

E2.2 (Closed) LER 50-318/98-005, Plant Cooldown Due to Reactor Coolant System Pressure Boundary Leakage

a. Inspection Scope (37551)

The inspectors BGE response to the identification of a reactor coolant pressure boundary leak at the pressurizer level instrument reference leg. BGE summarized their actions in the LER.

b. Findings and Observations

On July 25, 1998, with Unit 2 in Mode 3 (Hot Standby), a steam leak was discovered at the upper level tap on the pressurizer (See O1.2). BGE promptly placed the unit in Mode 5 (Cold Shutdown). BGE engineering personnel took immediate action to develop a repair plan for the breached primary boundary once the plant was cooled down and depressurized to allow physical inspection. A project team was assembled and led by the reactor coolant system manager. A clear and concise written plan was produced by the system manager and as a result, the applicable maintenance orders and special work permits were generated expeditiously. Safety considerations were observed by engineering and clear communications with the operations department were noted. Good coordination between BGE engineering and a contracted repair company was observed.

The LER documented the immediate corrective actions taken by BGE. The corrective actions included: performing various nondestructive tests (NDT) including a dye-penetrant test of the inside of the penetration sleeve, an ultrasonic test of the pressurizer shell around the penetration, and a remote interior visual inspection of the penetration weld. BGE also visually inspected three other upper level nozzles and found no evidence of leakage. Based on the results of these actions, BGE engineering personnel concluded that the pressure boundary failure was an isolated occurrence of primary water stress corrosion cracking (PWSCC). The LER described the corrective action repairs that included a BGE engineering plan which removed the outer portion of the leaking nozzle followed by the installation of a weld pad around the penetration area where a new nozzle was inserted. The new nozzle was welded to the weld pad using an Alloy 690-type filler material that is not susceptible to PWSCC.

In a letter dated August 4, 1998, BGE submitted the results of the flaw evaluation to the NRC Office of Nuclear Reactor Regulation for review as required by the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. In a follow-up letter dated August 25, 1998, BGE committed to prepare an action plan for further inspection of the Unit 2 pressurizer instrument nozzle weld flaw by February 26, 1999.

c. Conclusions

BGE engineering personnel were very effective in their involvement and responsiveness to the identification of the pressurizer leak. BGE took the required engineering measures to diagnose, repair, and document the leaking pressurizer weld. The corrective actions identified in the LER were appropriate in scope and detail. The inspectors verified that these corrective actions were acceptably completed. The LER is closed.

E2.3 Structure and System Walkdowns

a. Inspection Scope

The inspectors observed plant engineers conduct walkdowns of various safety related structures and systems.

b. Findings and Observations

The direction for performing structure and system walkdowns by engineering personnel was provided in BGE administrative procedure MN-1-319, Structure and System Walkdowns. The requirements for reporting identified deficiencies were provided in this procedure as well as a process for evaluation of material condition in accordance with 10 CFR 50.65. The procedure specified that the intervals and extent of the periodic walkdowns were to be negotiated between the system engineer and the applicable principal engineer.

Based on discussions with a sample of the principal engineers, the inspector found that the results of these negotiations are not documented; however, the principal engineers had informally established expectations that portions of systems would be walked down monthly and that all the accessible portions would be walked down at least quarterly.

The inspectors observed walkdowns conducted by engineers responsible for the SACM and Fairbanks Morse emergency diesel generators (EDG) and the emergency core cooling systems. The inspectors observed walkdowns of selected portions of the emergency diesel generator, containment spray, low pressure safety injection, and high pressure safety injection systems. Each of the system engineers performed thorough and competent walkdowns using general checklists provided in MN-1-319 as guidance. The system engineers were knowledgeable of the outstanding system deficiencies and the impact of the deficiencies on operational safety.

The system engineers appeared to have a low threshold for identifying and recording new potential problems. The engineers indicated that accessible portions of their systems were walked down on a monthly basis and inaccessible portions were walked down during outages. Discussions with the EDG system engineers indicated that less formal weekly walkdowns normally were performed in addition to the normal monthly walkdown. The inspector noted that the SACM EDG system

engineer recorded specific system parameters for trending purposes. The inspector also noted that the EDG system engineers had provided support and oversight during surveillance testing of the EDGs.

c. Conclusions

The inspectors observed BGE system engineers conduct structure and system walkdowns and concluded that thorough and competent engineering walkdowns were routinely performed. The system engineers were knowledgeable of the outstanding system deficiencies and the impact of the deficiencies on operational safety. The system engineers had a low threshold for identifying and recording new potential problems. The EDG system engineers trended system parameters and provided good support during surveillance testing of the EDGs.

