

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-317/89-05
50-318/89-05

Docket No. 50-317/50-318

License No. DPR-53/DPR-69

Priority

Category C

Licensee: Baltimore Gas and Electric Company
P. O. Box 1475
Baltimore, Maryland 21203

Facility Name: Calvert Cliffs Units 1 & 2

Inspection At: Lusby, Maryland

Inspection Conducted: February 27 - March 3, 1989

Inspectors:

C. J. Anderson for (R)
R. J. Paolino, Senior Reactor Engineer
DRS/PSS

3/24/89
date

C. J. Anderson for (SR)
S. Juergens, Reactor Engineer, DRP/Sec. 3B

3/24/89
date

Approved by:

C. J. Anderson
C. J. Anderson, Chief, Plant Systems
Section, DRS/EB

3/24/89
date

Inspection Summary: Inspection on February 27 - March 3, 1989 (Combined
Inspection Report Nos. 50-317/89-05 and 50-318/89-05)

Areas Inspected: Routine unannounced inspection to determine current status of Equipment Qualification Program and closeout of previously identified open EQ issues.

Results: No violations or unresolved items were identified. The Licensee's EQ Program has been revised to ensure compliance with 10 CFR 50.49 requirements. Nine previously identified open items have been reviewed and determined to be in accordance with NRC requirements.

DETAILS

1.0 Persons Contacted

1.1 Baltimore Gas & Electric Company

- R. Branch, EQ Engineer
- J. Clark, E&I Maintenance
- R. Condello, Senior Engineer
- *C. Cruse, Manager NE&D
- P. Furio, Licensing Engineer
- J. McVicker, Senior Engineer
- G. Pavis, EQ Program Manager
- *E. Roach, QA Auditor
- *D. Ross, I&C Calibration Facility Supervisor
- L. Russell, Manager Calvert Cliff Facility
- K. Sebra, Principal Engineer
- A. Thorton, General Supervisor - Plant & Project Engineering
- L. Weckbaugh, General Supervisor - Electrical & Controls

1.2 U.S. Nuclear Regulatory Commission

- R. Capra, Director, PDI-1/NRR
- V. Pritchett, Resident Inspector
- L. Tripp, Chief, Projects Section 3A

* Denotes personnel not present at exit meeting on March 3, 1989.

2.0 Background

A number of EQ violations were identified at Calvert Cliff Units 1 & 2 following a region based inspection in February and March of 1987. These deficiencies came after several NRC EQ team inspections that identified significant EQ equipment deficiencies at Calvert Cliffs in 1984 and 1985. As a result of these findings, the licensee developed a comprehensive program to inspect in detail the installed configuration of 10 CFR 50.49 electrical equipment in Unit 1 (shutdown on April 1, 1987) and Unit 2 (down for refueling outage). All identified discrepancies were resolved. A task force of Design Engineers, personnel with licensed operator experience and contract consultants reviewed the discrepancies. Licensee interim and long-term corrective actions were planned to improve the EQ program. For the short-term, interim methods were established to provide clear communication of EQ activities to field craft personnel and to provide additional reviews by qualified EQ reviewers. Long-term corrective actions included: an overall EQ Program Manager; revised EQ qualification maintenance requirement sheets which clearly provide EQ maintenance requirements; and an independent review of the EQ program.

3.0 EQ Program

Licensee management has led the effort to develop a comprehensive program to inspect 10 CFR 50.49 electrical equipment. The QA organization has provided an independent review of the EQ Program to ensure complete and proper documentation of inspections and subsequent reinspections following corrective maintenance of the discrepancies. Program controls have been established (CCI-208E) of EQ maintenance requirements (E-406) for craftsmen to ensure work is completed as directed. The scope of the revised EQ program encompasses such items as procurement activities, replacement parts, disposition of EQ deviations, modifications to EQ equipment and engineering reviews of environmentally qualified equipment.

To ensure a clear line of responsibility and authority, a Principal Engineer from the Plant and Project Engineering Section was named EQ Program Manager, responsible for the establishment and implementation of the EQ program. An EQ Systems Engineer, responsible to the EQ Program Manager, has been assigned to resolve day-to-day problems generated by the Qualification Maintenance Program.

New paragraphs in CCI-208E denote restrictions on contract personnel and Vendor Representatives regarding EQ maintenance with examples of what does and does not constitute EQ maintenance.

Verification of the licensee revised EQ Program was accomplished by review of the following documents and visual inspection of the following installations.

- Document File No. CBLO31 - XLPE Coaxial Cable (Rockbestos), Revision 2
- Document File No. JB0008 - 600 V Terminal Blocks, Revision 1
- Document File No. MOV-001 - Motor Operated Valves
- Document File No. HR-0001 - High Range Containment Radiation Monitor
- Calvert Cliffs Instruction (CCI) - 208E, Change No. 1
- Document File No. EPA-010 - Conax Electrical Connector, Revision 1A
- E-406 Section 11 - Environmentally Qualified Electrical Methods and Materials
- No. 11 Containment Spray Pump Motor Splices, Elevation 15' ECCS Room
- Flow Transmitter 1FT1581 - #11 Containment Cooler Service Water, Elevation 5"-0' East Piping Penetration Room (Unit 1)

- Solenoid Operated Valve #1SV1581, #11 Containment Cooler Inlet Control Valve, Elevation 27"-0' East Piping Penetration Room (Unit 1)
- Solenoid Operated Valve #25V4520, AFW Control Valve for #21 Steam Generator, Elevation 27"-0' East Piping Penetration Room (Unit 2)
- Solenoid Operated Valve #25V4531, AFW Control Valve for #22 Steam Generator, Elevation 27"-0' East Piping Penetration Room (Unit 2)

Training requirements for EQ technicians have been clarified and the required courses listed. Based on the above review and a sample verification of installed EQ equipment, the NRC inspectors determined that the licensee has established procedures that ensure qualification of electrical equipment within the scope of 10 CFR 50.49 is maintained on a continuing basis.

