

U.S. NUCLEAR REGULATORY COMMISSION
Region I

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Report Nos.: 50-317/89-03
50-318/89-03

Licensee: Baltimore Gas and Electric Company
Post Office Box 1475
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Facility: Calvert Cliffs Nuclear Power Plant, Units 1 and 2

Inspection at: Lusby, Maryland

Inspection Conducted: January 10 - February 20, 1989

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Date

Summary: January 10 - February 20, 1989: Inspection Report Nos.
50-317/89-03 and 50-318/89-03

Areas Inspected: (1) Facility activities, (2) routine inspections, (3) operational events, (4) maintenance, (5) surveillance, (6) radiological controls, (7) physical security, (8) Licensee Event Reports, (9) reports to the NRC, and (10) licensee action on previous inspection findings.

Results:

A violation resulted from improper document control and failure to accomplish a pre-critical functional test (Detail 5). Weak root cause analysis resulted in untimely review of a dropped rod event (Detail 2). The wrong leads were lifted on the Containment Exhaust Purge Valves (Detail 3) resulting in a licensee identified violation of surveillance requirements. Continuing problems with Emergency Diesel Generator Service Cooling Water Valves indicates that the application of these valves and their effect on EDG reliability should receive further consideration (Detail 4). The licensee is applying renewed emphasis to open and vigorous discussions of operational problems and downgraded equipment during their Daily Morning Manager's Meetings. This is a positive trend.

DETAILS

Within this report period, interviews and discussions were conducted with various licensee personnel, including reactor operators, maintenance and surveillance technicians and the licensee's management staff. Night shift inspections were conducted on January 16 and February 16, 1989. A back-shift inspection was conducted on January 12, 1989.

1. Summary of Facility Activities

Unit 1

Unit 1 began the period operating at a reduced power of 70% due to a continuing investigation of #12 Steam Generator Feedwater Pump (SGFP) Controls. On January 10, 1989, the unit was shut down to repair a leaking instrument line on #11 SGFP discharge piping and returned to 70% power on January 12, 1989. Unit 1 power was reduced to 50% on January 15, 1989, in order to investigate and repair a leak on SGFP discharge header and vent/drain line pipe supports. The unit returned to 70% power on January 18, 1989. Power was reduced to 50% on the unit on January 19, for testing of #12 SGFP and returned to 100% power on January 20, 1989. The unit operated at or near full power for the remainder of the period.

Unit 2

Unit 2 began the period and operated at or near full power through January 18, 1989. On January 19, 1989, at 9:25 p.m., a scheduled shutdown began to check Reactor Coolant Pump lubrication oil levels and repair #22 Feedwater Regulating Valve instrument air line. The unit returned to power operation on January 22 and operated at or near full power for the remainder of the period.

General

Inspections by Region I personnel were conducted during the weeks of January 9, 16, and 23, and February 13, 1989, in the areas of Health Physics, Transportation, and Non-Radiological Chemistry. The SALP Board for Calvert Cliffs facility met during the week of January 16, 1989, at the Region I office in King of Prussia.

2. Review of Plant Operation - Routine Inspections (71707)

a. Daily Inspection

During routine facility tours, the following were checked: manning, access control, adherence to procedures and LCO's, instrumentation, recorder traces, protective systems, control rod positions, containment temperature and pressure, control room annunciators, radiation monitors, effluent monitoring, emergency power source operability, control room logs, shift supervisor logs, and operating orders.

No unacceptable conditions were noted.

b. System Alignment Inspection

Operating confirmation was made of selected piping system trains. Accessible valve positions and status were examined. Visual inspection of major components was performed. Operability of instruments essential to system performance was assessed. The following systems were checked:

-- Auxiliary Feedwater Systems for Units 1 and 2 on February 16, 1989.

No unacceptable conditions were noted.

c. Bimonthly Safety System Verification

The inspector independently verified the operability of a selected engineered safety features (ESF) system (Units 1 and 2 AFW systems) by performing a complete walkdown of the accessible portions of the system to:

-- confirm that the licensee's system lineup procedures match plant drawings and the as-built configurations;

-- identify equipment conditions and items that might degrade performance;

-- verify appropriate levels of cleanliness were being maintained;

-- verify technical specification requirements are adhered to;

-- verify instrumentation lineup and calibration; and

-- verify proper valve position, availability for function and position indication.

No unacceptable conditions were identified.

d. Biweekly and Other Inspections

During plant tours, the inspector observed shift turnovers; boric acid tank samples and tank levels were compared to the Technical Specifications; and the use of radiation work permits and Health Physics procedures were reviewed. Plant housekeeping and cleanliness were evaluated.

