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SUSQUEHANNA STEAM ELECTRIC STATION
UNIT 1 10TH REFUELING AND INSPECTION
CORE SHROUD INSPECTION RESULTS
PLA-4937 FILE R41-2 Docket No. 50-387

This letter provides a summary of the results and analysis of inspections performed on the Unit 1 core shroud during the Unit's 10th refueling and inspection outage. These inspections were performed to address anticipated revisions to the BWRVIP-07 report.

If you have any questions please contact Mr. J. M. Kenny at 610-774-7535.

Sincerely,

R. G. Byram

Attachment

copy: NRC Region I
Mr. V. Nerses, NRC Sr. Project Manager - OWFN
Mr. K. M. Jenison, NRC Sr. Resident Inspector - SSES

U1-10th Refueling and Inspection Outage Core Shroud Re-inspection Results

The Unit 1 shroud originally was not required to be inspected based on the Susquehanna SES Unit 1 9th refueling outage inspection results and analysis. This analysis showed adequate safety factors for the defective shroud welds to the year 2000. However, anticipating the issuance of a revised BWRVIP-07 report which is expected to recommend inspection of vertical welds, PP&L conservatively scheduled the inspection of some vertical and horizontal welds for the Unit 1 10th outage. Findings of the inspection and subsequent analysis are summarized below.

Inspection Scope

The inspection included the following welds:

1. H9: 100% UT examination from the OD of the RPV.

2. H8: 10.21% UT examination from the OD of the RPV

3. H8: 20 inch EVT-1 inspection of the previously observed surface defect located at the 180 degree azimuth position behind the manway cover.

4. 135 degree azimuth vertical weld between H5 and H6a by the EVT-1 examination technique both OD(100%) and ID(top 24 inches to the H5 weld).

5. H5 weld at the 0 degree azimuth location from 352.52 degrees to 5.09 degrees on the lower HAZ and from 345.43 to 15.77 degrees on the upper HAZ of this weld.

6. H4 weld at the 0 degree azimuth location from 345.43 to 15.08 degrees on the lower HAZ and from 345.45 to 15.76 degrees on the upper HAZ of this weld.

Inspection Findings

1. The H9 weld was completely free of indications.

2. The H8 weld by UT was found to be free of indications in the areas inspected.

3. The H8 weld behind the manway cover was completely free of visual indications.

4. The 135 degree vertical weld was completely free of visual indications both ID and OD. Verification of the ability to detect defects by the technique used was obtained by looking for and finding the 62 inch horizontal defect in the H5 weld at this azimuth orientation.

5. The H5 weld was completely free of UT indications in the areas inspected.

6. The H4 weld showed three separate small indications in the areas examined. They ranged in length from 0.9 to 1.79 inches long and from 0.05 to 0.3 inches deep.

Analysis results

The only analysis needed pertained to the H4 and H5 welds. Because the examination for these welds was performed in regions that were not previously examined, the effect of the findings were to add more uncracked weld back into the calculations for limit load and LEFM analysis. This resulted in increased safety factors since these areas were previously assumed to be defective and therefore to have through wall cracking. The analytical techniques used in this case were the same as those used during the last analysis in 1996 and follow the guidelines set forth in the appropriate BWRVIP documents that have been approved by the utilities and accepted by the NRC.

The safety factors calculated for the H4 and H5 welds projected to the year 2000 are as follows.

	Upset stresses	Faulted stresses	Analytical technique
H4	3.85(3.1)	2.23(1.8)	LEFM
H5	5.55(4.3)	3.41(2.64)	Limit Load

NOTE: Parenthetical values () were those reported from the last inspection results in 1996.

Future inspection schedule

Our future inspection schedule has not been altered by the current findings. We are scheduled to perform a Unit 1 11th cycle (Spring 2000) ISI inspection of the shroud horizontal and vertical welds as identified in PLA-4877 dated April 15, 1998. The inspections will follow the recommendations and requirements set forth in the appropriate BWRVIP documents.