

U. S. NUCLEAR REGULATORY COMMISSION
REGION 1

Report Nos. 50-317/91-07
50-318/91-07

Docket Nos. 50-317
50-318

License Nos. DPR-53
DPR-69

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

Facility Name: Calvert Cliffs Nuclear Power Plant, Units 1&2

Inspection At: Lusby, Maryland

Inspection Conducted: April 1 through April 5, 1991

Inspectors: P. Patnaik 4-12-91
P. Patnaik, Reactor Engineer, Materials
Section, Engineering Branch, DRS
date
C. V. Dodd - Consultant (ECT)
Oakridge National Laboratory

Approved by: H. J. Kaplan for E. G. 4-12-91
E. Harold Gray, Chief, Materials Section,
Engineering Branch, DRS
date

Inspection Summary: A routine inspection was performed from April 1 through April 5, 1991. (Inspection Report Nos. 50-317/91-07 and 50-318/91-07.)

Areas Inspected: Eddy Current Test (ECT) scans, test data and the ECT inspection program for steam generator tubes were reviewed. Also, reviewed were corrective actions to the outstanding violations OI Nos. 89-27/28-02/02 on water chemistry.

Results: No violation or deviation was identified. The ECT test methods and data review met the regulatory requirements. The outstanding violations OI 89-27/28-02/02 on water chemistry were closed out based on licensee's corrective actions.

DETAILS

1.0 Persons Contacted

Baltimore Gas and Electric Company

- *P. Katz, Superintendent, Technical Support
- *M. Milbradt, Compliance Engineer
- *L. Wenger, Compliance Engineer
- *P. Klein, Materials Engineer
- *K. Hoffman, Supervisor, Materials Group
- *W. Gray, Zetec, Inc.

United States Nuclear Regulatory Commission (USNRC)

- L. Nicholson, Sr. Resident Inspector
- A. Howe, Resident Inspector

*Denotes those attending the exit meeting. The inspectors also contacted other administrative and technical personnel during the inspection.

2.0 Purpose

The purpose of this inspection was to review the eddy current inspection program for steam generator tubes conducted in accordance with Section 4.4.5.0 of the Calvert Cliffs Technical Specification. The review centered around the examination data obtained during the May, 1990 inservice inspection for Unit 1 and the May, 1989 inservice inspection for Unit 2. This inspection also covered the review of the corrective actions taken by the licensee against the outstanding violations #OI 89-27/28-02-02 of 10CFR 50, Appendix B, Criterion XIII, "Handling, Storage and Shipping."

3.0 Steam Generator Eddy Current Inspection

Details of Examination

During May 1990, an eddy current examination using a bobbin coil probe, was conducted on 100% of tubes in Unit 1. Approximately 20% of tubes in the hot leg and 3% in the cold leg of the sludge pile region, were examined by a motorized rotating pancake coil (MRPC) probe. Indications were found in the sludge pile region characterizing intergranular attack (IGA). Nine tubes in #11 steam generator and three tubes in #12 steam generator were plugged due to the indications found in the MRPC examination.

During April 1989, 100% of tubes in Unit 2 and, subsequently, during October 1990, 15% of tubes were examined using a bobbin coil probe. Also, during July 1990, approximately 3000 tubes in the sludge pile region of each steam generator were examined using an MRPC probe. Indications characterizing IGA were also observed in the sludge pile region of Unit 2 steam generators, but fewer than that of Unit 1. Twelve tubes in #21 steam generator and ten tubes in #22 steam generator were plugged during the 1989 examination. There were no tubes plugged following the 1990 examination since the Unit was shut down during the period.

The licensee also examined the U-bend areas of the steam blanket region (rows 6 through 13) of steam generators in both units. There was no rejectable indication in any steam generator.

Data Review

The review of eddy current data by the inspectors centered around the following areas:

- Indications in the free span of the tube, typical of manufacturing marks
- Fretting at support structures in the U-bend areas
- Intergranular attack within the sludge pile detected by the bobbin coil probe and the MRPC probe
- Sludge height measurement
- Computer data screening
- Small indications at the egg crate areas found by the MRPC examination
- Differentiating the IGA indication from that of the manufacturing marks in the free span

The inspectors also reviewed the following documents.

- Eddy Current Data Analyst's qualification tests
- Calvert Cliffs Nuclear Power Plant Evaluation Guidelines
- MIZ-18 Eddy Current Examination Procedure
- Eddy Current Data Analysis Procedure
- Documentation on eddy current calibration standards

The review of data indicates that the interpretation of indications by the licensee's analyst was accurate and consistent. The quality of data analysis seemed to be high. However, the inspectors made the following observations.

1. The licensee's Data Analyst's Guideline, does not address the methods of identification and the disposition of manufacturing marks which can be construed to be defects.
2. There is no guideline and test requirement for MRPC analysts in the existing Data Analyst's Guideline.

The licensee agreed to make necessary changes to the Data Analyst's Guideline to correct the above weakness in the program, prior to the next eddy current inspection.

4.0 (Closed) Violations 50-317/89-27-02 and 50-318/89-28-02

The Notice of Violation described in Appendix A of Report Nos. 50-317/89-27 and 50-318/89-28 indicated that the licensee's Chemistry Procedure (CP) 217, "Specifications and Surveillance - Steam Generator," required that the steam generator parameters be maintained within the specification. Contrary to this, between May 1, 1989 and December 15, 1989, the required pH and hydrazine concentrations for steam generators #11, #12 and #22 were not always maintained within the required specifications. This was a violation of 10CFR 50, Appendix B, Criterion XIII, "Handling, Storage and Shipping."

The inspector reviewed and verified that the licensee's corrective actions included the following:

1. The licensee's response dated March 9, 1990, which identified the root cause and the immediate corrective actions.
2. The Procedure OI-12B, Revision 6, which was revised to ensure a nitrogen overpressure purge path.
3. The new Procedure CCI-412, "Plant Lay-Up and Equipment Preservation Program", which controls the activities related to preservation of equipment during non-service.
4. The provisions for additional equipment, e.g., the Skid Mounted Steam Generator Water Filtration system to support an extended dual unit outage which was provided under the licensee's Facility Change Request No. 90-77.

Based on the above corrective actions by the licensee, the violations NRC OI Nos. 89-27/28-02/02 are closed out.

5.0 Management Meetings

The licensee's management was informed of the scope and the purpose of inspection at the entrance meeting on April 1, 1991. The findings of the inspection were discussed with licensee's representatives during the course of the inspection and presented to licensee's management at the exit meeting on April 4, 1991 (see paragraph 1 for attendees). The licensee did not indicate that proprietary information was involved within the scope of this inspection.