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84 APR 24 P 3:28

April 20, 1984

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:

Please find attached an interim report on corrective actions taken on Significant Deficiency No. 413/84-01.

Very truly yours,

H. B. Tucker/BH

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

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JPO/HBT/LTP
April 20, 1984

INTERIM REPORT
CATAWBA NUCLEAR STATION

REPORT NUMBER: SD 413/84-01

REPORT DATE: April 20, 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 metallurigical 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.

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3. The possible cause of the weld failures was low cycle fatigue induced by vibration within the system. This condition may have been aggrevated 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:

Subsequent to our report of February 13, 1984 some vibration testing has been done. This testing was done on March 13, 1984 on the "A" Train with no unacceptable vibration detected. These tests were performed at 69°F and approximately 200 psig. We were limited to these conditions because the system was "cold" and the reactor vessel head was not in place. Additional testing will be performed subsequent to fuel loading. This testing will be done at the 350°F plateau of the heat-up cycle. Beyond this point, the ND System would be isolated. As an additional means of assurance, the piping in question will be monitored by visual observation at least once in each 12 hour period. This monitoring would commence upon operation of the effected portion of the ND System and be terminated upon isolation of the ND System from the NC System.

We have committed to issue a supplementary report by August 13, 1984. This date is contingent upon fuel loading and heat-up as currently scheduled.

THIS IS AN INTERIM REPORT

RLW:mmg
04-17-84