- On January 11, 19, 20, and February 2, 9 and 15, 1989, the inspector attended the Plant Operations and Safety Review Committee (POSRC) meetings.
- On February 16, 1989, the inspector attended the Offsite Safety Review Committee (OSSRC) meeting.
- The inspector reviewed logs, conducted walkdowns of the Main Control Board for Units 1 and 2, compared operating conditions with Technical Specification requirements, observed operators maneuver the unit and accompanied Auxiliary Operators in their rounds. Housekeeping appeared better than last inspection but still needed improvement. Some scaffolding appeared uncontrolled and has remained in place for long periods of time. Tools were adrift in various locations in the Auxiliary Building. These housekeeping discrepancies were discussed with licensee management for followup.
- As a result of the Daily Morning Managers Meeting, the licensee develops a Plant Status Report which serves as the agenda for the meeting. Once a week, at this morning meeting, a review is conducted of long standing operational concerns. These items deal with equipment which is out of service, in a degraded condition, or conditions requiring further investigation. The inspector observed that this forum of various department managements discussing timetables and corrective actions was a good initiative.

With the exception of housekeeping deficiencies discussed above, no other significant concerns were identified.

Root Cause and Problem Identification Systems

The inspector conducted a review of some of the licensee's problem identification and corrective action systems. The focus of this review was to determine what level of significance would trigger the corrective action system. The licensee has a number of systems for identification of deficient conditions. Corrective action follows from these systems.

Specifically, the inspector reviewed the licensee program to identify and document plant events and the associated root cause(s). The inspector found that the overall root cause analysis program was weak and informal, however, the licensee had already identified this weakness and initiated actions to strengthen the program. Weaknesses were also identified with the problem identification system in that only significant plant events were evaluated, documented and trended.

Station reports of the plant events are performed at different thresholds. One such type of report is that identified in the Calvert Cliffs Reporting Requirements Procedure (CCI-118). NRC reportable occurrences, exceeding a safety limit, unscheduled plant shutdowns and events for which media interest are involved are examples of mechanisms which initiate a CCI-118 required report.

The Calvert Cliffs Event Reports Procedure (CCI-127) provides instructions to formally investigate and/or document significant in-house events. The following events normally require such a report: (1) unscheduled plant trips, (2) events that result in a plant shutdown or extends a plant shutdown, and (3) significant, unplanned radioactive releases. The licensee typically writes an average of about one event report per month. The above reports involve some type of informal assessment regarding the root cause of the initiating event.

The inspector noted that both types of plant event reports generated by the licensee are typically only for significant events. There is no formal evaluation and documentation process for events of lesser significance, but are nevertheless important to evaluate for root cause analysis and event tracking to identify potential adverse performance trends, even if such events do not result in plant shutdowns, reportable ESF actuations or other significant occurrences. Evaluating lesser significant events may allow for prompt resolution of the event cause(s) and possibly prevent more significant events from occurring. A specific example of the need to evaluate apparently non-significant plant events follows.

On January 11, 1989, during the Unit 1 startup, one control rod dropped into the reactor core during an attempt to withdraw control rods while in Mode 3 (Hot Standby). Plant operators locally verified that a power supply or fuse failure had not occurred. Then they successfully returned the rod to the rod bank position prior to withdrawing it, and continued with the plant startup.

On January 13, during an independent follow-up review of startup activities, the inspector questioned operators on the dropped control rod event. The inspector found that the operators did not (1) notify the appropriate station group to troubleshoot the event, (2) determine a root cause prior to continuing with the startup, or (3) document the event via a plant report. While the inspector agreed that the significance of the event was minimized due to the plant configuration (Mode 3), the inspector found that the operating staff failed to recognize its potential adverse safety implications. For example, if the nature of the problem had been an intermittent type of failure mode of an associated circuit card, that same card could have malfunctioned anytime during the latter phases of plant startup or power operations, possibly resulting in a reactor trip. The inspector informed the licensee of the above concerns, and the licensee subsequently initiated several corrective actions, including testing the associated control rod bank and monitoring the circuit cards via a strip chart recorder. No further deficiencies in control rod operation were detected.

In conclusion, several areas of concern were identified in this area: (1) no formal process was in place to systematically evaluate, document, and trend minor events which could possibly have underlying safety significance, (2) although reports are generated for the more significant events, a formal root cause analysis program is not in effect to methodically determine the principal and contributing causes, and (3) licensee personnel did not appear to be aggressive in attempting to investigate minor operational events. Licensee resolution of the above concerns will be closely monitored by the NRC on future inspections and will be tracked as an unresolved item (50-317/89-03-01; 50-318/89-03-01).

3. Operational Events (93702)

a. Mini-Outage

On January 19, 1989, Unit 2 was placed in hot shutdown to allow repair of an instrument air line associated with the Feedwater Regulation Valve #21 positioner. A small leak had developed in the instrument air tubing due to an identification tag which was in contact with the tubing causing fretting wear of the tube wall. A temporary repair was completed prior to the plant shutdown allowing for a planned shutdown to execute a permanent repair.

The inspector, through discussions with various plant personnel and review of work orders, assessed work accomplished during the shutdown on the following equipment:

(1) Main Feedwater Regulation Valve #21 Instrument Air Tubing

The repair to the main feed regulating valve positioner consisted of the replacement of the instrument air lines to that valve.

On August 24, 1988, Unit 1 tripped due to the failure of the air line on the #12 Main Feed Regulating Valve. The instrument air line failed due to cyclic stress and fatigue induced by vibration and inadequate support of a pressure switch in the instrument air line.

