



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
230 PEACHTREE STREET, N.W. SUITE 1217
ATLANTA, GEORGIA 30303

In Reply Refer To:
RII:BRC
50-390/78-13
50-391/78-11

MAY 26 1978

Tennessee Valley Authority
Attn: Mr. N. B. Hughes
Manager of Power
830 Power Building
Chattanooga, Tennessee 37401

Gentlemen:

This refers to the inspection conducted by Mr. B. R. Crowley of this office on April 17 - May 2, 1978, of activities authorized by NRC Construction Permit Nos. CPPR-91 and CPPR-92 for the Watts Bar Nuclear Plant, Unit Nos. 1 and 2 facilities, and to the discussion of our findings held with Mr. T. B. Northern at the conclusion of the inspection.

This inspection was conducted to perform an independent NDE study. The study consisted of inspection (RT, PT and visual) of a selected sample of various types of welds by an independent contractor and comparing the results with your inspection results. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

We have examined actions you have taken with regard to previously identified enforcement matters. These are discussed in the enclosed inspection report.

During the inspection, it was found that certain activities under your license appear to be in noncompliance with NRC requirements. This item and references to pertinent requirements are listed in the Notice of Violation enclosed herewith as Appendix A. This notice is sent to you pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations. Section 2.201 requires you to submit to this office, within 20 days of your receipt of this notice, a written statement or explanation in reply including: (1) corrective steps which have been taken by you and the results achieved; (2) corrective steps which will be taken to avoid further noncompliance; and (3) the date when full compliance will be achieved.

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MAY 26 1978

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosed inspection report will be placed in the NRC's Public Document Room. If this report contains any information that you (or your contractor) believe to be proprietary, it is necessary that you make a written application within 20 days to this office to withhold such information from public disclosure. Any such application must include a full statement of the reasons on the basis of which it is claimed that the information is proprietary, and should be prepared so that proprietary information identified in the application is contained in a separate part of the document. If we do not hear from you in this regard within the specified period, the report will be placed in the Public Document Room.

Should you have any questions concerning this letter, we will be glad to discuss them with you.

Sincerely,



C. E. Murphy, Chief
Reactor Construction and Engineering
Support Branch

Enclosures:

1. Appendix A, Notice
of Violation
2. RII Inspection Report Nos.
50-390/78-13
50-391/78-11

cc w/encl:

Mr. J. E. Gilleland
Assistant Manager of Power
830 Power Building
Chattanooga, Tennessee 37401

Mr. T. B. Northern, Jr., Project Manager
Watts Bar Nuclear Plant
P. O. Box 2000
Spring City, Tennessee 37381

Mr. J. F. Cox
400 Commerce Street
W9D214
Knoxville, Tennessee 37902

APPENDIX A

NOTICE OF VIOLATION

Tennessee Valley Authority

License No.: CPPR-91

Based on the results of the NRC inspection conducted on April 17 - May 2, 1978, it appears that certain of your activities were not conducted in full compliance with NRC requirements as indicated below. These items have been categorized as described in our correspondence to you dated December 31, 1974.

Criterion V of Appendix B to 10 CFR 50, as implemented by the FSAR, Paragraph 17.1A.5, requires in part that, "Activities affecting quality shall be prescribed by documented instructions, procedures, ... and shall be accomplished in accordance with the instructions, procedures, ..." Paragraph 4.3.3 of TVA Procedure 3.M.3.1(b), for performing pipe weld radiography, requires that the film density in the area of interest be within minus 15 and plus 30 percent of the film density through the penetrameter. In addition Table III of the procedure requires that for a pipe wall thickness of 0" to .375", a number 10 penetrameter be used.

Contrary to the above requirements, on May 2, 1978 the following two examples were found where these requirements were not being followed:

1. For pipe weld 1-063B-D090-10, the film density in the darkest area of interest in views 3-4 and 4-1 exceeded the allowable of penetrameter density plus 30 percent.
2. For pipe weld 1-072A-D063-09, a number 17 penetrameter was used in lieu of the required number 10.

