TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

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November 15, 1983

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - RESPONSE TO VIOLATIONS 50-438/83-24-01, 50-439/83-24-01 - QUESTIONABLE ULTRASONIC EXAMINATIONS - 50-438/83-24-02 - THE ACTION TO PRECLUDE RECURRENCE STATED IN NCR 2089 HAS NOT BEEN IMPLEMENTED

This is in response to R. C. Lewis' letter dated October 17, 1983, report report numbers 50-438/83-24, 50-439/83-24 concerning activities at the Bellefonte Nuclear Plant which appeared to have been in violation of NRC regulations. Enclosed is our response to the citations.

If you have any questions concerning this matter, please get in touch with R. H. Shell at FTS 858-2688.

To the best of my knowledge, I declare the statements contained herein are complete and true.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Licensing

Enclosure
cc: Mr. Richard C. DeYoung, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Records Center (Enclosure)
Institute of Nuclear Power Operations
1100 Circle 75 Parkway, Suite 1500
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ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
RESPONSE TO SEVERITY LEVEL IV VIOLATION
50-438/83-24-01, 50-439/83-24-01
QUESTIONABLE ULTRASONIC EXAMINATIONS

Description of Deficiency

10 CFR 50, Appendix B, Criterion V, as implemented by FSAR Section 17.1A.5, requires that activities affecting quality, such as ultrasonic examinations (ultrasonic testing) of containment penetration welds and control of records for examinations of these welds -

(1) Be prescribed by procedures, instructions or drawings that contain documented criteria for determining that important activities are satisfactorily accomplished.

(2) Be accomplished in accordance with the procedures.

Contrary to the above, procedure BNP-QCP-7.2, the procedure prescribed by the licensee for ultrasonic testing of containment penetration welds 1NI00009, 10, 12, 13 and 14 and 2NI00009, 10, 12, 13 and 14, did not contain criteria to assure that the ultrasonic testings were satisfactorily accomplished; and the ultrasonic testings and control of records therefore were not accomplished in accordance with the prescribed procedures, as indicated by the following examples:

(1) The Code applicable to the ultrasonic testing, ASME Section V (74), requires that examination records identify the procedure used (including calibration data) sufficiently to repeat the examination at a later date. The licensee's procedures did not contain documented criteria to assure that the following procedure information, needed to repeat the examination, was recorded:

- Scan directions and distances
- All DAC points and point amplitudes
- Procedural steps used to correct DAC curve utilizing transfer data
- Transfer data

As a consequence, the above procedural information was not recorded.

(2) The ultrasonic testing procedure did not designate any documented limit or other criteria to assure that the Code specified maximum scanning rate of 6 in./sec. was not exceeded. Maximum scanning rate is ordinarily specified in ultrasonic testing procedures intended to meet ASME Code requirements.

(3) The ultrasonic testing procedure did not provide any requirements or other documented criteria to assure that ultrasonic testing calibrations were maintained. No rechecks of calibration were required by the procedure, on any frequency, and the licensee's records do not indicate any instances of calibration rechecks. Calibration rechecks are necessary to assure that calibrations are not significantly affected by equipment handling, electronic component drift, etc.

(4) The ultrasonic testing procedure (and the Code) required that the calibration block for the examinations be of the same or equivalent P-No. as the material being examined. The material examined was P-No. 1. The ultrasonic testing records indicate the calibration block used was P-No. 8, which is not equivalent to P-No. 1. Thus, the calibration was not accomplished in accordance with the procedure.

(5) The ultrasonic testing procedure (and the Code) specifies calibration block and hole dimensions based on the thickness of the material examined. The material examined for ultrasonic testing of the penetration welds was over one inch thick. The block utilized in final ultrasonic testings of all the subject penetration welds was the block designated for material less than one inch thick. Thus, the calibration was not accomplished in accordance with the procedure.

(6) The ultrasonic testing procedure (and the Code) requires that the complete volume of weld metal be examined. Based on a review of the weld prep drawings and the ultrasonic testing records it appears that examination of the complete volume of weld metal, as required by the procedure, was not accomplished.

(7) The ultrasonic testing procedure requires that calibration data be recorded. It does not provide criteria to indicate exactly what data is required however.

