

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos. 50-317/90-15
50-318/90-14

Docket Nos. 50-317
50-318

License Nos. DPR-53
DRP-69

Licensee: Baltimore Gas and Electric Company
MD Rts 2 & 4, P.O. Box 1535
Lusby, Maryland 20657

Facility Name: Calvert Cliffs Units 1 and 2

Inspection At: Lusby, Maryland

Inspection Conducted: July 9-13, 1990

Inspectors: A. Finkel
A. Finkel, Senior Reactor Engineer, DRS

Aug 4, 1990
date

Approved by: David Bessette
D. Bessette, Chief, Operational Program
Section, Operations Branch, DRS

8/6/90
date

Inspection Summary: Announced Inspection on July 9-13, 1990 (Combined
Inspection Report Nos. 50-317/90-15 and 50-318/90-14

Areas Inspected: An inspection of the licensee's maintenance program was conducted to follow-up on the findings of the NRC maintenance team inspection (MTI) report nos. 50-317/90-80 and 50-318/90-80.

Results: The licensee has instituted programs, updated procedures, and increased personnel in selected areas to improve their maintenance program since the time of the maintenance team inspection. Two of the four unresolved items identified in that inspection were not ready for closure and their status is discussed in paragraphs 4.8.2 and 4.8.3.

DETAILS

1. Persons Contacted

Baltimore Gas and Electric Company

- *D. Butler, Supervisor, Quality Control
- *T. Camilleri, Maintenance Superintendent
- *J. Hayden, Supervisor Maintenance Program
- *L. Larragite, Compliance Engineer
- *J. Perkins, Design Engineer
- *K. Sebra, Principal Engineer
- *C. Sly, Compliance Engineer
- *L. Tucker, General Supervisor, Plant Engineering
- *L. Weckbaugh, General Supervisor, Electrical and Controls

United States Nuclear Regulatory Commission

- *T. Kim, Resident Inspector

During the course of the inspection the inspector contacted other members of the licensee's Operations, Technical, Quality Assurance, and Training staffs.

*Denotes those present at the exit meeting held on July 13, 1990.

2. Background

In response to the maintenance team inspection MTI report 50-317/90-80 and 50-318/90-80, the licensee, in their letters dated May 4, 1990, and June 4, 1990, provided written responses to the identified violation, unresolved items, and observed weaknesses in the Calvert Cliffs, Units Nos. 1 and 2 maintenance program. This inspection reviewed the licensee's initiatives and to assess management support of the maintenance process. Maintenance has undergone major improvements in the areas of staffing level, trending, reporting, and reassignment of responsibilities. For example, the Maintenance Programs Unit (MPU) has increased their staff from two to nine people to track maintenance orders (MO's). The MPU was also given the responsibility of maintaining the maintenance statistical data system.

3. Review of Maintenance Team Inspection Findings

To evaluate the licensee's response to the MTI findings, the inspector reviewed the data package for closing the item and then verified the work by performing a walk-down of the system (if applicable), reviewed the corrected documentation, and verified that the test performed for acceptance

to determine if the item complied with the criteria of the documentation. If a task was to be completed at a latter date, the inspector verified that the management control system assured that the task was scheduled. The documentation reviewed by the inspector to verify items described in this report are listed in Attachment A.

4. Maintenance Team Inspection Findings (MTIs) (50700)

4.1 (Closed) Violation 50-317/90-80-05 - Surveillance test procedure (STP) M-538-1 for the reactor coolant system subcooled margin monitor did not include testing of the alarm portion of the channel.

The licensee has developed both a short term and a long term action plan to resolve the identified violation.

4.1.1 Short Term Action Plan

Under the short term plan the licensee has taken the following actions:

- STP M-538-1, "Subcooled Margin Monitor Calibration," procedure has been revised to add a step for verification of the alarm function. The revised STP was performed satisfactorily for Unit 1 on March 8, 1990.
- All EOP steps triggered by control room alarms were reviewed. Twenty-three alarms were identified as precursors for operator action within the EOP. The alarms were classified as either: (1) tested by an STP, preventive maintenance or a surveillance procedure; (2) non-safety significant; or (3) needing additional action.
- The STP review program identified three alarms in both Units 1 and 2 that required additional clarification. For the three alarms on Unit 1, the licensee revised the STP procedure to include an alarm verification step. Testing of the alarm circuits verified that they were functional. The three alarms for Unit 2 will have their STPs revised and a test performed prior to restart.

