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Carolina Power & Light Company

December 6, 1979

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

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
LICENSE NO. DPR-23
DOCKET NO. 50-261
RESPONSE TO IE BULLETIN 79-17
PIPE CRACKS IN STAGNANT BORATED WATER SYSTEMS

Dear Mr. O'Reilly:

On July 26, 1979, the NRC issued the subject IE Bulletin 79-17, "Pipe Cracks in Stagnant Borated Water Systems at PWR Plants." The bulletin requires 1) the identification of all systems which contain stagnant oxygenated borated water, 2) previous history of inspections associated with those systems, 3) visual examination of 100% of all normally accessible welds of those systems to verify system integrity, and 4) volumetric and liquid penetrant examination of a minimum of 10% of all accessible welds in each system by pipe size and wall thickness. By our letter of September 6, 1979, CP&L provided responses to Items 1, 1a, 1b, 1c, and 1d of the subject bulletin. In addition, it was stated that the visual, volumetric, and surface examinations required could take longer than the time frame specified in the bulletin; and an extension of 60 days was requested. The request for extension was based on the magnitude of the examinations required and unsettled concerns regarding the procedures to be used.

Since the September 6, 1979, letter, CP&L has completed the required examinations. Through discussions with members of the NRC Region II staff and our consultants, it was determined how the required examinations would be conducted. Inspection techniques, sample methods, and reporting requirements were developed from these discussions, the requirements of the bulletin, and our September 6, 1979, letter. All required examinations were completed on November 5, 1979.

No evidence of intergranular stress corrosion cracking was found.

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On October 31, 1979, CP&L received Revision 1 to IE Bulletin 79-17. A review of the Revision 1 requirements verified that the examination and inspection program developed and performed in accordance with the original bulletin encompassed the requirements and guidelines presented in the revision.

The program implemented to meet the requirements of the bulletin began with the identification of the portions of the system which required inspection. The systems and the individual lines affected within the systems are identified in our September 6, 1979, response. Upon determination of the affected systems and lines, review of existing records was made; and each weld on the affected piping was identified on the system isometric drawings. From these isometrics, the welds to be examined were identified.

In conjunction with the weld identification process, procedures were identified that meet the specific requirements of the bulletin. To provide the visual inspections required, a special procedure was developed using as a guideline the 1977 ASME Code, Section V, Article 9, "Visual Examination." The procedure developed is specifically designed to determine the presence of boric acid residue on or around each weld. Liquid penetrant examination procedures used were (1) Westinghouse Electric Corporation Inspection Procedure NSD-ISI-11, Revision 9, Liquid Penetrant Examination Procedure," which complies with the requirements of ASME Section XI; and (2) H. B. Robinson Procedure QAP-4A, Revision 2, "Dye Penetrant Inspection." The ultrasonic procedure used is Westinghouse Electric Corporation Inspection Procedure NSD-ISI-90, Revision 1, "Manual Ultrasonic Procedures for Investigating for Presence of Intergranular Corrosion." Prior to the use of this procedure at H. B. Robinson, the procedure was qualified using actual piping samples removed from TMI Unit No. 1, which had been proven to have IGSCC of varying depths.

The field inspections included visual inspection of 100% of all the accessible welds. To make these inspections, insulation was removed; and individual examinations were performed on all the welds involved except those located on the RHR Heat Exchanger inlet and outlet piping inside the heat exchanger room. Piping inside the heat exchanger room was inspected for evidence of leakage; i.e., boric acid deposits and actual leaks during the annual RHR system leakage check conducted on November 5, 1979. When found, boric acid residue was removed from the weld area; and a liquid penetrant examination was performed. No boric acid residue was found on or around piping welds during any of the visual inspections that would indicate cracks in the piping, and no evidence of cracks were identified during any of the inspections.

Welds on which liquid penetrant and ultrasonic examinations were performed were randomly selected from welds on normally accessible lines. Welds were chosen such that for each system, pipe size, and wall thickness a minimum of 10% were examined. Although randomly selected, special attention was given to choosing welds such that those selected covered areas at low points and on horizontal and vertical runs of piping in each system. Welds on all piping in all accessible systems as previously identified were included in the sampling. Welds on piping with wall thickness less than 0.250 inches were examined by liquid penetrant and visual methods only. All other welds were examined by all three methods.

A total of approximately 725 accessible welds were identified for examination in the Safety Injection, Residual Heat Removal, Chemical and Volume Control, Waste Disposal and Spent Fuel Pit Cooling Systems. Specific lines inspected were listed in our response of September 6, 1979. A total of sixty-five (65) of the 725 welds were in the RHR heat exchanger room and were leak checked during the annual RHR leakage check. The remainder of the welds were visually examined as was previously described. Approximately 260 of the 725 welds were on piping with a wall thickness less than 0.250 inches. Thirty-three (33) of the 260 welds were liquid penetrant examined. Sixty (60) of the remaining welds on piping with greater than 0.250 inches wall thickness were examined by both liquid penetrant and ultrasonic methods. All welds inspected were chosen as previously described.

No evidence of intergranular stress corrosion cracking was found during any of the inspections. Based on the program implemented and results obtained, the requirements of the subject bulletin and its revision have been satisfied. No other inspections or follow-up to this bulletin are required nor scheduled.

If you have questions or desire further information concerning this response, please contact me.

Yours very truly,

B. J. Furr
Vice President - Nuclear Operations

MFP/CSB/jmb*

cc: Mr. N. C. Moseley, Jr.