DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28201

A. C. THIES
SENIOR VICE PRESIDENT
PRODUCTION AND TRANSMISSION

P. O. BOX 2178

January 31, 1974

Mr. Norman C. Moseley, Director
Directorate of Regulatory Operations
U. S. Atomic Energy Commission
Region II - Suite 818
230 Peachtree Street, Northwest
Atlanta, Georgia 30303

Re: RO:II:FJ
50-287/73-12

Dear Mr. Moseley:

Please find attached our response to Item I.A., "Reactor Vessel Baseline Inspection Procedures." These comments respond to the details section of the report prepared by S. D. Ebneter, dated January 2, 1974. The same paragraph and section numbers will be used in our response.

Duke Power Company does not consider any information contained in RO Inspection Report 50-287/73-12 to be proprietary.

Very truly yours,

Paul H. Barton

A. C. Thies For

ACT:vr

Attachment

8001140608

DUKE POWER COMPANY
OCONEE NUCLEAR STATION - UNIT 3
RESPONSE TO RO INSPECTION REPORT 50-287/73-12
REACTOR VESSEL BASELINE INSPECTION PROCEDURES

2.a. Test Procedure

The report states that the controlling documentation for this testing was B&W Test Procedure BLI-11, "Automated Ultrasonic Inspection of Reactor Vessel Weld Seam, Nozzle Welds and Ligament." The report states that the document was not an approved procedure as evidenced by the word "draft" printed on the first page.

The Unit 3 examination was being performed in accordance with procedures which had been previously used by B&W for manual examinations on the other Oconee units. These examinations are detailed in B&W's written procedures for ultrasonic examinations, BLI-1 through 8. They also detail the scanning coverage. The equipment operation was controlled by B&W Automated Reactor Inspection System Operators Manual and Training Guide. The BLI-11 draft was a composite procedure, incorporating the examination procedures and the Automated Reactor Inspection System Operation into one document. Subsequently, after the AEC inspectors left the site, the draft copy of BLI-11 was finalized and transmitted to Copley, Ohio, for approval. This composite procedure was then approved by B&W personnel and transmitted to Duke for approval. Duke Power approved this procedure for use on December 15, 1973. All further examinations were performed in accordance with BLI-11. All data obtained prior to December 15, 1973, were verified by B&W and Duke Power Company personnel, using the approved BLI-11 procedure. All recorded indications were verified as to size, amplitude, and position. In addition, several areas noted as clear were re-examined to verify that no indications were present.

The report states that the scope of the procedure specified that ASME Section XI was the controlling test code, but no specific date of issue was noted, and that B&W personnel could not find the applicable date of issue.

The examination procedures being used meet the ultrasonic examination requirements of the 1970 edition of Section XI (as stated in the 1968 edition of

Section III, Appendix IX, IX-340) and 1971 edition of Section II (as stated in the 1971 edition of Section III, Appendix IX, IX-3400).

2.b. Test Operations

The report states that the inspector requested B&W personnel to demonstrate system calibration and transfer, but neither could be accomplished on December 13. It further states that B&W personnel revised procedure BLI-11 during the evening and did demonstrate calibration on December 14.

The operator was performing this calibration for the first time. The calibration sequence had been performed and verified the previous night, December 12, 1973. A note from the Shift Supervisor described the particulars of calibration which the operator had not had time to check before the inspector's arrival. The operator was in the process of performing calibration when requested by the inspector to perform a transfer. He was not able to demonstrate transfer since he needed additional time to finish calibration and check the transfer sequence. The following day, both calibration and transfer were demonstrated to the inspectors.

The report further stated that the temperature of the reactor coolant water should have been checked periodically since transducer output is the function of the couplant temperature and thus, compensation must be made in relation to temperature. It is reported that B&W personnel stated that they had not checked the couplant temperature since the temperature probe was in the repair shop.

The temperature readout unit for the temperature sensing system provided with the ARIS system had been checked out before the unit was shipped to Oconee, and found to be out of calibration. As a result, the temperature was measured manually, instead of using the readout unit. The temperature does not affect the transducer output to any noticeable degree in the range encountered in the reactor vessel (40 to 120°F). It does, however, affect the ultrasonic wave propogation velocity in the couplant, which in turn affects the angle of the resultant wave in the vessel wall. At least one temperature measurement was being made per shift, manually, during the initial calibration and

throughout the time period the automated inspection system was used.

The report also states that "B&W personnel had been performing U-T inspection for several days and had accumulated some data on magnetic tape which were to be used for baseline data. The inspector requested a retest of a known recordable response to verify repeatability of the system. B&W personnel could located the recordable response but they were unable to verify the previously recorded magnitudes. The inspector requested Duke Power Company to sample the recorded test data to verify repeatability."

The amplitudes of implications detected in ultrasonic examination may not be repeated to the exact values detected previously. All indications that had been recorded prior to the inspector's visit were verified by B&W and Duke Power Company personnel. The review verified the position, size, and indication magnitudes within the accuracy range of the equipment.

2.c. Test Personnel

The second paragraph of this section of the inspection report states that no B&W personnel were certified as to being qualified to operate the computer controlled ARIS. The B&W personnel operating the equipment were trained in accordance with "ARIS Operators Manual and Training Guide" before going to Oconee. The training consists of 40 hours of classroom and operating experience with the system. A memo stating their training has been included in the preoperational inspection manual for Oconee Unit 3, and a copy of this memo is included in this response as Attachment 1.

2.d. Test Equipment

The inspector stated that typical equipment problems associated with the ARIS system were:

1. Temperature sensing and display subsystem were missing due to malfunction. Temperature was monitored manually; see response to 2.b.
2. An amplifier channel consistently displayed an alarm condition. B&W personnel explained that this was due to inadequate system grounding. The amplifier was not used in the data acquisition.
3. Calibration block certification could not be verified due to incomplete records. Only basic drawings defining geometry were available with no details of heat treatment or alloy composition. Data were to be sent from Copley, Ohio, by B&W.

Data were sent to Duke Power Company on December 17, 1973.

4. Transducer calibration data were not available at site. These data were requested by the licensee from B&W, Copley, Ohio, and will be supplied.

   Section XI and III of the ASME Code do not require any transducer calibration data other than that used to calibrate the ultrasonic transducer and instrument before the examination is performed. The qualification of a transducer is its ability to resolve the appropriate hole in the calibration block and to repeat the calibration checkpoints.

5. Test equipment operating logs were maintained by B&W but not in sufficient detail to enable a determination of the affect of equipment modification and repair. B&W agreed to record, in detail, malfunctions and repairs made, and to date and sign each entry for future audit purposes.

   The test equipment operating logs are used for B&W information purposes. The detail desired is a matter of judgment on B&W's part. The entries made were sufficient for B&W's purposes.

To prevent recurrence of similar incidents, a quality control supervisor will be added to the staff of Oconee Nuclear Station. Among his responsibilities will be to insure that contracted services, such as the baseline inspection, are performed in accordance with the requirements of Appendix B to 10CFR50. This quality control supervisor will be added to the Oconee organization before April 30, 1974.

Letter to Duke Power Company from N. C. Moseley
dated [illegible] 15 1974
Letter to N. C. Moseley from A. C. Thies, Duke Power Company,
dated January 31, 1974

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