(8) The ultrasonic testing procedure and the procedure for control of records, BNP-QCP-10.7, required preparation of Ultrasonic Test Reports such that they were readily retrievable. The ultrasonic testing records for Unit 1 welds, 1NI00009, 10, 12, 13 and 14 could not be readily retrieved when requested June 1-4, 1981 and October 19-23, 1981.

TVA Response

Items 1 and 7

1. Admission or Denial of the Alleged Violation

TVA admits the violation occurred as stated. However, we do not agree that ASME Section V, Article 5 specifically requires the recording of scan directions and distances, all DAC points amplitudes, procedural steps needed to correct DAC curve utilizing transfer data or the transfer data.

2. Reason for the Violation

Failure of the ultrasonic testing personnel to be consistent with what information, including calibration data, is to be entered into the respective areas of the ultrasonic test report can be attributed to both lack of procedural detail and insufficient training.

3. Corrective Steps Taken and Results Achieved

A sample ultrasonic test report has been prepared detailing specific data to be recorded that will insure repeatability of the examination. This sample report is being incorporated into the site ultrasonic testing procedure QCP-7.2 by Revision Request BNP-123.

4. Corrective Steps Taken to Avoid Further Noncompliance

Bellefonte ultrasonic testing inspection personnel have been retrained in the proper method of completing the ultrasonic testing report. Additionally, this method has been incorporated into the training program at the Nondestructive Examination (NDE) Training Center at Watts Bar Nuclear Plant to assure that all future ultrasonic testing personnel will be consistent in the completion of this type test report.

5. Date When Full Compliance Will Be Achieved

The sample report will be incorporated into the ultrasonic testing procedure QCP-7.2 by November 28, 1983.

Items 2 and 3

1. Admission or Denial of the Alleged Violation

TVA denies the occurrence of this part of the alleged violation.

Reasons for Denial

Item 2 states the procedure does not include the code specified limit on scanning rate (not to exceed six inches per second). There is no requirement for a six inch per second maximum scan rate in ASME Section V, Article 5 when performing ultrasonic examination of welds. However, we feel that we are in compliance since we are aware of the scanning rate limitation requirements as stated in ASME Section V, Article 5, T-524.2, "Angle Beam Examination of Steel Castings" and the applicable portions of Article 23. (Please refer to the July 1, 1974 edition.) Also, there are practical physical limitations while trying to exceed this rate under manual scan methods. These requirements are imparted to all Level I and Level II ultrasonic testing inspection personnel during training courses, before certification at our NDE Training Center at Watts Bar Nuclear Plant.

Item 3 states that neither the procedure nor the records indicate requirements for a performance of rechecks of calibration and that such rechecks are needed to assure maintenance of calibration.

Although neither ASME Section V nor our procedures require rechecks or post-calibration following examinations, we do periodically check the integrity of the calibration in process of examination by the use of a portable "rompas" field calibration block as a matter of good practice.

Items 4 and 5

1. Admission or Denial of the Alleged Violation

TVA admits this part of the violation occurred as stated.

2. Reason for Violation

Failure of ultrasonic testing inspection personnel to utilize proper calibration blocks can be attributed to inadequate implementation of procedural requirements.

3. Corrective Steps Taken and Results Achieved

Upon identification of this discrepancy, an immediate investigation was conducted to identify welds previously examined and affected by the use of improper calibration blocks. Documented corrective action consisting of reexamination of affected welds is being tracked by quality control investigation reports (QCIRs) 36,238 and 36,273. Corrective action for containment electrical penetration welds is being tracked by NCR 2445.

4. Corrective Steps Taken to Avoid Further Violations

Applicable unit inspection personnel have been retrained in proper calibration methods per G-29M Process Specification 3.M.7.1, "Specification for Ultrasonic Examination of Weld Joints."

5. Date When Full Compliance Will Be Achieved

There are approximately 150 welds which will require reexamination. Some of the affected welds are located in systems where the insulation must be removed in order to examine the welds. Therefore, reexamination of affected welds and correction of any deficient conditions found will be accomplished by January 1, 1985.

Item 6

1. Admission or Denial of the Alleged Violation

TVA denies the alleged violation occurred as stated.

Reasons for Denial

ASME Section V, Article 5, paragraph T-535.1(b) states, "The beam angle in the production material shall be in the range of 40 to 75 degrees inclusive, with respect to the perpendicular to the entry surface." The 10 welds in question were examined using a 60 degree

transducer. During this examination, welds 1NI0009 and 1NI00010 were rejected. The repair ultrasonic testing was performed only on the repair areas of these welds using a 45 degree transducer. Only one side of the weld had a counter bore situation. By using our alloted 14/8 vee path and by scanning the area of interest from both sides, we have verified that the entire volume of the repair weld metal in question was covered.