E8 Miscellaneous Engineering Issues (IP 92903)

E8.1 (Closed) Violation 50-317&318/96-10-02, Failure to Support Dry Fuel Cask Unloading

The violation involved a failure of the BGE dry fuel storage canister unloading procedures to include detailed instructions to assure that cask overpressurization would be prevented during reflood operations. In the BGE response to the violation dated April 4, 1997, BGE committed to complete a detailed calculation to bound the reflood rate of the canister, to do a root cause evaluation of the event, and to incorporate lessons learned into the cask unloading procedure. The inspector verified through discussions with BGE fuels engineers and review of the root cause evaluation that the actions had been completed. The inspector also verified that the cask unloading procedure had been revised to include cask specific overpressurization preventive measures. The BGE actions in response to the violation were appropriate and the violation is closed.

E8.2 (Closed) Licensee Event Report 50-317/98-03; Technical Specification Violation, Low Pressure Safety Injection Inoperable

This LER documented the discovery and resolution of damage to restraining steel (pipe support) in the Unit 1 low pressure safety injection (LPSI) system common header piping (reference Inspection Report 50-317&318/98-80, section E2.2). The damage was attributed to water hammer caused by recurring check valve slam. The inspector walked down the affected piping with a system engineer and reviewed the BGE corrective actions. The inspector determined that the damaged pipe supports had previously been evaluated, as documented in an engineering evaluation complete following a 1989 water hammer event. This evaluation included a series of stress calculations which provided a basis for removal of a number of pipe supports, including R-2 in the LPSI suction header and R-16 in the discharge header.

A root cause evaluation was completed to address this recent discovery and a number of corrective actions were specified, including: training of operations personnel on water hammer events; repair of the affected supports; and the planned substitution of the LPSI discharge check valves with a design less susceptible to check valve slam. In addition, filling, venting, and flushing procedures had been implemented at Unit 1 and were being implemented at Unit 2 to minimize the amount of air that could accumulate in the system piping following maintenance. BGE identified that corrective actions following 1987 and 1989 LPSI system water hammer events were not totally effective in preventing recurrence. The inspector determined that this contributing cause was being separately addressed in the BGE corrective action process. The inspector concluded that BGE's corrective actions for this event were appropriate. This LER is closed.

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 Backshift Observation of Radiological Protection Controls and Activities

a. Scope

The inspectors observed various radiological protection activities during the Unit 2 shutdown to repair a pressurizer leak.

b. Observations and Findings

During the Unit 2 forced outage, the inspectors observed radiological controlled area (RCA) access, pre-job briefings, and job coverage by radiation safety technicians (RST). The inspectors observed that workers stopped at the RCA entrance to discuss their jobs, the special work permit (SWP) controls, and additional radiation safety instructions with the special work permit coordinator (SWPC). The inspectors also noted that a BGE management expectation for workers and the SWPC to use three-way communications for RCA access check-in had been implemented.

The inspectors observed selected pre-job briefings for work that was being done to prepare for the replacement of a pressurizer instrument nozzle. Both the maintenance supervisor and the RST used pre-job briefing checklists. Topics discussed at the briefing included the evolution objective, roles and responsibilities, specific radiological controls, current radiological conditions, and strategies to be used to improve human performance. The personnel attending the briefs were attentive and demonstrated questioning attitudes. Minor deficiencies identified by the inspectors were promptly analyzed and resolved.

The inspectors also accompanied a group of workers on a containment entry to perform preparations for replacing a Unit 2 pressurizer instrument nozzle. The RST verified that the workers were properly wearing the specified protective clothing, dosimetry, and air sampling equipment. The RST provided appropriate support for the work including radiological surveys, air sampling, and monitoring of worker practices and exposure.

c. Conclusions

BGE appropriately conducted radiological protection activities during a Unit 2 forced outage. The observed RCA access check-ins were conducted in an acceptable manner and three-way communications were used. Pre-job briefings were thorough and comprehensive and the participants demonstrated good questioning attitudes. The RST provided good job coverage including radiological surveys and effective worker monitoring.