This is a deficiency.



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Report Nos.: 50-390/78-13 and 50-391/78-11

Docket Nos.: 50-390 and 50-391

License Nos.: CPPR-91 and CPPR-92

Categories: A3, A2

Licensee: Tennessee Valley Authority
830 Power Building
Chattanooga, Tennessee 37401

Facility Name: Watts Bar Nuclear Plant, Units 1 and 2

Inspection at: Watts Bar Dam, Tennessee

Inspection conducted: April 17 - May 2, 1978

Inspector: B. R. Crowley

Other Accompanying Personnel: U. S. Testing Company Personnel

Reviewed by: *T. E. Conlon* 5/25/78
T. E. Conlon, Chief Date
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch

Inspection Summary

Inspection on April 17 - May 2, 1978 (Report Nos. 50-390/78-13 and 50-391/78-11)

Areas Inspected: Announced inspection for purposes of conducting a non-destructive examination (NDE) study. The inspection involved 147 inspector-hours on site by one NRC inspector.

Results: One apparent item of noncompliance (deficiency - failure to follow radiography procedures), was identified.

DETAILS I

Prepared by: B. R. Crowley
B. R. Crowley, Metallurgical Engineer
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch

5/25/78
Date

Dates of Inspection: April 17 - May 2, 1978

Reviewed by: T. E. Conlon
T. E. Conlon, Chief
Engineering Support Section No. 2
Reactor Construction and Engineering
Support Branch

5/25/78
Date

1. Persons Contacted

Tennessee Valley Authority (TVA)

*T. B. Northern, Jr., Project Manager
*H. C. Richardson, Construction Engineer
*L. C. Northard, Jr., Supervisor, Welding and NDE
*S. Johnson, Assistant Construction Engineer
L. J. Johnson, Mechanical Engineer
J. E. Treadway, Construction Superintendent
F. W. Lawhern, Assistant Construction Superintendent
W. Proffitt, Assistant Construction Superintendent
L. Hanna, RT Supervisor
D. Sanders, Radiological Hygiene Branch

In addition to the above personnel, the inspector interviewed other craft and inspection personnel.

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (78-02-01): Failure to follow procedures for control and documentation of welding. The licensee's corrective action, including the mockups welded to show no detrimental effects from a slightly high purge gas oxygen content, has been reviewed and appears to be adequate. This item is closed.

3. Unresolved Items

No unresolved items were identified during this inspection.

4. Independent Inspection Effort

The NRC conducted an independent nondestructive examination (NDE) study program as outlined on page 16, "Examination Requirements" of scoping document, entitled "Feasibility Study of Independent NDE by NRC (Radiographic and Surface Examination)". The study consisted of inspection of a selected sample of various types of weld joints which were previously inspected and accepted by the licensee. The NDE was performed by an independent contractor (U. S. Testing Company) and a comparison was made between USTC inspection results and the licensee results. The following is a summary of the inspection and the results obtained for the various categories of welds listed in the scoping document.

a. Containment Structure

The containment structure was welded and inspected by Chicago Bridge and Iron Company (CB&I) in accordance with the ASME Boiler and Pressure Vessel Code, Section III, Subsection NE, 1971 Edition with addenda through the winter of 1971. The following welds were radiographically (RT) inspected and the results compared with the above code and CB&I radiographs:

(1) Unit 1

Weld 3A,	View 0-1
Weld 1-2 Girth 90-180	View 15-16

(2) Unit 2

Weld B1,	View 10-11
Weld 2-3 Girth 0-90,	View 22-23
Weld 100A,	View 22-23
Weld 3-4 Girth 90-180,	View 7-8

b. Major Equipment Supports Within The Containment

There were no welds in this category available for inspection. The only field welds in this category that were accessible were the steam generator lateral snubber tangs. All of these welds were either complete and painted out or not started. It was considered that stripping of paint to obtain surface inspection of one type of weld only was not warranted.

