

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-440/89010(DRS)

Docket No. 50-440

License No. NPF-58

Licensee: The Cleveland Electric Illuminating Company  
10 Center Road  
Perry, Ohio 44081

Facility Name: Perry Nuclear Power Plant, Unit 1

Inspection At: Perry Site, Perry, Ohio

Inspection Conducted: March 14-16, April 11-13, and May 9-10, 1989

Inspector: *K. D. Ward*  
K. D. Ward

*5/16/89*  
Date

Approved By: *D. H. Danielson*  
D. H. Danielson, Chief  
Materials and Processes Section

*5/16/89*  
Date

Inspection Summary

Inspection on March 14-16, April 11-13, and May 9-10, 1989 (Report No. 50-440/89010(DRS)).

Areas Inspected: Routine, unannounced safety inspection of inservice inspection (ISI) activities including review of programs (73051), procedures (73052), observation of work activities (73753), and data review (73755); and licensee action on Information Notice 88-03 (92717).

Results: No violations or deviations were identified. Based on the results of the inspection, the NRC inspector noted the following strengths:

- ° The licensee demonstrated the ability to properly implement the first ISI program on Unit 1 in accordance with ASME Section XI and the licensee's program.
- ° The licensee had an adequate ISI staff that was well trained and competent.
- ° Management involvement was evident.
- ° The ISI contractor personnel were very knowledgeable, had good equipment and were qualified in using the licensee procedures.

## DETAILS

### 1. Persons Contacted

#### Cleveland Electric Illuminating Company (CEI) (Centerior Service Company) (CSC)

\*E. Riley, Director, Nuclear Quality Assurance Department  
\*W. Coleman, Manager, Operational Quality Section  
\*H. Walls, Jr., Manager, NDE  
\*T. Bradshaw, NDE Supervisor  
\*J. Rivers, Lead ISI Engineer  
\*B. Schneidman, Operations Engineer  
\*R. Matthys, Quality Engineer  
\*G. Gayton, NDE inspector  
\*K. Curtin, Engineering Aide

#### Gilbert Associates Incorporated (GAI)

P. Pitz, ISI Staff Specialist

#### MQS

C. Zastawnik, Lead Technician

#### Southwest Research Institute (SWRI)

H. Enoch, Project Engineer

#### Hartford Steam Boiler Inspection and Insurance Company (HSB)

W. Zimmerman, ANII

#### Nuclear Regulatory Commission (NRC)

R. Lanksbury, Acting Senior Resident Inspector  
G. O'Dwyer, Resident Inspector

The inspector also contacted and interviewed other licensee and contractor employees.

\*Denotes those present at the exit interview May 10, 1989.

### 2. Licensee Action on Information Notice 88-03 (92717)

Information Notice 88-03, "Cracks in Shroud Support Access Hole Cover Welds".

#### Background

Jet pump BWRs are designed with access holes in the shroud support plate, which is located at the bottom of the annulus between the core shroud and

the reactor vessel wall. Each reactor vessel has two such holes which are located 180 degrees apart. These holes are used for access during construction and are subsequently closed by welding a plate over the hole. The covers and shroud support ledge are Inconel Alloy 600 material. The connecting weld material also is Inconel Alloy 600 (alloy 182 or 82).

The high residual stresses resulting from welding, along with a possible crevice geometry of the weld, when combined with less than ideal water quality, present a condition conducive to Intergranular Stress Corrosion Cracking (IGSCC). This has been recognized by General Electric and, as a result, they have developed a remotely operated ultrasonic examining capability for detecting cracks in the cover plate welds. This custom ultrasonic examining fixture was first used at Peach Bottom, Unit 3.

On January 21, 1988, at Peach Bottom, Unit 3, intermittent short cracks were found in the weld heat affected zone around the entire circumference of the covers. It is estimated that cracking exists over 50 to 60 percent of the circumference with cusps as deep as 70 percent through the wall. It is believed that the cover plate welds were not inspected previously on any other BWR. It is possible that the cracking is general and may, therefore, affect all BWRs with jet pumps.