The inspector verified that the Unit 1 STPs were corrected and that testing of the alarms circuits was completed. The supporting documentation for this task is described in the Unit 1 Short-Term Action Plan titled, "Technical Specification Alarm/Annunciator Review," April 22, 1990.

This item is closed.

4.1.2 Long-Term Action Plan

The licensee's long-term program is described in a "Performance Improvement Action Plan," part of which is to review the Technical Specification (TS) surveillance requirements as presently specified in the STP's to ensure that their scope has not changed. This task is scheduled for completion by the end of 1992 (Reference Licensee Letter of May 4, 1990, to the U.S. Nuclear Regulatory Commission).

- 4.2 (Closed) Weakness 50-317/90-80-06 and 50-318/90-80-05 - Plant walkdown indicated there are areas in the plant where housekeeping could and should be improved.

The licensee has issued instructions and revised procedures for a housekeeping up-grade program. On April 16, 1990, the Maintenance Superintendent issued a policy on housekeeping in the areas of plant/equipment cleanliness. To support this letter Calvert Cliffs Instructions (CCI) 107, "Area Cleanliness Requirements," and CCI-161, "Ownership of Plant Operating Areas," were issued. These revised procedures have instruction and guidance for improvements in housekeeping.

Additionally, a "Maintenance Supervisory Observation Program" (MSG-01) was issued describing program goals and providing checklist to be completed by the supervisor performing the inspection. The results of the supervisors reports are tabulated by the Maintenance Program Unit (MPU) and issued to the Maintenance Superintendent. The first report was issued in May 1990 and indicated improvements in most areas of the plant, including the mechanical and electrical/I&C areas. The interjection of maintenance supervisors through the Maintenance Supervisors Observation Program and the revision of CCI-107 and 161 have improved plant housekeeping. A walkdown of the plant and shop areas by the inspector showed that housekeeping improvements are evident.

- 4.3 (Closed) Weakness 50-317/80-07 and 50-318/80-06 - The program for using MR tags appears to be adequate but the number of tags throughout the plant causes concern that each has been properly evaluated.

The licensee took three actions in the verification and control of their maintenance request (MR) program: (1) all open Unit 1 and Unit 2 MR's were evaluated for status, need, and significance; (2) manpower to implement and document the MR program was increased; and (3) the MRs were re-classified using the guidelines described in INPO-85-038, Revision 1, "Types of Maintenance."

The MTI had noted that many MR's had no bearing on plant or equipment operation. Use of the INPO guidelines reduced the Unit 1 and Unit 2 backlog to approximately 2700 items, a number which remained fairly constant from April-June 1990. During early June 1990, the new controls and added personnel started to decrease the MR backlog in both Units. Tagging has been maintained as described in MR procedures. Status of MR's is tracked in a computer report and by reports issued by the Outage Department and the Maintenance Programs Unit organization.

The maintenance superintendent issues a weekly trending report to his staff on the Unit 1 and 2 MR status. The inspector discussions with various managers and supervisors in outage planning, maintenance, and operations indicated that they were aware of the MR backlog status and that they were working the issues on a daily basis. The inspector also verified that plant management was aware of the MR backlog status and that the outage management report was part of their daily meetings.

- 4.4 (Closed) Weakness 50-317/90-80-08 and 50-318/90-80-07 - The conditions of plant supervisory staff, maintenance workers, and others regularly working 55 to 65 hours per week over extended time periods could be considered excessive overtime.

To establish a specific overtime policy an overtime work policy was issued on April 11, 1990 which defined the working hours criteria that personnel may work. The policy statement is effective from Spring 1990 through September 1990. The documentation of weekly and monthly working hours is issued by the QASD Services organization. A review of their time records by the inspector verified that the overtime criteria established in the April 11, 1990 letter is being maintained by the organization. To exceed the 50 hours per week/person a task need and approval is required by the responsible supervisor/department head before the work and overtime is started. In each case of OT reviewed by the inspector management approved the effort before the work began.

- 4.5 (Closed) Weakness 50-317/90-80-09 and 50-318/90-80-08 - A predictive maintenance program has not been fully developed and implemented.