On September 7, 1987, Unit 2 tripped due to a failed instrument sensing line (fatigue failure from vibration) for a pressure transmitter associated with the turbine electro-hydraulic control system.

Region I Combined Inspection Report 50-317/88-19; 50-318/88-19 described a weakness in the control over tubing configurations (design and maintenance). Because the cause of the most recent leak in the air line was the result of fretting verses fatigue failure, the inspector concluded that evaluations of air supply installations which are being conducted as a corrective action to the earlier trips should include this failure mode. The inspectors will review future corrective actions taken by the licensee in this area.

(2) Reactor Coolant Sample Valves 2-CV-5467 and 2-CV-5465

The position indication for the Unit 2 Reactor Coolant System Hot Leg Sample Isolation Valve (2-CV-5467) failed resulting in an indicated intermediate position. 2-CV-5467 is one of three inside containment isolation valves for the Reactor Coolant System Sample Header. The other two inside containment isolation valves are the pressurizer vapor space sample isolation valve (2-CV-5465) and the pressurizer liquid space sample isolation valve (2-CV-5466). Due to difficulties with the pressurizer sample valves, the unit has operated with the manual isolation valves associated with these valves closed. These sample points were not included as part of the Post Accident Sampling System (PASS).

Without positive indication of the Reactor Coolant System Hot Leg Sample Isolation Valve (2-CV-5467), the sample system was aligned to demonstrate that the valve was closed by measuring leakage flow past the valve to the sample sink. The system engineer, by correlating data from Local Leak Rate Testing of the Sample System Header penetration to liquid leak rate, established a maximum liquid leakage with 2-CV-5467 exposed to

Reactor Coolant System Pressure (2250 psia) which was acceptable. Until January 19, the liquid leak rate remained below this limit. When the limit was exceeded, the outside containment isolation valve 2-CV-5464 was closed and de-powered in accordance with Technical Specification 3.6.4.1 Remedial Action.

Reactor Coolant Sample Valve 2-CV-5467 had work performed on its position indicator during the shutdown. The position indication on this type of valve has a history of failure at Calvert Cliffs. After completion of the work and functional testing, a chemistry technician who took a hot leg sample, noted that the liquid leakage at the sample sink past 2-CV-5467 appeared to be greater than the leakage prior to the repair of the position indicator. The System Engineer conservatively determined that a Local Leak Rate Test (LLRT) should be performed. The inspector reviewed the results of the LLRT and found them to be within the acceptance criteria.

(3) Reactor Trip Breakers TCB 5, TCB 7, and TCB 8

Corrective maintenance was performed on Reactor Trip breakers TCB 5,7 and 8 during the mini-outage. In all three instances the work was required due to the failure of the breakers to re-close after opening. The safety function of these breakers is to open. The inspector reviewed the functional testing associated with the repair of the breakers. All of the breakers were exercised with the opening times measured within the tolerance of the acceptance criteria prior to being returned to service.

The inspector attended a critique of the mini-outage conducted on January 26. The licensee's critique identified several areas for improvement which were assigned to appropriate responsible departments for corrective action. The inspector considered two of the critique items to be of significance; they are discussed below.

There was a need for better coordination of the Radiological Control department resources to the ongoing maintenance activities as exemplified by the fact that when the outage was extended beyond the original schedule, insufficient resources were available to support the newly scheduled work in the containment building during the 00-08 shift on January 21.

With regard to the repair of the position indication associated with 2-CV-5467, the licensee's critique identified that a design change was scheduled for installation during the upcoming outage to replace the sample valves with a different style valve. However, due to the lead time required to procure the replacement valves, a temporary improvement to the position indication had been proposed for the

existing valves in May of 1988. The installation of the improvement required Design Engineering review and approval. The review and approval was not accomplished as expected by the Maintenance Department representatives present at the critique meeting. Had the improvement been approved prior to the Mini-Outage, it could have been installed during the shutdown to ensure the reliability of the position indication for these valves until they are replaced.

The inspector concluded that although the coordination between the departments performing the maintenance activities and the support groups resulted in additional difficulty or delays in completing the work, the maintenance activities reviewed were completed with the proper emphasis on ensuring the safe operation of plant equipment, prior to plant startup.

b. Wrong Leads Lifted on Containment Exhaust Purge Valves (CV1412 and CV1413)

On February 14, 1989, at 2:00 p.m., with Unit 1 at 100% power, the licensee's Electrical and Control planner was in the process of preparing a lifted lead request required for the upcoming Unit 1 mini-outage scheduled on March 2-12, 1989. The planner was using a newly revised version of Calvert Cliffs Instruction (CCI)-117, Temporary Modification Control, which requires the individual preparing the request to consult and attach all pertinent drawings to the request. The planner compared his request to the existing request and found that they did not agree. The planner confirmed and physically verified in the field that the existing request was incorrect and in effect required the wrong leads lifted for the Containment Exhaust Isolation Valves (CV1412 and CV1413). The planner notified the Shift Supervisor who determined that the surveillance requirements in Technical Specification (TS) 4.6.1.7 were not being met and required that the wrong lifted leads be reconnected and the appropriate leads be lifted for the Containment Purge Isolation Valves. At 5:48 p.m., Unit 1 entered Limiting Condition for Operation (LCO) 3.0.3 for not meeting LCO 3.6.1.7. At 7:25 p.m., Unit 1 exited the LCO and met the requirements of TS 3.6.1.7.

