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January 15, 1981

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

Re: Cherokee Nuclear Station, Unit 1
Docket No. 50-491
IE 81/01-5PS-491
NSSS-Shutdown Heat Exchanger
Duke Files: CK-1412.11-1

Dear Mr. O'Reilly:

Attached is Duke's interim report on the referenced 10CFR50.55(e) reportable item. Another report will be submitted by July 15, 1981. Initial notification was made by telephone to Mr. Rausch of your office on December 17, 1980.

Very truly yours,

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

JEB/pam

Attachment

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

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DUKE POWER CO.
CHEROKEE NUCLEAR STATION

Report Number: IE 81/01-5PS-491

Report Date: January 15, 1981

Facility: Cherokee Nuclear Station - Unit #1

Identification of Deficiency:

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

Description of Deficiency:

On December 17, 198_, 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, on the following basis:

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 these heat exchangers were suspect.

2. The Duke Unit #1 SDHX's were preliminarily 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:

The SDHX's provide a safety related function in both the containment spray and shutdown cooling modes of operation of the Containment Spray System.

The containment spray mode is designed to remove heat from the containment atmosphere in the event of a LOCA or MSLB inside the containment. The SDHX cools the containment spray water as it recirculates from the containment recirculation sump to the spray nozzles. Loss of one SDHX would delete redundancy in the containment spray mode, while the simultaneous loss of both SDHX's could compromise this mode of heat removal.

In the shutdown cooling mode the SDHX's remove heat during both cooldown and shutdown. During cooldown they remove core decay heat, Reactor Coolant System sensible heat, and safeguards pump heat; during shutdown they remove decay heat, containment spray pump heat, and low pressure safety injection pump heat. Loss of one SDHX in the shutdown cooling mode would delete redundancy and increase the normal cooldown time for plant shutdown, while the simultaneous loss of both SDHX's could compromise this mode of heat removal.

Corrective Actions:

Duke will remove the Unit 1A and 1B SDHX's from the Reactor Building, and return them to the original supplier for examination and repair. Specific corrective actions will be determined over the next 6-12 months. Similar problems will be precluded on Cherokee, Unit 2 and subsequent units not yet under construction.