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84 OCT 2 P1:20

September 27, 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
Units 1 and 2
Docket Nos. 50-413 and 50-414
Significant Deficiency 413-414/84-18

Dear Mr. O'Reilly:

Please find attached a final report on the subject Deficiency which was identified in my letter of July 27, 1984. All corrective action has been completed for the Unit 1 diesels.

Very truly yours,

Hal B. Tucker

Hal B. Tucker

LTP/mjf

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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Final Report

Catawba Nuclear Station

Report Number: SD 413-414/84-18

Report Date: September 27, 1984

Facility: Catawba Nuclear Station, Units 1&2

Identification of Deficiency: Transamerica Delaval Inc. furnished four diesels for the Catawba Nuclear Station with the possibility of residual stresses in the type AN piston skirts.

Initial Report: On June 28, 1984, Mr Virgil Brownlee of the NRC Region II, Atlanta, Georgia office was notified of this deficiency by Mr L M Coggins, Mr J M Lines, Mr T L Utterback, and Mr R D Carroll of Duke Power Company, Charlotte, NC 28242.

Supplier and/or Components: Transamerica Delaval Inc. of Oakland, California, manufactured and supplied the type AN piston skirts that were initially installed in the four Catawba diesels and are designated 1A, 1B, 2A and 2B.

Description of Deficiency: Four type AN piston skirts were found to have cracks adjacent to the piston pin bosses. These cracks are approximately vertical, and appear to initiate on the inside of the skirt where a circumferential reinforcing rib intersects the piston pin boss. The largest crack, on diesel generator 1A-cylinder 3L, penetrates the piston wall and is about 3 to 4 inches long on the outside. These cracks were visually located during an inspection, following an extended operational test of diesel generator 1A, and verified by dye penetrant

and ultrasonic testing.

Analysis of Safety Implication: The cracking of the AN type piston skirt was attributed to high cycle fatigue. The Catawba unit 1 diesels operated approximately 800 hours without the operability of the diesel being compromised. Therefore, it is reasonable to expect continued operation of the diesel, using an AN type piston skirt, without a piston failure. However, since 4 AN type piston skirts cracked, this situation is evaluated to be a potentially generic problem. As a result, the AN type piston skirts in the Catawba unit 1 diesels have been replaced with the improved AE type pistor. skirt, and the Catawba unit 2 diesels are expected to have the AE type piston skirts installed by August, 1985.

Corrective Action: The cracked type AN piston skirts in the Catawba 1A diesel did not cause any operational problems, and 12 of the 16 skirts were free of cracks. However, all of the unit 1 piston skirts have been replaced with improved design AE type skirts. The AE skirts have been stress relieved and include improved design features such as a thicker reinforcing rib and better rib to piston boss intersection details. These improvements are expected to adequately reduce stresses and the propensity for cracking in the area which experienced cracking at Catawba. In addition, the type AE skirts also incorporate the latest improvements in the stud boss region, which has been a problem area in earlier piston designs at the skirt to head transition.

The Catawba unit 2 diesels are expected to have the type AE piston skirts installed by August, 1985.