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July 14, 1981

Mr. J. P. O'Reilly, Director
U. S. Nuclear Regulatory Commission
101 Marietta Street, Suite 3100
Atlanta, GA 30303

Re: Cherokee Nuclear Station, Unit 1
Docket No. 50-491
IE 81/01-5PS-491
NSSS-Shutdown Heat Exchanger
Duke Files: P81-1201.00, P81-1201.06

Dear Mr. O'Reilly:

Attached is Duke's progress report on the referenced 10CFR 50.55(e) reportable item. Another report will be submitted by October 1, 1981. Initial notification was made by telephone to Mr. Rausch of your office on December 17, 1980. An interim report was submitted to your office on January 15, 1981.

Very truly yours,

L. C. Dail, Vice-President
Design Engineering Department

GDR/pam

Attachment

cc: Director of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, DC 20555

IE27
S1/1

DUKE POWER CO.
CHEROKEE NUCLEAR STATION

Report Number: IE 81/01-5PS-491, (Progress Report)

Report Date: January 15, 1981 (initial)

Facility: Cherokee Nuclear Station - Unit #1

Restatement of Deficiency:

Apparent breakdowns in manufacturing, cleaning, and inspection processes on Shutdown Heat Exchangers (SDHX's)

Description of Deficiency:

On December 17, 1980, Mr. R. E. Miller and Mr. W. H. Bradley informed Mr. John Rausch, NRC of potential deficiencies in the Shutdown Heat Exchangers, supplied by Combustion Engineering as part of the NSSS contract, along the following lines.

1. Due to problems encountered on the WPPSS Unit #3 SDHX, and since the Duke SDHX's were manufactured by the same vendor (Ametek), CE advised Duke that heat exchangers were suspect of similar deficiencies.

2. Duke Unit #1 SDHX's were inspected at the site, and were found to have problems with the stainless steel cladding and contamination of tube side material surfaces.

Analysis of Safety Implications:

Refer to initial report.

Update on Corrective Actions:

Duke removed the Unit 1A and 1B SDHX's from the Reactor Building, and returned them to the original supplier for examination and repair. Results of the examination of the SDHX's are as follows:

Unit 1A:

(1) Unacceptable hardness readings and cracking will require recladding of the tube sheet, tubesheet to channel weld, and channel cover. Acceptable clad thickness will be verified by ultrasonic inspection (UT).

(2) Minor unacceptable PT indications in areas not to be reclad will be corrected and re-PT'd.

(3) Complete retubing will be required due to recladding of the tube sheet. New tubing will be eddy current tested (ET) per revised CE procedure to assure no unacceptable defects.

(4) Reworked heat exchangers will be cleaned, dried, and inspected following hydrotest to assure absence of surface contamination.

Unit 1B:

(1) All clad surfaces were found to be acceptable from an application (i.e. hardness) standpoint with the exception of a few minor unacceptable dye penetrant test (PT) indications. These unacceptable indications will be corrected and re-PT'd.

(2) Clad thickness was measured by UT technique for minimum thickness verification. Readings at ten points were found to be under the CE specified minimum. CE accepted this condition based on acceptable SS thickness at the surface to accomplish required design life corrosion protection. Acceptance of these exceptions to specification will be documented by including an approved deviation from contract requirement (DCR) in the QA documentation package.

(3) Contamination of tubing internal surfaces was removed by power tool/detergent cleaning. ET to revised CE procedure was conducted with no unacceptable indications.

The work identified above on Unit 1A is in various stages of progress, and complete on Unit 1B. Unit 1B has been re-hydrotested, final cleaned with demineralized water, dried, nitrogen blanketed on tube and shell side, and has just recently been delivered to the Cherokee site. Receipt inspection activities are underway and results will be available by 8-1-81. Unit 1A is scheduled to be completed and shipped by 8-31-81. A full report to the NRC on the causes of the deficiencies identified and details on the corrective actions taken is tentatively scheduled to be available by 10-1-81.

JCS/ser