In response to NUREG-0737 requirements for Containment Isolation Dependability, Baltimore Gas and Electric chose to keep Containment Purge Supply and Exhaust Isolation Valves closed. A license amendment was approved in February 1982, which established TS 3.6.1.7. The TS require the Containment Purge Valves closed in Modes 1 thru 4.

There are two Containment Purge Supply and two Containment Purge Exhaust valves in Unit 1. The valves are 48" air operated butterfly valves. Each valve has a manual air isolation valve and an air supply solenoid valve. TS 3.6.1.7 says that the valves "...shall be closed by isolating air to the air operator and maintaining the solenoid air supply valve deenergized."

In order to satisfy TS 3.6.1.7, the licensee closes and tags the manual air isolation valves and lifts the electrical leads to the solenoid air operated valve for each containment purge valve. Surveillance requirements 4.6.1.7 for TS is performed monthly and before changing from Mode 5 to Mode 4 using Surveillance Test Procedure (STP) 0-55-1, Containment Integrity Verification.

Contrary to the above requirement, this discovery also made the licensee aware that a TS violation existed in that Mode 4 was entered without the Containment Purge Exhaust Isolation Valves (CV1412 and CV1413) air supply solenoid valves being deenergized. The licensee determined that the isolation had existed since May 1987. Thus, the surveillance requirement had not been properly satisfied during the same period of time.

STP-0-55-1 had been performed by Electrical and Controls technicians who did not verify the proper lifted leads. In some cases the technicians believed that the leads lifted were correct and the STP was incorrect. Other technicians verified that the lifted leads were controlled under a CCI-117 lifted lead request, not under the STP. Technicians ascribed greater credibility to the lifted lead request than to the STP. When a difference was noted between the STP and the actual leads lifted, technicians failed to exercise a questioning attitude to determine which was correct or to get the STP or lead request corrected.

One particular weakness identified by the event was that as a part of the present Facility Change Request (FCR) process, Drawing Change Notices (DCNs) were established to show modifications until drawings could be updated. This required the individual to search out any outstanding DCNs prior to using drawings. This approach places the burden on the individual and increases the probability for error. In addition, there appeared to be a lack of procedural guidance, a lack of procedure adherence, and a questioning attitude among technicians.

The licensee has determined that the probability of operating the two Containment Exhaust Isolation Valves (CV1412 and CV1413) was extremely remote in that the manual air supply valves were closed and tagged and the Control Room handswitches were also tagged as an extra precaution to prevent operation.

The incorrectly lifted leads disabled the Engineered Safety Features Actuation System (ESFAS) inputs to CV1412 and CV1413 as well as the Hydrogen Purge Valves. Containment Purge Isolation (CPI) was the ESFAS inputs to the CV1412 and CV1413. CPI would be required by TS in Mode 6. The Hydrogen Purge Valves would be required to be closed per TS 3.6.1.8 during Modes 1-4. Since the lifted leads would be reconnected upon entrance into Mode 5 from Mode 4, requirements for ESFAS signal would be satisfied.

The licensee is taking the following corrective actions to preclude reoccurrence of this type of event: (1) STP-0-55 will be revised to include the correct leads that should be lifted; (2) as the result of a BG&E initiative not related to this event, the lifted lead request procedure was revised in January 1989. The current procedure now requires E&C personnel to review all applicable drawings and DCNs and attach them to the request package; (3) training was conducted for E&C personnel in mid-October 1988 to stress the importance of procedural compliance; (4) training will be conducted with all E&C personnel to review this event and stress the need for personnel to ask questions when information is conflicting; (5) E&C personnel who were involved with the incorrect lifted lead requests and STPs will be counseled on the events; and (6) the licensee will evaluate the incorporation of permanent jumpers like key switches into the circuits of equipment that requires lifted leads during various modes of operation. This will minimize the potential for events like this in the future.

This item is considered a licensee identified violation (50-317/89-03-02) in accordance with Section V.G of Appendix C to 10 CFR 2.

4. Plant Maintenance (62703)

The inspector observed and reviewed maintenance and problem investigation activities to verify compliance with regulations, administrative and maintenance procedures, codes and standards, proper QA/QC involvement, safety tag use, equipment alignment, jumper use, personnel qualifications, fire protection, retest requirements, and reportability per Technical Specifications.

#12 Emergency Diesel Generator Problem

On January 17, 1989, the plant experienced several problems with diesel generator (DG) #12. The plant was conducting a post maintenance surveillance test run. The first attempt to run the DG resulted in a 10.2 second start time (10 seconds is the required start time according to the Technical Specifications). The root cause was determined to be an Emergency Overspeed Switch which was probably bumped during maintenance. The alignment of the switch was adjusted and a second start of the DG was attempted. This also resulted in a greater than 10 second start time and the root cause was lack of fuel to the injectors. During maintenance the fuel was drained from the injectors. Priming the engine prior to start fills the fuel lines but not the injectors.

