UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-280/79-37 and 50-281/79-56

Licensee: Virginia Electric and Power Company
Richmond, Virginia 23261

Facility Name: Surry Nuclear Facility, Unit 1 and 2

Docket Nos. 50-280 and 50-281

License Nos. DPR-32 and DPR-37

Inspection at Surry Site near Williamsburg, Virginia

Inspector: _____ 7/13/79
B. R. Crowley Date Signed

Approved by: _____ 7/13/79
A. R. Herdt, Section Chief Date Signed

SUMMARY

Inspection on June 28-29, 1979.

Areas Inspected

This special, announced inspection involved 6 inspector-hours onsite in the area of steam generator feedwater line radiography (RT).

Results

No apparent items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

Licensee Employees

W. L. Stewart, Station Manager
*G. E. Kane, Operating Supervisor
T. Peebles, Superintendent of Technical Services
J. P. Maciejewski, Engineering Supervisor
T. W. Brombach, NDE Foreman
*F. L. Rentz, Resident QC Engineer

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on June 29, 1979 with those persons indicated in Paragraph 1 above. This inspection included review of original construction requirements, loop configurations, and recently taken radiographs for the steam generator feedwater piping.

3. Licensee Action on Previous Inspection Findings

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection Effort

Due to recently reported cracking in steam generator feedwater lines in several PWR plants, Virginia Electric and Power Company (VEPCO) radiographically (RT) inspected certain feedwater line welds and adjacent base material on Surry, Unit 1. The RT inspection revealed cracks near the nozzle to reducer welds located in the reducer base material for all three loops and in the nozzle base material for loops "B" and "C". The purpose of this inspection was to review the radiographs and obtain information relative to the configuration and original construction aspects of the feedwater loops. The following is a summary of observations/reviews made by the inspector and information obtained:

a. Configuration of Feedwater Lines

The three feedwater loops are 14-inch diameter schedule 80 pipe connected to 16-inch diameter steam generator nozzles using 16-inch x 14-inch carbon steel reducers. The horizontal sections of pipe

leaving the steam generators are from 11 to 15-feet long and contain an inverted "U" or flex-loop. The lines then make 90 to 120-degree turns with the first restraint being 4 to 9-feet upstream from the bend or elbow.

b. Observation/Review of Inspection Results

(1) The inspector reviewed the following Unit 1 film:

Loop A

Nozzle to Reducer: FW-18, Line WFPD-17-601

Reducer to Pipe: Line WFPD-17-601

Loop B

Nozzle to Reduce: FW7, Line WFPD-13-601

Reducer to Pipe: Line WFPD-13-601

Loop C

Nozzle to Reducer: FW8, Line WFPD-9-601

Reducer to Pipe: Line WFPD-9-601

The radiographs were made using a 2 shot technique recommended by Westinghouse where the source is placed on one side of the weld 1/2-inch from the centerline of weld for one shot and then moved to the other side of weld 1/2-inch from the centerline of the weld for the second shot. Number 12, 15 and 17 penetrameters were used for each shot. The 2T hole was visible in all radiographs. Review of the radiographs revealed circumferential cracking in the reducer and nozzle base materials as previously reported by the licensee. Most of the cracks are in the reducer base material. However, Nozzles "B" and "C" do have some indications of cracks. Also, in "A" loop there is an indication in the edge of the weld on the reducer side parallel to an indication in the reducer base material. In two of the reducer to pipe welds, there are questionable indications which the licensee plans to investigate further after the reducers are removed.

In addition to the film listed above, the inspector also reviewed the original construction film for the nozzle to reducer welds. These film did not show the cracking observed in the above recent film.

(2) The inspector visually inspected the Unit 2 reducers which had been cut out previously as part of the steam generator replacement project. The inside surface of the reducers had not been cleaned up and

therefore a meaningful visual inspection could not be performed. The licensee was in process of RT inspection of the reducer welds and adjacent base material. At the conclusion of the inspection, RT results had not been obtained.

c. Materials

Based on a review of available drawings, the following material specifications are applicable:

Steam Generator Nozzle - SA508, C1.2

Reducer - SA234, Gr.WPB

Pipe - SA106, Gr. B

d. Welding and Heat Treatment

The inspector reviewed a sample of the construction weld records to obtain the following information:

(1) Nozzle to Reducer Weld -

Joint Type - Consummable Insert

Filler Material - Root: MS-1 Insert, Remainder:E7018

Preheat - 200 F

PWHT - 1150 F

(2) 14-Inch Pipe Welds

Joint Type - Open Butt

Filler Material - Root: MIG A681, Remainder: E7018

Preheat - 200 F

PWHT - N/A

Within the areas inspected, no items of noncompliance or deviations were identified.