U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 80-21

Docket No. 50-317

License No. DPR-53 Priority -- Category C

Licensee: Baltimore Gas and Electric Company

P. O. Box 1475

Baltimore, Maryland 21203

Facility Name: Calvert Cliffs, Unit 1

Inspection at: Lusby, Maryland

Inspection Conducted: October 22-24, November 5-7 and 13-14, 1980

Inspectors: H. A. Walton for — 12-09-80
E. P. Jernigan, Reactor Inspector — Date Signed

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Date Signed

Approved by: H. A. Walton for — 12-09-80
L. E. Tripp, Chief, Engineering Support Section No. 1, RC&ES Branch — Date Signed

Inspection Summary:

Inspection on October 22-24, November 5-7 and 13-14, 1980 (Report No. 50-317/80-21)
Areas Inspected: Routine, unannounced inspection of inservice inspection and spent fuel rack fabrication activities. The inspection involved 45 inspector-hours onsite by one regional based inspector and one supervisor.
Results: One item of noncompliance was identified. Failure to weld spent fuel racks in accordance with ASME Code Requirements (Paragraph 2).

## DETAILS

1. Persons Contacted

Baltimore Gas and Electric Company (BG&E)

* L. Russell, Plant Superintendent
T. Sydnor, QA Supervisor
B. Rudel, ISI Coordinator
J. Pence, Level III Examiner

Southwest Research Institute (SwRI)

S. Richter, Team Leader (ISI)

Meeting Attendees (November 14, 1980)

Baltimore Gas and Electric Company (BG&E)

M. C. Key, Engineer
L. E. Titland, Principal Metallurgist
L. F. Dudek, QA Engineer
T. L. Sydnor, Supervisor, Operations QA
J. A. Mihalcik, NFM
H. L. Hoffman, Sr. Engineer
L. A. Sundquist, Supervisor, Engineering QA
K. M. Hoffman, Engineer
R. F. Ash, Chief Nuclear Engineer
R. E. Miles, Consultant to BG&E

Nuclear Engineering Services (NES)

A. H. Yoli, Vice President, Engineering
R. A. Milos, Project Manager

Metal Products Corporation

B. Zerfoss, Manager, Nuclear Engineering
B. Long, Sales and Marketing Manager

Nuclear Regulatory Commission (NRC)

L. E. Tripp, Chief, Engineerng Support Section No. 1, RC&ES Branch
R. E. Architzel, Senior Resident Reactor Inspector
E. P. Jernigan, Reactor Inspector
S. D. Reynolds, Reactor Inspector
R. A. Hermann, Materials Engineer, IE Headquarters
C. D. Sellers, NRR

2. Damaged Spent Fuel Rack

During fabrication activities, a spent fuel rack assembly was dropped by the fabricator (Metal Products, Inc.). A visual inspection revealed that several outer shell spot (fusion) welds had separated due to a lack of fusion.

-- Licensee/NRC Meeting Summary

A meeting of representatives of the BG&E Co., NES, Metal Products, Inc., and the NRC was held at the plant on November 14, 1980. The purpose of the meeting was to discuss the structural adequacy of the high density spent fuel storage racks utilizing this design, fabrication/welding techniques. The contractor's (NES) representative discussed fabrication techniques and considerations associated with the method of welding the racks under discussion. The representative stated that specified material thickness (.060 inch sheet stainless steel), number of welds involved, and withstanding economic considerations precluded the exclusive use of manual welding. Therefore, it was decided to develop a semi-automatic method of welding. The process selected involves the local milling of a material overlapping another, thus creating an autonomous weld in the area of the faying surfaces. The contractor's representative also stated that results of tests associated with the welding procedure qualification indicated this type of welding to be adequate for this application. However, material weldability characteristics were not a consideration during qualification tests or production welding. As a result of the aforementioned weld failures, the contractor fabricated a half length storage rack mockup for tests with the series of affected welds omitted. The results of this analysis indicated that the racks were suitable for their intended use, the contractor concluded.

The NRC representative observed that the requirements of the engineering specifications implementing this modification had not, in all respects, been met. Specifically, the requirements to meet Section III and Subsection NF Class II of the 1977 Edition including the Winter 1977 Addenda of the ASME Code. Subsection NF requires that all welding be performed in accordance with Section IX of the ASME Code. Section IX does not include the type of welds involved. Thus, the subject welds do not meet ASME Code requirements.

The NRC representative also stated that the conditions of the license Amendment Number 47 for Facility Operating License DPR-53 had not been met.