During a third test run, the #12 DG experienced problems with the service water control valve PDIC-1588. The valve was observed to go full open (greater than 15 psid) and, after some time, the position returned to a normal reading of 7.6 psid, but the valve operation was erratic.

The inspector witnessed portions of the troubleshooting under Maintenance Order 208-347-410B. Technicians removed a lead to simulate a diesel run in order to allow troubleshooting of the control system. A test run at the conclusion of the troubleshooting revealed the same problem - service water valve PDIC-1588 was controlling at greater than 15 psid. The problem was attributed to air binding in the sensing lines. The lines were properly vented and the controller was tuned to achieve stable control of the valve within normal values.

A related problem was experienced on the #11 DG service water cooling valve last year which resulted in the removal from service of #11 DG several times (Inspection Report 317/88-32; 318/88-32, Detail 4).

The licensee needs to address the application of these valves in the context of plant experience, maintenance required and reliability of operation. The safety significance of the operation of the valves is somewhat minimized since a safety actuation of the emergency core cooling systems would require the valves to open fully. Even with the consideration, the amount of down time for the DGs as a result of these valves appears excessive.

No unacceptable conditions were noted.

Main Vent Sampler

On January 12, 1989, at approximately 8:00 a.m., with Unit 2 operating at 100% power, the Main Particulate and Iodine Vent Sampler was taken out of service in order to replace worn hoses. A Senior Control Room Operator notified a technician in the Chemistry section of Operations' intentions to remove the vent sampler from service. The technician noted the vent sampler out of service in the equipment status board in the Chemistry Office. An entry was also made in the Control Room log indicating that the vent sampler was in fact removed from service at 8:00 a.m.

At approximately 11:00 a.m., on January 12, 1989, the Chemistry Supervisor reviewed the equipment status board in the Chemistry Office and observed that the particulate and iodine portions of the main vent sampler were posted out of service. The Control Room was notified that Technical Specification (TS) 3.3.3.9, Action 38 was not being met. The Control Room took appropriate action to clear tags and return the sampler to service. At 11:25 a.m., the main vent sampler was returned to service and the TS action statement was exited. TS 3.3.3.9, Action 38 requires that with the iodine and/or particulate sampler inoperable, effluent releases via the affected pathway may continue provided samples are continuously collected as required in TS Table 4.11-2 with auxiliary sampling equipment.

Contrary to the above, on January 12, 1989, for a period of three hours and twenty five minutes, continuous samples of effluent releases as required by TS Table 4.11-2 were not taken with auxiliary sampling equipment.

The main vent sampler measures radioactivity and ensures gaseous radioactive releases are in accordance with TS requirements. The data accumulated from the sampler is used to provide periodic reports which satisfy requirements in the Offsite Dose Calculation Manual. The licensee has determined that the wide range effluent monitor was in service and capable of monitoring radioactive gaseous releases. No radioactive level increases were noted during the period in question. Therefore, the licensee concluded that there were no iodine or particulate releases. The inspector has verified that the wide range monitor has the same detection capability as the main vent sampler.

In addition to returning the main vent sampler to service, the licensee is implementing the following corrective actions to preclude recurrence:

- (1) A guidance document will be drafted detailing the responsibilities of both the Operations and Chemistry sections with respect to plant evolutions that have the potential to affect plant chemistry or required action from Chemistry technicians.
- (2) Procedures will be revised, as necessary, to assure implementation of the required actions as detailed in the guidance document.
- (3) Training will be provided to all personnel affected by the new guidance document and procedure changes. The focus of this training shall be to inform all affected individuals of their responsibilities with regard to plant evolutions affecting Chemistry and the procedures that lend guidance on how to satisfy these responsibilities.
- (4) The Operations section will perform an evaluation to determine if there are similar situations in the plants TS which could contribute to communication deficiencies between Operations and other plant sections. Additional corrective actions will be implemented based upon the results of this evaluation.
- (5) The Chemistry section is evaluating the prudence of purchasing a redundant plant vent sampler. This sampler would be available as a back up to the current sampler and used in situations when the current sampler was out of service for repair.
- (6) The Chemistry section will establish procedural guidance to assure that incoming information applicable to equipment or evolutions for which they are responsible is relayed to qualified personnel within the section for evaluation.

This is a licensee identified violation in accordance with 10 CFR 2, Appendix C, Section V. G. (50-318/89-03-02).

5. Surveillance (61726)

The inspector observed parts of tests to assess performance in accordance with approved procedures and LCO's, test results (if completed), removal and restoration of equipment, and deficiency review and resolution.