The Reliability Centered Maintenance (RCM) program is not fully implemented yet; however, the organization and personnel have been assigned and work is started in this area. In addition to RCM work, the licensee has started work using Infrared Thermography technology, Intergrated Corrective Action Program (ICAP) database as a predictive maintenance tool using equipment historical data, and a Component Failure Analysis system (CFAR) is operating. The CFAR program compares Nuclear Plant Reliability Data System (NPRDS) with the Calvert Cliffs failure rate history files. These are new programs, however, they are staffed and work is being performed in each area with tracking by the RCM section.

- 4.6 (Closed) Weakness 50-317/80-10 and 50-318/80-09 - The QCII procedure for writing QCII's does not define the kind of items QC should inspect.

Quality control inspection instructions (QCII's) QCI-4, Revision 1, issued January 2, 1990, describes the methods and responsibilities for screening and review of work control documents that are defined in Baltimore Gas and Electric QA Policy, 1B5, Instructions, Procedures, and Drawings; and, 1B10, Inspections.

Attachment B for QCP-4 describes the elements to be considered by the QC reviewer (mechanical/electrical and controls) during the selection of QC hold points for WO application. Training was given on QCP-4. Discussions with the quality control personnel indicated that they understood and were knowledgeable of the document requirements.

- 4.7 (Closed) Weakness 50-317/90-80-11 and 50-318/80-10 - The criteria for initiating non-conformance reports (NCR's) were reviewed and found to be general and subject to different interpretations by individuals such that MR's were sometimes written when an NCR would provide better trending and tracking of problems.

Calvert Cliffs Procedure (CCI)-116, "Identification and Control of Non-conforming Conditions" was revised and training was given to plant personnel. CCI-116 contains a clear definition of a "Condition Adverse to Quality," which includes such terms as deficient material workmanship, failures or malfunctions. Discussions with plant personnel indicated that the latest revision of the CCI and the training provided clarified the use of NCRs. Also, the inspector noted an increase in NCR's originating by the various line organizations.

- 4.8 Followup of Previously Identified Items (92701)

- 4.8.1 (Closed) Unresolved Item 50-317/90-80-01 and 50-318/90-80-01 - The Service Water pump room coolers relief valve for Unit 2 had tail piping while the same relief valves for Unit 1 did not, nor did the Unit 1 isometric drawings show such piping. This item was unresolved pending clarification of drawing completeness and the configuration of the relief valve tail piping.

A nonconformance report was issued on March 15, 1990 and a design evaluation was completed with Field Engineering Change (FEC) 90-01-266 issued. The modification task is to be scheduled by the licensee as part of their modification program. Inspector review of the FEC verified that an acceptable safety evaluation was performed including a seismic analysis. The closing of the NCR requires that the site documentation be revised to include the latest design configuration.

This item is closed.

- 4.8.2 (Open) Unresolved Item 50-317/90-80-02 and 50-318/90-80-02
Temporary ventilation alignment from the sump to the Engineered Safety Features (ESF) ventilation ducting. This path was being used pending a permanent modification to allow routine containment depressurization without the risk of an unmonitored release path to atmosphere.

A permanent modification has been in progress for sometime to allow venting through the hydrogen purge system; however, the design to ensure an operable radiation closure signal to the hydrogen purge valves for all modes of operation has not been completed. This item is open pending completion and testing of the design for all modes of operation.

- 4.8.3 (Open) Unresolved Item 50-317/90-80-04 and 50-318/90-80-03
The adequacy of present test procedure for demonstrating the capability of recharging the batteries at a rate of ≤ 400 amperes while supplying normal DC loads or equivalent or greater during loads in accordance with Technical Specification 4.8.2.3.2.e. This item is unresolved pending NRC acceptance of the licensee method of complying with the TS section.

The licensee is scheduled to submit a report to the NRC describing their technical rationale for their present test method. This item remains open pending NRC approval of the technical justification for their testing approach.

- 4.8.4 (Closed) Unresolved Item 50-317/90-80-05 and 50-318/90-80-04
This item is unresolved pending completion of modification for grouting under the 4KV switch gear cubicle tracks and verifying that breaker trip path design is working.

Facility Change Request 88-166 which describes the method of injection flowable epoxy grout underneath the tracks at the base of the switchgear cubicles was performed on Bus 13, cubicle 152-1301 on July 13, 1990. The inspector witnessed the first cubicle to be modified as described in FCR 88-166. The method for applying the epoxy grout under the tracks in cubicle 152-1301 was the same method used in preparing the engineering test sample. The cubicles for Unit 1 will be completed prior to startup and have been scheduled in the outage program plan.

This item is closed.