R7 Quality Assurance in Radiological Protection & Chemistry (RP&C) Activities (IP 92904)

R7.1 (Closed) LER 50-318/97-003; Chemistry Sampling Not Performed as Required by Technical Specifications

a. Scope (92700)

The inspectors reviewed LER 50-318/97-003 that described problems with Unit 2 reactor coolant system (RCS) chemistry sampling.

b. Observations and Findings

On April 22, 1997, BGE identified that Unit 2 RCS samples required to be taken to comply with Technical Specification (TS) 3.4.7, "Reactor Coolant System Chemistry" had not been taken. Samples were not taken after the reactor had been defueled on April 11 and subsequently drained. Calvert Cliffs Technical Specification Surveillance Requirement 4.4.7 was applicable at all times and required that RCS samples be analyzed for chlorides and fluorides every 72 hours. Action statements were stipulated for excess halogen concentrations found with the unit in Modes 1 through 6. Chemistry personnel interpreted this as meaning that samples were only to be taken in Modes 1 through 6. There was no capability to sample once the RCS was drained.

Upon discovery, BGE entered the issue in their corrective action process. The BGE corrective actions included: (1) taking samples as soon as practicable upon discovery that the sampling was required; (2) clarification of the existing technical specification was planned after the Improved Technical Specifications (ITS) were implemented; and, (3) BGE management re-emphasized the expectation that technical specifications were to be implemented as written. A site-wide review was planned to determine if there were any other technical specifications being inappropriately interpreted.

The LER stated that the samples taken after discovery of the oversight, were found to be within acceptable limits. The inspectors reviewed the records of RCS chemistry samples taken during the refueling and defueled periods of the Unit 1 1998 refueling outage and found that BGE performed the surveillances required by TS 4.4.7. These RCS chemistry requirements were removed from TS 3.4.7 and relocated to Updated Safety Analysis Report Chapter 15, Technical Requirements Manual (TRM) by the implementation of the improved technical specifications. However, the problem had not been corrected because sampling continued to be required by the technical requirements with the RCS drained. BGE informed the inspectors that this problem would be corrected prior to attaining that condition. The inspectors considered this issue to be of minor safety significance.

Chemistry personnel evaluated requirements for chemistry parameters and surveillances to ensure that all actions required could be performed as stated in the applicability section of technical specifications. The BGE investigation did not identify any additional areas where the TS were not being performed as stated. Also, the Superintendent of Nuclear Operations requested the Nuclear Performance Assessment Department (NPAD) perform a review of operating practices. The review included: operator training on technical specification, implementation of technical specifications, and the TS interpretations. The NPAD assessment did not identify any issues; however, several recommendations were generated. An inspector review of the BGE action item tracking system confirmed that BGE took action on these recommendations.

c. Conclusions

The inspectors found that BGE LER 50-318/97-03 was timely, accurate, and appropriately described the event. The corrective actions identified in the LER had been completed. Additional corrective actions identified in BGE follow-up activities were appropriate and had been implemented or were scheduled. The issues raised in the LER were of minor safety significance. This LER is closed.

R7.2 (Closed) Violation 97-03-01; Multiple Examples of Failure to Document and Report to Management Significant Conditions Adverse to Quality

The violation was cited for three radiation protection area events that had not been documented in the BGE issue report system although they had met the BGE established documentation criteria. The inspector verified through discussions with radiation safety personnel that awareness of the need to document problems in the issue report system had become a radiation safety management expectation. Further, the inspector observed that there was a marked increase in issue reports in the area, commensurate with problems that were being identified following an event on April 9, 1998, as discussed in NRC Inspection Report 50-317&318/98-05. Subsequent to that event, BGE had taken actions to improve radiation safety performance, including careful documentation of problems and tracking of corrective actions. BGE actions in response to the violation were appropriate, including

review of concerns to ensure proper documentation in the corrective action process and awareness training of line radiation safety personnel. The violation is closed.