4.0 Status of Previously Identified Items

- (Closed) Unresolved Item No. 317/85-03-04 pertaining to the flow instability problem that was observed during tests of a motor-driven Auxiliary Feedwater Pump (AFW) at low steam generator pressures.

The problem was attributed to cycling of the automatic recirculation (ARC) valve and a high flow capacity (CV). This problem was partially corrected on Unit 2 by changing the trim on the control valve and disabling the ARC.

Modification and Testing (TSP-188) was conducted on Unit 1 regarding the AFW system flow instability in April 1985 to determine the acceptability of an ARC valve modification and the required trim on the flow control valves for both Units 1 and 2.

A Facility Change Request (FCR) 84-1094 was completed in October 1986 for Unit 1 and in April 1987 for Unit 2. This FCR authorized permanent defeat of the ARC feature on both units ARC valves and a further reduction in trim on the motor train flow control valves 1/2-CV-4525/4535.

This item is closed.

- (Closed) Unresolved Item No. 317/85-03-05 pertaining to the unlabeled Auxiliary Feedwater Pump No. 13 and the inadequate labeling of Breakers in Motor Control Console Nos. 104 and 114, the Battery Disconnect Switch No. 95-1203 and ECCS Pump Room No. 22.

The licensee initiated requests per instructions CCI-308, dated January 30, 1989 and February 6, 1989, for permanent labels to be

applied to the above referenced items. The licensee plans to install the labels by March 30, 1989.

This item is closed.

- (Closed) Violation Nos. 317/85-20-03 and 318/85-20-03 pertaining to licensee failure to follow procedures (QAP-7) requiring that changes to control documents be controlled by initialing and recording the date of change by the individual making the change.

The inspectors examined specifications, instructions and revised EQ files noting that where changes were made to the control document, the changes were lined out and properly initialed and dated.

In addition, personnel were alerted to the requirement in QAP-7 that changes to controlled documents be lined out, initialed and dated by the individual making the change.

This item is closed.

- (Closed) Unresolved Item Nos. 317/85-22-05 and 318/85-20-05 pertaining to adequacy of EQ training. The inspector reviewed licensee training memorandum nos. 86-M-22, 87-M-15, 87-M-14, 87-M-22, 87-M-35 and thirty-one separate class rosters documenting EQ training completed in 1988. The inspector noted that various disciplines attended the training which consisted of lectures and "hands on" exercises.

The inspector also attended the licensee's Introductory EQ Training session for systems engineers. The training session was given by the EQ Program Manager and lasted approximately thirty minutes. Class participation was good. The twelve systems engineers in attendance appeared knowledgeable in the area of EQ as evidenced by the type of questions asked and responses to the instructor. The licensee's training provides a basic presentation of the EQ program to ensure consistency in the performance of associated activities.

This item is closed.

- (Closed) Unresolved Item No. 317/86-19-02 pertaining to an unqualified wrap-around splice, identified in December 24, 1986. The licensee replaced the unqualified splice immediately after it was found with a qualified Raychem splice. However, the identification of other similar deficiencies was not determined until after the NRC inspection of March 23-27, 1987. Licensee short-term/long-term corrective action to resolve the problem was determined to be adequate.

This item is closed.

- (Closed) Unresolved Item Nos. 317/87-07-01 and 318/87-08-01 pertaining to changes to procedure E-406, which did not have the complete installation information required to produce a qualified splice. The licensee has revised Procedure No. E-406 to include current splice installation requirements used as basis for qualification.

This item is closed.

- (Closed) Violation Nos. 317/87-07-02 and 318/ 87-08-02 pertaining to the unqualified wrap-around splices used in pig-tail leads for Solenoid Valve Nos. 1-SV-4530, 1-SV-4531 and 2-SV-4530, 2-SV-4531. The licensee performed a detailed inspection of electrical equipment within the scope of 10 CFR 50.49 to identify similar deficiencies. The unqualified wrap-around splices were replaced with qualified Raychem splices. The electrical installation procedure E-406 was revised to reflect the current qualified configuration. Field craft received training and hands-on experience in installing qualified splices.

This item is closed.

5.0 Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable, deviations or violations. Unresolved items are discussed in paragraph 4.0.

6.0 Exit Meeting

The inspector met with licensee personnel (denoted in Details, paragraph 1.0) at the conclusion of the inspection on March 3, 1989 at the plant site. The inspector summarized the scope of the inspection and the inspection findings. At no time during the inspection was written material given to the licensee.