Failure to follow engineering specifications and design/fabrication as specified in the license application is an item of noncompliance. (50-317/80-21-01)

Furthermore, the licensee's QA program as promulgated did not identify the above identified departure from specification requirements so that timely corrective action could be taken.

Additionally, the failure to follow design specification and code requirements will necessitate a re-submittal of the license amendments to NRR for, their concurrence, by the licensee.

This item is considered to be unresolved pending an NRC review of the licensee's re-submittal and compliance with requirements contained therein. (50-317/80-21-02)

3. Inservice Inspection (ISI) Activities

a. ISI Program

The licensee's ISI Program is based on the 1974 Edition of Section XI including the Summer 1975 Addenda of the ASME B&PV Code. Nondestructive examinations (NDE's) scheduled to be performed during the 1980 refueling outage are the first to be conducted during the second three and one third year period of the first 10 year inspection interval. The licensee's ISI Program had been developed by the examination contractor (Southwest Research Institute (SwRI)).

The inspector audited the aforementioned ISI Program and related documents. This audit was conducted to determine whether requirements of the facility Technical Specifications (TS's) and ISI Program requirements had been met.

The inspector found that the examinations scheduled for the 1980 outage were consistent with the 10-year plan. No items of noncompliance were identified.

b. Implementing NDE Procedures

The inspector audited selected NDE procedures to determine their technical adequacy and compliance with applicable code requirements. Specific procedures audited included:

-- SwRI-NDT-200-1/47

-- SwRI-NDR-300-2/27

-- SwRI-NDT-600-3/55

Attributes of the above procedures were considered with respect to procedural requirements delineated in the applicable ASME Code Section. However, one exception was noted by the inspector involving the surface examination technique planned for use on the reactor pressure vessel closure nuts. The examination involves the use of a

magnetic yoke with adjustable tips. The implementing procedure appears to be generic in nature in that it does not reflect component uniqueness. Although the procedure could be used to examine these nuts, with proper equipment selection, the inspector questioned the adequacy of the examination planned.

This item is considered unresolved pending an NRC review, during a subsequent inspection, of final ISI examination documentation. (50-317/80-21-03)

Additionally, Section V of the ASME Code requires that a sketch be made of complex components using this examination method. This had been omitted from the applicable procedure. Also, the inspector observed that Class II components had been incorporated into the ISI program. Due to code requirements applicable to the plant during construction, these welds were not ground (generally). Subsequent upgrading of the ISI program requires that some Class II welds be volumetrically examined. This examination usually involves the ultrasonic technique which requires a smooth surface which routinely is accomplished by light grinding. Although the inspector was informed that no grinding of welds had been performed during this outage, there is not a formalized procedure to control grinding of finished welds or to require post grinding surface examination(s). However, the welds are visually examined after grinding. These concerns were discussed with licensee representatives.

No items of noncompliance were identified.

c. Observation of Examination

The inspector observed the ultrasonic examination of weld 34 MS-1202-17. This is a Class II system weld and is in the main steam piping system. The inspector observed that details of the implementing procedures were being followed, such as: examination coverage, scan speed, use of calibrated equipment and properly certified examiners. Also, the inspector noted that examination results were being documented in accordance with procedural requirements.

No items of noncompliance were identified.

d. Personnel Qualification Records

The inspector audited training and qualification records of NDE personnel. The records identfied the discipline in which the individual had been certified. Contractor certificates for visual acuity and color perception indicated that all personnel qualification procedural requirements had been met. No departures from practices recommended by SNT-TC-1A were observed.

No items of noncompliance were identified.

4. Reactor Coolant Pumps Closure Stud Examination

The licensee performed a visual examination of the above captioned components. This examination was consistent with a recent Bulletin issued by the NRC which required that all reactor coolant pump studs be visually examined for deterioration. The licensee found that several studs had sustained substantial corrosion due to pump seal leakage. The inspector audited documentation associated with this examination and reviewed the licensee's proposed corrective action relative to replacing defective studs. The inspector found that all studs with observable deterioration were being replaced. Additionally, increased visual inspection of these studs is being considered by the licensee.

No items of noncompliance were identified.

5. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during this inspection are discussed in Paragraphs 2 and 3 of this report.

6. Exit Interview

The inspector met with licensee representatives denoted by an asterick in Paragraph 1 at the conclusion of the inspection on November 14, 1980. The inspector summarized the scope and results of the inspection as described in this report. The licensee's representatives acknowledged the inspector's summarization as herein detailed.