P2 Status of EP Facilities, Equipment and Resources

P2.1 Severe Weather Communications Capabilities

The inspectors reviewed the BGE emergency preparedness communications capability and discussed severe weather conditions communications with BGE telecommunications and emergency planning personnel. BGE maintained communication capabilities with off-site agencies using radio, microwave, and redundant underground telephone equipment. In the event that severe winds render all above ground communication systems inoperable, the dedicated underground telephone trunks were maintained, each with an emergency power supply. The inspectors concluded that BGE would be able to maintain a communication line with off-site agencies following severe weather conditions.

P3 EP Procedures and Documentation

P3.1 Emergency Response Plan Changes

The inspectors reviewed several changes BGE made to the emergency response plan (ERP) and its associated implementing procedures (ERPIPs). The inspectors verified that the changes to the documents reviewed did not decrease the overall effectiveness of the emergency response plan, met the standards of 10 CFR 50.47(b), and met the requirements of Appendix E to 10 CFR Part 50. A list of ERP and ERPIP changes reviewed is included as an attachment to this report.

P4 Staff Knowledge and Performance in EP (IP 82206)

P4.1 Radiological Assessment Capability

a. Inspection Scope (82206)

The inspectors observed, in prescribed scenarios, the performance of emergency personnel responsible for radiological assessment during emergencies.

b. Observations and Findings

Individual performance of four on-shift chemistry technicians in a static control room simulator environment were assessed along with the performance of four radiological assessment specialists and two radiological assessment directors functioning in two separate teams in the emergency operations facility.

The chemistry technicians generally performed their duties in the scenarios without error. Some scenarios included changes in wind direction between calculations and others required manual dose assessment calculations to be completed. One technician made two errors when performing a manual calculation. Another took an

excessively long time to perform calculations for one scenario using the BGE radiological assessment computer model. Two of the technicians made errors in calculations which they later self-identified and corrected before any adverse consequences would have resulted. All individuals interacted with their shift managers to understand the nature of the simulated radiological accident and to convey recommendations.

The BGE radiological assessment teams in the emergency operations facility also performed their duties well in the observed scenarios. Occasional mistakes were made by the radiological assessment specialists, but except for one case these were self-identified and corrected without outside prompting. The radiological assessment specialists were familiar with the use of procedures for determining accident type. They were able to continue performance of their duties during simulated absences of the radiological assessment directors, and they questioned the validity of incongruous incoming data.

The BGE radiological assessment directors were very familiar with their duties, procedures, computer model capabilities, and dose assessment concepts. The directors effectively led their teams to formulate timely and accurate real time assessments and projected forecasts.

All of the BGE chemistry technicians interviewed, indicated that they considered the revised procedure that governs their emergency tasks to be an improvement. The technicians stated that they felt that there was room for further improvement in the procedure. For example, one technician who was interviewed felt that the procedure should provide better transition to the other procedures that may need to be used to perform the on-shift radiological assessment task. The inspectors discussed this finding with emergency planning unit (EPU) and training personnel. These personnel stated that further procedural enhancements had been identified and were planned as a result of observation of the scenarios.

c. Conclusions

The performances of the on-shift interim and long term augmentation radiological assessment staffs were much improved over previous observations. The procedure improvements made since the last NRC inspection effectively improved performance, but further procedure improvement was needed to address concerns raised by the procedure users during simulated scenarios.

P5 Staff Training and Qualification in EP (IP 82206)

P5.1 Evaluation of Emergency Preparedness Training

a. Inspection Scope (82701)

The inspectors monitored two training classes to evaluate the conduct of training. They interviewed several individuals responsible for providing emergency response organization (ERO) training to determine the EPU's oversight of the training program.

Finally, they reviewed documents governing the conduct of ERO member training to assess the training program implementation.

b. Observations and Findings

The designated objectives and topics for basic emergency response training and self contained breathing apparatus (SCBA) training were appropriately covered and trainee handouts were informative and aided the training process. The training was provided at the appropriate level for the attendees. During SCBA training, there was a strong emphasis by the instructor on personnel safety.