#### Licensee Action

Units 1 and 2 each have one access hole and cover in the shroud support plate. The creviced design was the original Perry design, but this was replaced by a new design in 1980/1981. This new design is exempt from UT and only a visual examination is required. No welding was performed on the access hole prior to receipt of the new cover plates in 1981. The new design cover plate is a two piece assembly: a ring and a cover plate. The ring is 316L stainless steel which has an Inconel weld buildup so that the weld to the shroud support plate is an Inconel to Inconel weld. The access hole cover that contains the 316L stainless steel crevice was included in the plant's inservice inspection program this outage. The access hole cover was visually examined and found to be acceptable.

### 3. Inservice Inspection (ISI) Unit 1

#### a. Review of Program (73501)

The NRC inspector verified that the licensee's ISI program was complete and conformed to regulatory requirements and to the licensee's commitments. The program was in accordance with ASME Section XI, 1983 Edition, Summer 1983 Addenda. There was sufficient organizational staff to ensure that acceptable ISI work was performed. The sampling inspection plan for addressing IGSCC concerns was in accordance with Generic Letter 88-01. All welds inspected by the licensee in accordance with Generic Letter 88-01 were found to be acceptable. Where ASME requirements were determined to be impractical, specific reliefs (15) were requested from NRR in writing November, 1988. NRR



had a question that was answered by the licensee January, 1989, and as of this report the licensee had not received an approval from NRR. NRR gave relief for the same 15 specific reliefs for preservice inspection. Lugs in the area where welds are examined are the reasons for most of the specific relief requests. The licensee also submitted the ISI ten year plan to NRR for approval March, 1987. NRR had questions that were answered by the licensee April, 1988, and as of this report the licensee had not received an approval from NRR. The NRC inspector reviewed audits/surveillances of ISI activities conducted by qualified personnel to verify compliance with the ISI program.

b. Review of Procedures (73052)

The NRC inspector ascertained that the licensee's ISI procedures adequately covered all required aspects of the ISI program submitted to the NRC for approval. All ISI procedures were approved by the ANII and were reviewed by the NRC inspector. The nondestructive examinations (NDE) and techniques were adequately described and in conformance with the requirements and guidance of ASME Section V, 1983 Edition, Summer 1983 Addenda.

c. Date Review and Evaluation (73755)

The NRC inspector's review concluded that the reported data for this inspection covered the scope of the examinations described in the ASME Code, Technical Specifications, and the ISI program. This review included examination of documents relating to NDE equipment data and evaluations. The examination data was within the acceptable criteria as outlined in the applicable NDE procedures and ASME Code requirements.

d. Observation of Work and Work Activities (73753)

The NRC inspector observed the following activities and verified that the ISI was performed in accordance with the Technical Specifications, licensee procedures, and the applicable ASME Codes:

- (1) SWRI personnel performing ultrasonic and liquid penetrant examinations on pipe weld E51-0085 in the RCIC.
- (2) SWRI personnel performing magnetic particle examinations on eight welded lugs 1E12H0670-WA.
- (3) CEI personnel performing ultrasonic and visual examinations on the drain channel weld 2.
- (4) CEI auditor performing an audit on the ISI activities.

The NRC inspector reviewed the qualifications and certifications of all inspection personnel on site to ensure conformance with SNT-1C-1A. The Level II and Level III personnel performing ultrasonic examinations on stainless steel welds were qualified at Electric Power Research Institute (EPRI) for detection and discrimination of intergranular stress corrosion cracking (IGSCC).

No violations or deviations were identified.

4. Exit Interview (30703)

The inspector met with site representatives (denoted in Paragraph 1) at the conclusion of the inspection. The inspector summarized the scope and findings of the inspection noted in this report. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents/processes as proprietary.