Missed Manual Reactor Trip Surveillance

On February 8, 1989, the Operations Surveillance Test Coordinator identified a portion of Surveillance Test Procedure STP-0-6-1 "RPS Startup Test" which had been inadvertently deleted from the current revision of the procedure. The portion missing was the last page of the procedure which included the Technical Specification surveillance requirement to perform a channel functional test of the manual reactor trip feature. The surveillance test procedure for Unit 2 which includes the manual reactor trip functional test (STP-0-6-2) was being revised to incorporate changes which were already included in the Unit 1 surveillance test procedure (STP-0-6-1). STP-0-6-1 was being used as a reference. The Operations Surveillance Test Coordinator, while revising STP-0-6-2 noted that the corresponding Unit 1 STP-0-6-1 did not include the steps which functionally tested the manual reactor trip.

Revision 11 to STP-0-6-1 became effective on August 10, 1988, and contained 14 listed effective pages. Apparently due to an administrative error during reproduction of the master copy for use, the last page, page 14 of the procedure was misplaced. The steps to test the manual reactor trip channels were included on that page. The surveillance test procedure was completed without accomplishing a functional test of the manual trip channels and a plant startup occurred on August 25, 1988. Subsequently, STP-0-6-1 was revised twice to incorporate minor changes to unrelated portions of the procedure. Revision 12 became effective on October 19, 1988. Since page 14 was still missing from the master copy when Revision 12 was handled by Word Processing, the list of effective pages was reduced to 13. A startup occurred using Revision 12 of STP-0-6-1 on November 9, 1988. The next revision to STP-0-6-1 became effective on November 30, 1988 and was used for a plant startup on January 11, 1989. The failure to conduct a functional test of the manual reactor trip channels prior to three reactor startups on August 25, 1988, November 15, 1988, and January 11, 1989, is considered to be a violation of NRC requirements (50-317/89-03-03).

The inspector reviewed the operating history of the manual reactor trip channels and the operation of the manual trip during normal operating evolutions and for post maintenance testing. No failures of the manual reactor trip channels were identified. During normal reactor shutdowns, all of the Control Element Assemblies (CEAs) are inserted to their lower electrical limit, then the manual reactor trip is initiated to de-energize the Control Element Drive Mechanisms. Also, preventive maintenance (PM-1-58-E-Q-1) is performed on the reactor trip breakers on a quarterly basis. Post maintenance testing of the breakers involves the operation of the manual reactor trip feature. There were no failures of the manual

reactor trip function during the post maintenance testing performed in conjunction with the preventive maintenance since August 10, 1988. Therefore, although the manual reactor trip channels were not functionally tested prior to three reactor startups, as required by the Technical Specifications, it is expected that the manual reactor trip channels would have functioned, if required. Therefore the safety significance of this occurrence is minimal.

The inspector is concerned however, that an error such as this one, which resulted in the failure to perform a Technical Specification required surveillance test, was not identified in a more timely fashion. There were several contributing factors to the failure to identify the discrepancy in the procedure which resulted in the failure to test the manual reactor trip channels.

Revisions to the procedure to incorporate changes did not involve review of portions of the procedure unaffected by the change. Since the revisions of STP-0-6-1 were accomplished to incorporate minor changes in unrelated sections of the procedure, it is reasonable to expect that the reviews of the revisions would not identify the fact that the functional testing of the manual reactor trip channels had been removed from the procedure. However, a simple check to ensure that the entire procedure was present after word processing would have identified the missing page.

Reviews of STP-0-6-1 prior to and after completion of the tests did not have the proper focus nor information readily available to identify the procedural discrepancy. The reviews in the Control Room by the Licensed Operator prior to performing the test procedure and Shift Supervisor after the completion of the test procedure were not intended to be technical reviews of procedure content. The format and content of surveillance test procedures did not delineate the purpose nor contain a discussion of the objectives of the tests included in the procedure. If this information had been available it would have been more likely that a non-technical review would have identified the missing steps of the procedure. Also, there was no administrative method which identified the fact that a page was missing from the procedure other than the list of effective pages, which was erroneously updated to reflect the missing page in revisions 12 and 13. These facts combined, resulted in the missing page not being readily apparent to on-shift Control Room personnel. However, the inspector considered that the review of the completed tests performed by the System Engineer and the Surveillance Coordinator should have identified the discrepancy when the procedure was performed as revision 11 with a discrepancy between the number of pages in the completed procedure and the list of effective pages.

The biennial review of STP-0-6-1 was three months overdue. All surveillance test procedures receive a biennial review as required by Quality Assurance Procedure QAP 16 "Surveillance Testing" Revision 18, however, STP-0-6-1 had last been reviewed for this purpose on October 27, 1986. The purpose of this review is to determine if the procedures adequately meet their intended functions and are up to date. When the discrepancy of the missing page was identified, a biennial review was completed. No other discrepancies were identified. The inspector examined the biennial review checklist and concluded that, had the biennial review been completed, sufficient guidance was included in the checklist to identify the discrepancy. The inspector also reviewed the status of biennial reviews for other operations surveillance procedures and found that although there had been a number of operations surveillance procedures overdue, recent efforts had reduced the backlog such that all biennial reviews would have been brought up to date during the first quarter of 1989. The inspector discussed the status of procedures which require biennial reviews with the Quality Assurance Department Supervisor. The licensee had previously identified a concern with the timely completion of the biennial reviews and has initiated actions to provide for more timely biennial reviews. The inspectors will follow the licensee's actions in this area.