Interviews with those responsible for providing ERO training indicated a change in the EPU's oversight of the training program. Training providers described their past working relationship with the EPU as informal. Communications with the EPU was generally driven by personnel initiative instead of programmatic controls. Recently, the EPU has been more involved in the training program. For example, the EPU had reviewed lesson plans and examinations. The EPU revised ERPIP-904, Emergency Response Training, to more clearly define EPU and trainer responsibilities. The training providers interviewed were aware of the revision to ERPIP-904.

The inspectors identified one discrepancy in the conduct of EP training. ERPIP-904 stated that the EPU was responsible for "evaluating training effectiveness and additional training needs." ERPIP-904 also stated that "trainees are primarily evaluated by drill performance." Based upon reviews of the emergency response plan, ERPIP-904, SOP-20 (Emergency Response Training Program), and the recently superseded Emergency Response Training Program Manual, there was no specific requirement for written examinations or drill participation for ERO requalification. Therefore, there were no programmatic controls to ensure that the above mentioned evaluations were performed. The inspectors were informed that some ERO members received a written examination upon completion of their requalification training and that ERO members participated in drills based upon their assigned position. The EP Director (EPD) stated that individual drill participation had not been tracked in the past although drill attendance sheets were available. He had recently initiated action to begin tracking individual drill participation in a data base. The EPD stated he was considering action which could specify the requalification training evaluation requirements to ensure that the statements in ERPIP-904, as stated above, were met.

c. Conclusions

The inspectors concluded that training was being conducted as specified in the emergency response plan and that the EPU was exercising closer oversight of ERO training. The BGE procedures did not adequately specify how to evaluate or track personnel performance in order to evaluate the effectiveness of EP requalification training.

P6 EP Organization and Administration (IP 82701)**P6.1 Emergency Response Organization Readiness****a. Inspection Scope (82205)**

The licensee briefed the inspectors on its recent initiative for more effectively tracking the ERO's ability to respond in a timely manner to plant emergencies. The inspectors reviewed the BGE self-assessment leading to this initiative and the documentation of the recently performed personnel notification tests.

b. Observations and Findings

BGE formerly tracked ERO personnel response times by conducting a recall drill every six years. After conducting a self-assessment of the adequacy of this practice for ensuring complete and timely response, BGE instituted a quarterly personnel notification test to verify that regulated positions in the ERO could readily be filled. The test solicited and recorded the estimated response time of each respondent. BGE incorporated this test into its preventive maintenance schedule and revised its standard operating procedure to describe the process.

c. Conclusions

The BGE initiative to more formally track and verify emergency personnel response from offsite was considered an appropriate program enhancement.

P8 Miscellaneous EP Issues (IP 92904)**P8.1 (Closed) Inspector Follow-Up Item 50-317&318/97-09-01**

The BGE dose assessment staff at the EOF could not use the on-line dose assessment code to provide an accurate protective action recommendation. This item was opened to track BGE corrective actions for an exercise weakness observed during the November 18, 1997 biennial EP exercise. The inspectors noted that the following corrective actions were either completed or planned for completion in the near future:

- Completion of special one-on-one training given to radiological assessment specialists
- Completion of assessment drills conducted on July 2, and August 13, 1998
- Completion of formal group training on August 10, 11, 1998
- Completion of a formal Job Task Analysis for radiological assessment directors and specialists (results pending at the completion of the inspection)
- Planned personnel reassignments in the above two positions to strengthen performance
- Planned procedure upgrades for the above two positions

Based on the above corrective actions and the favorable performance by the two dose assessment staffs observed, the inspectors considered the BGE correction of the exercise weakness to be adequate. This item is closed.

P8.2 (Closed) Inspector Follow-Up Item 50-317&318/97-08-04

The concern was written to follow-up on BGE actions to identify and protect technical support center (TSC) responders from thyroid exposure during accidents. BGE had performed an initial screening of all TSC responders to determine if they were:

- allergic to potassium iodide (KI) thyroid blocking agent
- willing to ingest KI if it were provided to them
- qualified in the use of self-contained breathing apparatus (SCBA)
- physically able to wear an SCBA

Based on the responses to the above questions, BGE determined that all of its TSC responders would be protected in the event of a radiological accident resulting in large radioiodine concentrations in the TSC. BGE also formalized the above questionnaire into a recurring task that was entered into the EPU's task tracking system. The inspectors concluded that the actions were appropriate. This item is closed.

