

DUKE POWER COMPANY

P.O. BOX 33189  
CHARLOTTE, N.C. 28242

HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

TELEPHONE  
(704) 373-4531

84 FEB 17 4 54 PM '84

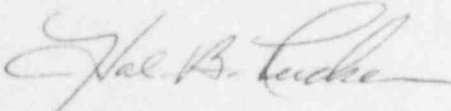
Mr. James P. O'Reilly, Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30303

Re: Catawba Nuclear Station  
Unit 1  
Docket No. 50-413

Dear Mr. O'Reilly:

Pursuant to 10 CFR 50.55(e), please find attached Significant Deficiency  
Report SD 413/84-01.

Very truly yours,



Hal B. Tucker

LTP/php

Attachment

cc: Director  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

NRC Resident Inspector  
Catawba Nuclear Station

Palmetto Alliance  
2135 1/2 Devine Street  
Columbia, South Carolina 29205

INPO Records Center  
Suite 1500  
1100 Circle 75 Parkway  
Atlanta, Georgia 30339

Mr. Robert Guild, Esq.  
Attorney-at-Law  
P. O. Box 12097  
Charleston, South Carolina 29412

8402220051 840213  
PDR ADDCK 05000413  
S PDR

OFFICIAL COPY

2227

11

## CATAWBA NUCLEAR STATION

REPORT NUMBER: SD 413/84-01

REPORT DATE: February 13, 1984

FACILITY: Catawba Nuclear Station - Unit #1

### IDENTIFICATION OF DEFICIENCY:

During the cool-down stage of the hot functional test, Nuclear Production Department detected an increase in the coolant makeup requirements. A search was made, and a leaking socket weld was found in the Residual Heat Removal System (ND) in the Auxiliary Building. This was identified on 01-03-84.

### INITIAL REPORT:

On January 13, 1984, G. Nejfelt, NRC Region II, Atlanta, Georgia, was notified of the subject deficiency by W. O. Henry, L. M. Coggins, J. K. Berry, and R. L. Williams of Duke Power Company, Charlotte, North Carolina 28242.

### DESCRIPTION OF DEFICIENCY:

Our investigation found that a 2" socket weld (IND66-35) had developed a crack in the weld metal extending approximately 300° around the circumference of the weld. This weld is a socket weld joining 2" pipe to a socket weld half coupling. The 2" line provides water to letdown heat exchanger for cleanup during refueling. While investigating this problem in the "A" Train, a similar problem was found in the "B" Train. In the latter case, another 2" socket (IND66-6) had developed a crack. This weld joined 2" pipe to a socket weld valve. This crack extended approximately 70° around the circumference of the pipe and was at the juncture of the weld metal and pipe base material.

The two socket welds have been removed and a metallurgical evaluation performed. This consisted of sectioning, polishing, and etching the cross section of the weld for optical microscopy. We also separated the cracked sections and examined the fracture surface using a scanning electron microscope.

Each of the two lines in question contain a motor operated valve. There are spring supports on the motor operators to support the weight of the valves; and on the "A" Train motor operator, there is a restraint to control seismic vibration. The supports on the valves had been disconnected for valve maintenance. Stress Analysis reviewed the systems with and without the supports.

The conclusions of our evaluations to date are as follows:

1. The system is adequately supported for all normal design loads.
2. The socket welds met code requirements.

Catawba Nuclear Station - Unit #1  
Report Number : SD 413/84-01  
Report Date : January 13, 1984

3. The possible cause of the weld failures was low cycle fatigue induced by vibration within the system. This condition may have been aggravated by the absence of the valve supports mentioned above.

ANALYSIS OF SAFETY IMPLICATIONS:

Had the leaks occurred during plant operation, any potential contamination would have been contained in the Auxiliary Building. However, assuming similar leaks in both trains, the intended safety function of the Residual Heat Removal System could possibly have been adversely affected.

CORRECTIVE ACTION:

We are developing a test procedure to operate the systems at various flows and valve alignments to identify any vibration problems. This potential problem will be evaluated for Catawba - Unit #2 and other Duke Power Company Nuclear Units, and any safety significant problems will be reported. We anticipate completion of this evaluation and forwarding a supplementary report on our findings by August 13, 1984

RLW:grm  
02-11-84