Licensee corrective action prior to the end of the report period included the addition of a step to all surveillance procedures to verify that the latest revision is being used and that each of the effective pages listed is included. Further corrective actions will be reviewed in future inspections.

6. Radiological Controls (71707)

Radiological controls were observed on a routine basis during the reporting period. Standard industry radiological work practices, conformance to radiological control procedures and 10 CFR Part 20 requirements were observed.

Improper Periodic Sampling of Turbine Building Sumps

On February 9, 1989, with Units 1 and 2 at 100% power, the Shift Supervisor was notified that during a discussion for qualification of a Chemistry Technician, the technician questioned the periodicity of the surveillance being performed to satisfy the requirement of Technical Specification (TS) 3.11.1.1, Surveillance 4.11.1.1.1, Table 4.11-1. The Shift Supervisor determined that the sampling requirements as per the TS were that the Turbine Building Sumps should be sampled once per month for each unit. Contrary to the above the Turbine Building Sumps were being sampled alternatively. Thus, the Turbine Building Sumps of each unit were being sampled every two months.

The plant's Yard Oil Interceptors collect the effluent of the Turbine Building Sumps for both units and was sampled and analyzed for gamma emitters on a monthly basis. The licensee identified that the above condition had existed at least since 1980, but that there had not been detectable gamma activity in the Turbine Building Sumps or the Yard Oil Interceptor during this period.

The licensee has implemented the following corrective actions: (1) all chemistry Technicians will be informed of the missed sampling frequency and trained on the correct sampling frequency, (2) the procedure will be upgraded to reflect the proper sampling requirements, and (3) a detailed review of the Chemistry related Technical Specifications has been performed and the requirements have been cross referenced to the existing Chemistry procedures to ensure full compliance with the Technical Specifications. This item is considered a licensee identified violation (50-317/89-03-04;50-318/89-03-03) in accordance with Section V.G of Appendix C to 10 CFR 2.

7. Observation of Physical Security (71707)

Checks were made to determine whether security conditions met regulatory requirements, the physical security plan, and approved procedures. Those checks included security staffing, protected and vital area barriers, vehicle searches and personnel identification, access control, badging, and compensatory measures when required.

No unacceptable conditions were noted.

8. Review of Licensee Event Reports (LERs) (90712 and 92700)

LERs submitted to NRC were reviewed to verify that the details were clearly reported, including accuracy of the description of cause and adequacy of corrective action. The inspector determined whether further information was required from the licensee, whether generic implications were indicated, and whether the event warranted on site follow up. The following LER's were reviewed:

<u>LER No.</u>	<u>Event Date</u>	<u>Report Date</u>	<u>Subject</u>
<u>Unit 1</u>			
88-14*	10/29/88	1/12/89	Leaking Steam Isolation Valve Causes Excessive Check Valve Cycling Resulting in Check Valve Misalignment and Leakage
88-15	12/30/88	01/29/89	Movement of Heavy Loads Over the Spent Fuel Pool

<u>LER No.</u>	<u>Event Date</u>	<u>Report Date</u>	<u>Subject</u>
<u>Unit 2</u>			
89-01	01/12/89	01/13/89	Plant Vent Sampler Inoperable Without Observing Proper Action Statement Results in a Condition Prohibited by TS Caused by a Lack of Communication

*Detailed examination of this event is documented in Detail 8 of Inspection Report 317/88-32;318/88-32.

No unacceptable conditions were noted.

9. Review of Periodic and Special Reports (90713)

Periodic and special reports submitted to the NRC pursuant to Technical Specification 6.9.1 and 6.9.2 were reviewed. The review ascertained: inclusion of information required by the NRC; test results and/or supporting information; consistency with design predictions and performance specifications; adequacy of planned corrective action for resolution of problems; determination whether any information should be classified as an abnormal occurrence; and validity of reported information. The following periodic reports were reviewed:

-- December 1988 and January 1989 Operating Data Reports for Calvert Cliffs No. 1 Unit and Calvert Cliffs No. 2 Unit, dated January 11, 1989 and February 13, 1989.

-- Semi-Annual Effluent Release Report dated February 14, 1989.

No unacceptable conditions were identified.

10. Licensee Action on Previous Inspection Findings (93702 and 92701)

(Closed) Unresolved Item (50-317/85-22-05; 318/85-20-05). A review of the licensee's training program and lesson plans relative to personnel working in the EQ area indicates the scope and depth of the training is satisfactory. Further, the inspector has verified, through review of attendance rosters, that personnel involved in the EQ program have received the requisite training. The licensee continues to train existing personnel on changes in the EQ program and provides initial training to incoming new personnel. This item is closed.