P8.3 (Closed) Violation 50-317&318/97-08-05; Failure to Test Communication Circuits.

The violation resulted from the failure of BGE to test communication circuits in accordance with Part 50, Appendix E. BGE completed the following actions that were committed to at the time of the January 1998 inspection as well as a February 2, 1998 meeting at the NRC Region I office. These included:

- the reinstatement of monthly testing requirements for the circuits in question
- the resumption of tracking the communication surveillances by the EPU
- 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

Based on satisfactory completion of the above actions, this violation is closed.

P8.4 (Closed) Violation 50-317&318/97-08-06; Training Deficiencies in Dose Assessment Capability

The violation was issued due to training deficiencies in on-shift dose assessment and the use of an automated dose assessment model. BGE completed all actions committed to in its April 20, 1998 response to the Notice of Violation. These included additional training and evaluation of the interim radiological assessment directors (IRADs) as well as upgrading of the ERPIP for the IRADs. The inspectors considered the BGE actions adequate and the performance of the IRADs in the observed scenarios favorable (see section P4). This violation is closed.

V. Management Meetings

X1 Exit Meeting Summary

During this inspection, periodic meetings were held with station management to discuss inspection observations and findings. On October 1, 1998, an exit meeting was held to summarize the conclusions of the inspection. BGE management in attendance acknowledged the findings presented.

X2 Review of UFSAR Commitments

While performing the inspections discussed in this report, the inspectors reviewed the applicable UFSAR sections that related to the areas inspected to verify that the UFSAR wording was consistent with the observed plant practices, procedures, and/or parameters. No discrepancies were identified.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

BGE

C. Cruse, Vice President- Nuclear Energy Division
P. Katz, Plant General Manager
L. Wechbaugh, Superintendent, Nuclear Maintenance
M. Navin, Superintendent, Nuclear Operations
K. Neitmann, Manager, Quality Assurance
B. Montgomery, Director, Nuclear Regulatory Matters
S. Sanders, General Supervisor, Radiation Safety
T. Sydnor, General Supervisor, Plant Engineering
D. Holm, General Supervisor, Plant Operations
T. Pritchett, Superintendent, Technical Support
T. Forgette, Director, Emergency Planning Unit
J. Lemons, Manager, Nuclear Support Services

INSPECTION PROCEDURES USED

IP 61726: Surveillance Observations
IP 62707: Maintenance Observation
IP 71707: Plant Operations
IP 92700: Onsite Follow up of Written Reports of Nonroutine Events at Power Reactor Facilities
IP 73755: Inservice Inspection - Data Review and Evaluation
IP 37551: Onsite Engineering
IP 71750: Plant Support Activities
IP 82205: Shift Staffing and Augmentation
IP 82206: Knowledge and Performance of Duties (Training)
IP 82701: Operational Status of the Emergency Preparedness Program
IP 92904: Follow-Up: Plant Support

ITEMS OPENED, CLOSED AND DISCUSSED

Open

None

Closed

50-318/96-01	LER	Automatic Plant Trip Due to Partial Loss of Offsite Power
50-318/98-004	LER	Manual Plant Trip Due to Moisture Separator Reheater Vent Line Rupture
50-318/98-03	LER	Relays Out of Calibration Due to Bumped Dial
50-317&318/96-10-01	VIO	Failure to Assure Fuel Handling Procedures Were Adequate
50-317&318/96-10-02	VIO	Failure to Support Dry Fuel Cask Unloading
EA 97-192-06014	VIO	Corrective Actions for a Missing Capscrew
EA 97-192-07014	VIO	Corrective Actions for Metallic Debris
EA 97-192-08014	VIO	Corrective Actions for a Failed Grapple Closed Light
EA 97-192-09014	VIO	Corrective Actions for a Stuck Relief Valve on the Upender
EA 97-192-10014	VIO	Corrective Actions for a Damaged CEA Cable
EA 97-192-11014	VIO	Failure to Follow Procedures Regarding Spent Fuel Pool Ventilation
50-317&318/96-10-04	VIO	Incomplete Corrective Actions for Electrical Separation Barriers
50-317/97-09	LER	Automatic Reactor Trip Due to Condenser Vacuum Breaker Opening
50-317&318/98-02	LER	Fire Hose Stations and Room Sprinkler Systems Out-of-Service
50-317&318/97-05-02	VIO	Inadequate Corrective Actions for Problems Identified with the Installation of Compression Fittings
50-318/98-005	LER	Plant Cooldown Due to Reactor Coolant System Pressure Boundary Leakage
50-317/98-03	LER	Technical Specification Violation, Low Pressure Safety Injection Inoperable
50-318/97-003	LER	Chemistry Sampling Not Performed as Required by Technical Specifications
50-317&318/97-03-01	VIO	Multiple Examples of Failure to Document and Report to Management Significant Conditions Adverse to Quality
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
50-317&318/97-08-06	VIO	Training deficiencies in on-shift dose assessment staff use of automated dose assessment model
50-317&318/97-09-01	IFI	The dose assessment staff at the EOF could not use the on-line dose assessment code to provide an accurate protective action recommendation