4.8.5. Followup of Previously Identified Items (92701)

(Closed) Unresolved Item 50-317/86-23-01 and 50-318/86-24-01 - The verification that testing is performed for infrequently operated devices.

The licensee is conducting a review of their systems and procedures for testing all components of safety systems to ensure that they can operate in the range of their Technical Specification criteria. The licensee program and scope is defined in their engineering memorandum EAU 90-217, dated July 12, 1990. The inspectors review of the engineering task performed to date indicated that engineering management understood the problem and has sufficient personnel and direction for the task to be completed during the third quarter of 1990.

This item is closed.

5. Unresolved Items

Unresolved items are matters about which more information is required in order to determine whether they are acceptable, an item of non-compliance, or a deviation. Updates of unresolved items in this report are described in paragraphs 4.8.2 and 4.8.3.

6. Exit Meeting

Licensee management was informed of the scope and purpose of the inspection at an entrance meeting conducted on July 9, 1990.

The findings of the inspector were discussed periodically with licensee representatives during the course of the inspection. An exit was conducted on July 13, 1990 (see Paragraph 1), at which time the findings of the inspector were presented.

At no time during the inspection did the inspector provide written material to the licensee nor did the licensee indicate that areas covered by this inspection contained proprietary information.

ATTACHMENT A

Documentation Reviewed

- Technical Specification Alarm/Annunciator Review, April 22, 1990.
- Emergency Operating Procedures Alarm Reviewed (EOPs)
 - EOP-1 Post Trip Immediate Actions
 - EOP-2 Reactor Trip
 - EOP-3 Loss of Offsite Power
 - EOP-4 Total Loss of All Feedwater
 - EOP-5 Excess Steam Demand
 - EOP-6 Loss of Coolant Accident
 - EOP-7 Steam Generator Tube Rupture
 - EOP-8 Station Blackout
 - EOP-9 Functional Recovery Procedure
- Baltimore Gas and Electric Letters of May 4, 1990 and June 4, 1990, Responses to Maintenance Team Inspections finding, 50-317/90-80 and 50-318/90-80
- STP M-538-1, Subcooled Margin Monitor Calibration Procedure
- Technical Specification Alarm/Annunciator Review Report
- Calvert Cliffs Instruction 107 - Area Cleanliness Requirements and 161 - Ownership of Plant Operating Areas
- Maintenance Supervisory Observation Program
- INPO-85-038 Types of Maintenance Section
- QCP-4 Quality Control Inspection Instructions
- Calvert Cliffs Instructions 116 - Identification and Control of Non-conforming Conditions
- Field Change Report 90-01-266 ECCS SW Relief Valve Tail Pipe and Field Change Request 88-166 4KV Epoxy Grout method
- Engineering Memorandum 90-217

SUMMARY OF WEAKNESSES

Weakness - A potential problem or condition presented for reference to the licensee for evaluation and corrective action as appropriate.

- Plant walkdowns indicate there are areas in the plant where housekeeping could and should be improved (reference paragraph 1.2).
- The program for using the MR tag appears to be adequate but the number of tags throughout the plant causes concern that each has been properly evaluated (reference paragraph 1.2, 6.3).
- The condition of plant supervisory staff, maintenance workers and others regularly working 55 to 65 hours per week over extended time periods could be considered excessive overtime. (reference paragraphs 3.3, 4.5, 8.0)
- A predictive maintenance program has not been fully developed and implemented (reference paragraphs 3.4, 5.0, 5.6).
- The QCII procedure for writing QC II's does not define the kind of things QC should inspect (reference paragraph 4.4).
- The criteria for initiating nonconformance reports (NCR) were reviewed and found to be general and subject to different interpretations by individuals such that MRs are sometimes written when an NCR would provide better trending and tracking of problems (reference paragraph 4.4, 6.3)
- Health Physics is staffed primarily with contractors and is insufficiently staffed with licensee employees. (reference paragraph 4.5).
- Health Physics lacks a definitive written plan that describes the department policies, procedures and communications being used to accomplish their goals (reference paragraph 4.5).
- Licensee rules for protecting open piping do not include diameters below two inches. Protection of smaller diameter pipe and tubing to prevent ingress of foreign material is good industry practice and lack of this protection is considered a weakness (reference paragraph 5.1.1).
- The licensee had not fully implemented a program to assess the difference between inadequate maintenance work or other root causes. Generally, licensee formal evaluation of rework items on a component specific basis was not implemented (reference paragraph 6.4)