

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

REGION I

Report No. 79-15
Docket No. 50-334
License No. DPR-66 Priority -- Category C

Licensee: Duquense Light Company
Attn: Mr. C. N. Dunn, Vice President, Operations Division
435 Sixth Avenue
Pittsburgh, Pennsylvania 15219

Facility Name: Beaver Valley Power Station

Inspection At: Shippingport, Pennsylvania

Inspection Conducted: June 25-27, 1979

Inspectors: R. A. Feil
R. A. Feil, Reactor Inspector

9/10/79
date

G. A. Walton
G. A. Walton, Reactor Inspector

9/10/79
date

Approved by: J. E. Tripp
L. E. Tripp, Section Chief, ESS#1, RC&ES Br.

date
9/17/79
date

Inspection Summary:

Inspection on June 25-27, 1979 (Report No. 50-334/79-15)

Areas Inspected: Routine, unannounced inspection by two regional based inspectors of the new high density spent fuel storage rack modifications and feedwater piping defects. The inspection consisted of a review of records and radiographs and observation of work in progress. The inspection involved 37 inspector hours onsite by two NRC regional based inspectors.

Results: No items of noncompliance were identified.

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DETAILS

1. Persons Contacted

- *G. Beatty, QA Engineer
- *B. Hoover, Cognizant Site Engineer
- *L. Hutchinson, Station QA Engineer
 - C. Kirschner, QC Engineer
- *F. Lipchick, Station QA Engineer
- *R. Mafrice, Onsite Engineering Group Supervisor
 - A. Mazakna, QC Supervisor
 - J. Werling, Station Superintendent
 - J. Zilka, QC Supervisor

The inspectors conferred with other licensee personnel during the course of the inspection.

*Denotes those present at exit interview.

2. Tour of Facility

The inspector toured the Spent Fuel Pool area. All seventeen racks (833 cells) have been installed. The racks are maintained in a clean state by means of plastic sheeting covering the racks. All edges and openings are taped to preclude contamination of any portion of the spent fuel pool and racks below the level of the top of the spent fuel pool racks.

3. Spent Fuel Storage Rack Modification

The inspector reviewed the installation procedure and the engineering change notices (ECN) for the 17 spent fuel storage racks. The procedure and ECNs were verified to have been reviewed and signed off by the appropriate personnel. The procedure covered the site construction, installation and inspection for the high density fuel storage racks. ECNs provided for changes required during the entire modification.

The inspector verified by sample observation that the seismic restraints were installed. Records reviewed by the inspector showed that 45 seismic restraints had a clearance of 1/8" and were torqued to 75 ft lbs and 106 seismic restraints had clearance between .048" and .075" and were torqued to 10 ft lbs. Three seismic restraints were located in such a position that gapping could not be accomplished. The clearances and torque values met the requirements of the procedure.

The licensee is not going to install test coupons since the high density fuel racks are made entirely of 304 SS and is the same grade and quality as the spent fuel pool liner.

The inspector selected Rack #12 for a detailed review of records. The following records were reviewed.

- a. Rack position in storage pool
- b. Cleanliness inspection sheets during installation
- c. Support Block bolt torque values
- d. Verification of bolts secured, clearance of lock bolt in cell and cell pedestal contact on fuel pool liner.
- e. Plumbness test on four selected cells in the rack
- f. Dummy fuel assembly drag test
- g. Cleanliness during drag test
- h. Weld records
- i. Liquid penetrant inspection reports

The plumbness test results show that plumbness for the four cells of the rack at the four compass locations was between $+5/32$ " and $-1/16$ ". Acceptance criteria for the plumbness test was that the centerline of the top opening of each corner fixed cell be within $3/8$ " radius true position of the centerline at the bottom of each fixed cell.

The drag test results for the 49 cells in rack 12 show that the maximum differential between the maximum weight while lowering the dummy assembly into the cell and the maximum weight while raising the dummy assembly out of the cell was 35 lbs. Acceptance criteria for the drag test was that the maximum weight differential between the insertion and withdrawal be less than 50 lbs.

Drag testing has been successfully accomplished on 798 cells. Testing remains to be done on 34 cells. One cell will not be used or tested. Piping mounted on the south wall of the spent fuel pool prevents insertion of any fuel.

Records for the installation of the remaining 16 racks were sample audited. Minor discrepancies were noted. These were corrected by the licensee during the inspection.

No items of noncompliance were observed.

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4. Feedwater Piping Defects

The licensee reported to the NRC on June 18, 1979 that radiographic inspection of the three steam generator nozzle-to-feedwater inlet piping showed cracking in all three inlet elbows. The inspector audited the following activity associated with the repair of the feedwater line welds.

- a. The inspector reviewed the radiographs of the three nozzle to pipe welds and observed the following. The cracking is not located in the weld itself, rather the cracks originated at the transition of an existing counterbore, located approximately 1/2" to 9/16" away from the root of the weld. In several instances the cracks appear very prominent on the radiographic film, indicating significant thru wall dimensions.

The inspector also reviewed the radiography work performed November 12, 1976 as a result of vibrations experienced on the "B" steam generator feedwater line. At that time the radiographs were reviewed and accepted by the licensee. The review by the inspector of the radiographs of this weld show that the cracks were present at that time. This was determined by comparing the existing radiographs to the November 1976 radiographs. The images of the cracks were faint and would not be interpreted as cracks without the new radiographs for comparison.

The licensee was inspecting the rest of the feedwater line welds inside containment and had completed a portion of the welds at the time of this inspection. The inspector reviewed the following four radiographs.

- . FW-10-RC-E-IC
- . FW-12-RC-E-IC
- . FW-13-RC-E-1A
- . FW-12-RC-E-1A

The licensee had rejected FW-12-RC-E-1A because the radiographs revealed a 3/8 inch long crack. The licensee had evaluated this crack as a fabrication defect. The licensee plans to make repairs of this area.

The inspector reviewed the construction radiographs for the following welds:

- . FW-16-RC-E-1C
- . FW-15-RC-E-1A

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No indications of cracks were present in these radiographs.

- b. The inspector reviewed the cutting procedure applicable for removal of the defective welds. The defective area is being removed by cutting thru the center of the weld on one side and removing the defective area and the 45° elbow. The licensee plans to replace the elbow with new material. The new elbows will contain a counterbore, radiused to reduce stresses at the transition of the counterbore.
- c. The inspector performed a visual inspection inside containment of the feedwater lines after the elbows were removed. No apparent discrepancies were noted on the systems, the inside surfaces of the lines looked clean, with no apparent residual buildup and no cracks were noted on the inside of the nozzle or feedwater sparger sleeve.

The elbows removed from "B" and "C" feedwater line revealed visual cracks on the inside surface at the location discovered by radiography. The "B" elbow cracks appeared visually to extend 360° around the counterbore

- d. The inspector requested a ring from one of the lines which contained a crack so that NRC could have an independent analysis of the cause of cracking. The licensee supplied the ring from "B" line. The sample was sent to "Parameters" for analysis. The licensee has reported that based on preliminary analysis, the cause of the pipe cracks, located at the steam generator nozzles, appears to be fatigue failure assisted by corrosion.

No items of noncompliance were identified.

5. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on June 27, 1979. The inspector summarized the findings of the inspection. The licensee representatives acknowledged the inspector's findings.