LIST OF ACRONYMS USED

ASME	American Society of Mechanical Engineers
CEA	Control Element Assembly (Control rod)
CS	Containment Spray
EDG	Emergency Diesel Generator
EOF	Emergency Operations Facilities
EP	Emergency Planning
EPD	Emergency Planning Director
EPRI	Electric Power Research Institute
EPU	Emergency Planning Unit
ERO	Emergency Response organization
ERP	Emergency Response Plan
ERPIP	Emergency Response Plan Implementing Procedure
FAC	Flow Accelerated Corrosion
FME	Foreign Material Exclusion
HPSI	High Pressure Safety Injection
IRAD	Interim Radiological Assessment Director
ISTS/ITS	Improved Standard Technical Specifications
KI	Potassium Iodide
LCO	Technical Specification Limiting Conditions of Operation
LER	Licensee Event Report
LPSI	Low Pressure Safety Injection
NDT	Nondestructive Tests
NOV	Notice of Violation
NPAD	BGE Nuclear Performance Assessment Department
PDR	NRC Public Document Room
PWSCC	Primary Water Stress-Corrosion Cracking
RCA	Radiological Controlled Area
RCS	Reactor Coolant System
RST	Radiation Safety Technician
SACM	diesel manufacturer acronym
SCBA	Self Contained Breathing Apparatus
SWP	Special (radiation) Work Permit
SWPC	Special Work Permit Coordinator
TRM	Technical Requirements Manual
TS	Technical Specification
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Review

Emergency Response Plan and Implementing Procedures Reviewed

DOCUMENT NO.	DOCUMENT TITLE	REVISION /CHANGE NO.
EAL-BASIS	Emergency Action Levels Basis Document	6/0
ERP	Emergency Response Plan	25/0
ERPIP 3.0	Immediate Actions	19/0, 20/0, 21/0
ERPIP-102	Superintendent-Nuclear Operations	2/1, 3/0
ERPIP-105	Control Room Communicator	3/5,4/0
ERPIP-106	Plant Parameters Communications-Control Room	0/1
ERPIP-107	Interim Radiological Assessment	2/1,3/0
ERPIP-108	Interim Radiation Protection	1/0
ERPIP-202	Plant General Manager	2/2,3/0
ERPIP-209	Technical Support Center Communicator	3/4
ERPIP-303	Radiation Protection Director	2/0
ERPIP-314	Operational Support Center Communicator	1/1
ERPIP-315	Plant Parameters Communications-OSC	0/5
ERPIP-318	Onsite Monitoring Team Members	1/1
ERPIP-501	Site Emergency Coordinator	3/1,4/0
ERPIP-509	Emergency Operations Facility Communicator	3/4
ERPIP-511	Radiological Assessment Director	2/0
ERPIP-750	Security	5/0
ERPIP-822	Initial Dose Assessment Manual Calculation Methods	2/0
ERPIP-824	Dose Assessment Reference	1/0
ERPIP-832	Emergency Work Permits	3/0
ERPIP-901	Communications Equipment	2/2
ERPIP-902	Records	½

ERPIP-903	Monitoring Equipment and Instrumentation	1/0
ERPIP-904	Training	3/0
ERPIP-905	Exercises, Tests and Drills	3/0
ERPIP-B.1	Equipment Checklist	20/0, 21/0
ERPIP-B.2	Off-site Survey Points	10/0