(Closed) Unresolved Item (50-317/86-20-01; 50-318/86-20-01). Failure to Verify the Closure of Containment Penetrations 10; 11; 12; 47A, B, C, and D; 49A, B, and C; and 60 During Core Alterations and Irradiated Fuel Movements as Required by Technical Specification 4.9.4.9. The inspector reviewed Surveillance Test Procedure STP-0-55A-2 to ensure that the above penetrations had been included in the procedure prior to the Spring 1987 outage as committed. The same procedure for Unit 1, STP-0-55A-1, has not been so revised; however, the revision is in the review and approval process. Records were reviewed to ensure that the affected penetrations had been verified as required during period of core alterations/irradiated fuel movements in Unit 1 during the Fall 1986 and Spring 1988 outage. This item is closed.

(Closed) Unresolved Item (50-317/87-04-01; 50-318/87-04-01). Implement a System to Provide Training Related Non-Conformance Reports (NCRs) to the Training Department. The licensee implemented a procedure change to address the inspector's concern, however, the change did not clearly document either the intent of the change or how the Training and Quality Assurance groups actually implemented the change. The inspector discussed the current procedure with the licensee, who agreed that the wording of the instruction was insufficient to clearly reflect the current practice. The licensee subsequently initiated a procedure change to reflect the above. The inspector confirmed that the licensee properly implemented the intended NRC reviews to evaluate the potential for its impact on training. Based upon proper implementation and initiation of the appropriate procedure change, this item is closed. The inspector will verify the adequacy of the final change during a future routine inspection.

(Open) Violation (50-317/88-01-04; 50-318/88-01-04). Temporary Changes to Station Procedures Without the Required Documented Reviews. The licensee responded to the violation by letter dated April 18, 1988. The licensee discussed the need for attention to detail and procedural adherence with plant operators, and stressed the station requirements as related to the related events with plant operators. The licensee's response stated that, in one instance, the required two member review was actually performed, however, the procedure was not initiated as required. Further inspector review identified that the apparent intent procedure change that was involved in that instance was not properly implemented. A review of training material and discussions with selected operators indicated that there are not adequate guidelines which clearly define intent and non-intent procedure changes. Classification for some changes may be subjective and therefore, may be subject to different interpretations. This item remains open pending resolution of the above concern.

(Closed) Unresolved Item (50-317/88-01-01; 50-318/88-01-01). Unsatisfactory housekeeping and material conditions. The licensee responded to these items on April 18, 1988. The four areas specifically addressed were material adrift in the vicinity of safety-related buses and panels, scaffolding erected near safety-related equipment for long periods of time, general housekeeping in the Unit 2 east penetration room 5' elevation and the intake structure, and contamination in the ECCS pump rooms. Inspectors have verified that corrective action was implemented to satisfy the aforementioned weaknesses. This item is closed.

(Closed) Inspector Follow Item (50-318/86-03-01). Complete Inspection Program of Safety-Related 4 KV Breakers. The licensee had inspected all but six safety-related breakers (which were inaccessible due to plant operation) to verify that newly installed drive pawls had been properly welded. The inspector reviewed completed maintenance orders 206-119-474A, -475A, -477A, -473A and 206-133-835A and determined that these remaining breakers were satisfactorily inspected. This item is closed.

(Closed) Unresolved Item (50-317/86-20-02). Apparent Failure to Demonstrate the Operability of the Unit 1 Containment Spray Systems by Verifying That Every Nozzle in Each Spray Header is Unobstructed. The inspector reviewed Surveillance Test Procedure STP-M-14-1 (Revision 3), approved May 9, 1988, to verify that the procedure correctly reflects the as-built condition of 90 spray nozzles in the outer ring and 89 in the inner ring. The inspector also reviewed Bechtel Eastern Power Corporation letter of November 21, 1986, which concludes that 89 nozzles in the outer ring (the number verified unobstructed during the conduct of the November 20, 1983 test) is acceptable and that for the period which includes peak containment pressure, spray through the ring would be approximately equal to the value used in containment pressurization calculations. Review of STP-M-14-1 (Revision 3) prepared May 19, 1988, indicated satisfactory results. This item is closed.

(Closed) Violation (50-317/86-20-03; 50-318/86-20-02). Apparent Failure to Properly Review Completed Surveillance Tests and Take Corrective Action for Out of Specification Test Results. The licensee revised the effected procedures to provide for the documentation of required calculations and acceptance criteria. Administrative controls were revised to require a temporary change to a surveillance test procedure which was not or which could not be completed in its entirety in order that it might be signed off as complete. A guide to aid these involved in the review of completed test procedures have been provided with a "Guide for Review." An audit was performed of surveillance test procedures in order to establish whether the problems cited in the violation were generic to the surveillance program. The audit, which included 43 randomly selected procedures in the areas of operations, fire protection, inservice inspection, electrical and controls and mechanical maintenance, concluded that the cited examples were isolated cases. Two findings of program inadequacy were also identified which are being pursued by the licensee under the corrective action program. This item is closed.

11. Unresolved Items (93702)

Unresolved items require more information to determine their acceptability. One such item is discussed in Detail 2.

12. Exit Interview (30703)

Meetings were periodically held with senior facility management to discuss the inspection scope and findings. A summary of findings was presented to the licensee at the end of the inspection.