Item 8

1. Admission or Denial of the Alleged Violation

TVA admits the violation occurred as stated.

2. Reason for the Violation

The review instructions used to review ultrasonic testing documents did not provide the capability to cross-check ultrasonic testing documents during the time the inspections were done. Due to this inability to cross-check files at submittal, the inspection reports referenced in this report were not available to the inspector.

3. Corrective Steps Taken and Results Achieved

The ultrasonic reports referenced in the violation were identified in QCIR 13,988. The missing reports were replaced with existing copies or information from the personnel performing the work. A review was made of all ultrasonic testing reports (refer to attachments B and C of the subject reports) to ensure all were present. No additional reports were found missing.

4. Corrective Steps Taken to Avoid Further Violations

The procedure used to review ultrasonic testing reports that are submitted as complete (QCRU-RI-192) has been revised to include a cross-check to verify that the corresponding ultrasonic report is on file in the records vault.

5. Date When Full Compliance Was Achieved

Full compliance was achieved on or by October 10, 1982.

BELLEFONTE NUCLEAR PLANT UNIT 1
RESPONSE TO SEVERITY LEVEL IV VIOLATION
50-438/83-24-02
THE ACTION TO PRECLUDE RECURRENCE STATED IN NCR 2089
HAS NOT BEEN IMPLEMENTED

Description of Deficiency

10 CFR 50, Appendix B, Criterion XVI, as implemerted by FSAR Section 17.-1A.16, requires that the licensee establish measures to assure that corrective actions are taken to preclude repetition of significant conditions adverse to quality.

TVA Nonconformance Report (NCR 2089) identified an overpressurization of safety-related piping during flushing as a significant condition adverse to quality. One of the corrective actions specified to preclude repetition of the overpressurization (which occurred when a valve in the flow path was not open as required) was to place lead seals on the valves after alignment to assure they were maintained in the proper positions to provide required flow paths.

Contrary to the above, when the flushing procedure BNP-CTP-6.1 was changed to incorporate corrective actions described in NCR 2089, the requirement to place lead seals on the valves was not incorporated with the rest of the corrective actions. This applies to Unit 1 only.

Response

1. Admission or Denial of the Alleged Violation

TVA denies the alleged violation.

Reasons for Denial

The violation stated that BNP-CTP-6.1 was not revised to incorporate the requirement to place lead seals on valves as specified in NCR 2089 as a corrective action to preclude repetition of the overpressurization. The inspector's determination concerning the revision of BNP-CTP-6.1 is apparently the memorandum from Lonnie S. Cox to R. M. Hodges dated May 26, 1983 which provided root cause and actions to prevent recurrence associated with NCR 2089. The memorandum listed four basic actions as recurrence control. Action number three stated that BNP-CTP-6.1 was revised to incorporate three new and improved requirements for flushing operations. Action number four stated that Mechanical Quality Control (MQC) was now using lead seals on valves after alignment to assure proper configuration controls were maintained. TVA never intended for lead sealing of valves to become a project program requirement, and therefore, did not include this action as a revision to BNP-CTP-6.1. The inspection report stated the inspector determined that the licensee had not implemented the use of lead seals as specified. This determination by the inspector was incorrect in that MQC was using lead seals on system boundary valves prior and during the time of the NRC inspection.

Subsequent to the NRC inspection, an additional memorandum from Lonnie S. Cox to R. M. Hodges dated September 15, 1983 requested concurrence by Engineering Design for rescinding action number four specified in the previous memorandum in that actions one through three were adequate to prevent recurrence and lead sealing of valves was never intended to be a project program requirement. A memorandum from R. M. Hodges to L. S. Cox dated September 30, 1983 provided concurrence with the site position. Upon receipt of the R. M. Hodges memorandum, the practice of lead sealing of valves was discontinued.

In addition to the recurrence control actions specified for NCR 2089, BNP-CTP-6.1, R3 was issued June 29, 1983, and requires MQC verification and sign-off on any valve realignment during flushing operations. This requirement was specified to prevent any valve alignment discrepancies and basically renders the use of seals obsolete.