

DUKE POWER COMPANY

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September 3, 1982

Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

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

Dear Mr. O'Reilly:

Pursuant to 10 CFR 50.55e, please find attached Significant Deficiency Report
SD 413/82-17.

Very truly yours,

H.B. Tucker / HBT

Hal B. Tucker

RWO/php
Attachment

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

Mr. P. K. Van Doorn
NRC Resident Inspector
Catawba Nuclear Station

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DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
SIGNIFICANT DEFICIENCY

REPORT NUMBER: SD 413/82-17

REPORT DATE: September 3, 1982

FACILITY: Catawba Nuclear Station Unit 1

IDENTIFICATION OF DEFICIENCY: During review of supplemental field radiograph of pipe/valve weld area a subsurface indication was identified in the base metal of valve 1FW056. The size and location of the indication was verified by etching and liquid penetrant examinations during removal of the indication by grinding.

INITIAL REPORT: Initial report was made to Mr. A. Ignatonis, Region III NRC, on August 6, 1982 by Messrs. W. O. Henry, J. E. Cavender, and V. H. Shellhorse.

DESCRIPTION OF DEFICIENCY: Duke nonconforming item report number 13187 documented a difference in interpretation between the Duke Level III RT inspector and the site authorized nuclear inspector. The site authorized inspector feels the indication is a crack that propagates from a porosity indication in the weld into the valve body. The Duke Level III feels the indication is an inclusion in the base material. The situation was discussed with Mr. J. L. Coley of the NRC during a November 2-6, 1981 site inspection and is documented in his report number 50-413-414/81-26, item 3. c. 2. The NRC inspector feels there are two indications; one indication is believed to be porosity in the weld and the other an inclusion in the base material which starts below the porosity indication and runs towards the valve body. It was agreed that supplemental RT examinations would be made by Duke. The piping system was drained in July 1982 to allow the supplemental radiography. This radiography revealed the indication to be near the outside surface, but it was not determined if the indication was a single indication or two indications, one in the weld and one in the valve. An ultrasonic examination was performed from the inside surface using both straight and angle beam techniques. The indication was not detected, even when the sensitivity of the UT equipment was increased to greater than 100% minimum sensitivity. Exploration of the indication was performed by grinding. The indication was uncovered approximately 1/16 in. below the outside surface and was approximately 3/64 in. in diameter. Etching was performed and revealed the indication to be in the valve material approximately 1/32 in. from the weld fusion zone at 0. D. Further exploration by grinding was performed and also liquid penetrant examination performed after incremental grinding. This revealed that the indication was one single indication which extended approximately 1/2 the wall thickness in a direction essentially perpendicular to the outside surface and then sloped (angled) away from the weld joint towards the valve body and extended essentially through the wall (the indication was approximately 9/16 in. from the weld on the inside surface). A large quantity of penetrant was applied during the exploration.

There was no evidence of penetrant on the inside surface, indicating no leak path through the wall. The indication was evaluated to be an inclusion in the base material which was not closed during the forging process.

The valve used in application IFW056 (9D-212) is a 12 inch, 300# pressure class Westinghouse check valve with serial number 1200CS8400000000S740008. The valve was manufactured by the Westinghouse Electro-Mechanical Division in Cheswick, Pennsylvania from forged SA182 type F316 material in accordance with the 1974 edition of the ASME Section III Code, Class 1. The material was supplied by Wymann Gordon with heat number 535062.

The valve documentation package shows that Westinghouse performed an ultrasonic examination on the valve and that no recordable indications were found.

ANALYSIS OF SAFETY IMPLICATION: The inclusion did not compromise the pressure boundary integrity of the valve. First, the valve was in compliance with the liquid penetrant and ultrasonic testing acceptance criteria required by the ASME Code even though an indication which was difficult to interpret was noted during additional RT examinations. Second, the valve has passed the component hydrostatic test and the piping system hydrostatic test without leaks. The component hydrostatic test of 1181 psig is 2.6 times the maximum system pressure of 450 psig. Third, the component hydrostatic pressure is based on a ASME Code required minimum wall thickness of 0.57 inch. According to the valve documentation package, the smallest actual minimum wall thickness is 1.492 inch which is 0.922 inch in excess of the required code minimum wall.

CORRECTIVE ACTION: The indication has been removed from the valve and a major weld repair was performed.

Westinghouse was contacted by telephone on August 5, 1982 to verify that similar problems had not been reported by other customers. No other problems were known at that time; however, review as a possible 10CFR21 deficiency was initiated.

In order to prevent reoccurrence of similar problems we will reemphasize the need for conservative evaluations of base metal indications in close proximity to welds. Specific guidance will be developed by November 1, 1982.