c. Safety Related Structures

(1) Tanks (Unit 1)

The Primary Makeup Water and Refueling Water Storage Tanks were welded and inspected by Pittsburgh Des Moines Steel Company (PDM) in accordance with the ASME Boiler and Pressure Vessel Code, Section III, subsections NC and ND, 1974 Edition with addenda through the winter of 1975. The following welds were RT inspected and the results compared with the above code and PDM radiographs:

Primary Makeup Water Tank: Weld 1H3, Spot

Refueling Water Storage Tank: Weld 1H4, view 12-13
Weld 2V2, View 5-6

(2) Tanks (Common to Units 1 and 2)

The CVCS Holdup tanks were welded and inspected by CB&I in accordance with the ASME Boiler and Pressure Vessel Code, Section III, Subsection ND, 1974 Edition. The following welds were RT inspected and the results compared with the above code and CB&I radiographs:

Tank 74-3743: Weld 1-2 Girth 90-180, Spot

Tank 74-3744: Weld A1, View 6-7

Tank 74-3744: Weld C1, View 3-4

d. Safety Related Component Supports Outside the Containment

There are no field welds in this category which require and/or receive NDE.

e. Reactor Coolant Pressure Boundary Piping Welds (Unit 1)

Reactor coolant pressure boundary piping is being welded and inspected in accordance with the ASME Boiler and Pressure Vessel Code, Section III, Subsection NB, 1971 Edition with

addenda through the summer of 1973. The following welds were radiographed and the results compared with the above code and the licensee's radiographs:

1-068D-W001-02
1-068F-W003-01
1-068B-W003-02
1-074B-D055-14
1-063B-D091-06
1-063B-D090-10
1-087B-D040-08
1-063B-D092-10
1-063B-D092-09
1-074B-D054-10
1-074B-D053-01

Review of the licensee's radiograph of weld 1-063B-D090-10 revealed that the film density for a portion of the weld exceeded the film density of the penetrometer by more than 30%. This is in nonconformance with TVA procedure 3.M.3.1(b), paragraph 4.3.3 and paragraph IX-3334.3 of the above referenced code, which require that if the film density through the diagnostic area varies by more than minus 15 or plus 30 percent from the density through the penetrometer, an additional penetrometer is required. The inspector informed the licensee that this failure to follow procedure was considered in noncompliance with Criterion V of Appendix B to 10 CFR 50, as implemented by paragraph 17.1A.5 of the FSAR. This item is identified as Item No. 78-13-01.

In addition to RT inspection, the following welds were liquid penetrant (PT) tested in accordance with the above referenced code:

1-068F-W003-01
1-074B-D055-14
1-063B-D091-06
1-087B-D040-08
1-074B-D053-01

f. Safety Related Piping Welds (Units 1 and 2)

Safety related piping is being welded and inspected in accordance with the ASME Boiler and Pressure Vessel Code, Section III, Subsection NC, 1971 Edition with addenda through the summer of 1973. The following welds were radiographed and the results compared with the above referenced code and the licensee's radiographs:

(1) Unit 1

1-003C-D011-07
1-072A-D063-09
1-062A-D022-15
1-003B-D003-06

Review of the licensee's radiograph of weld 1-072A-D063-09 revealed that a number 17 penetrometer had been used. Based on TVA procedure 3.M.3.1(b), paragraph 4.0 and Table IX-3325-2 of the above referenced code, a number 10 penetrometer should have been used. This is another example of failure to follow procedures and is considered to be a second example of the noncompliance stated in paragraph 4.e. above.

(2) Unit 2

2-063A-D120-05
2-063A-D119-09
2-074A- D026-03
2-072A-D037-09
2-062A-D117-05
2-074A-~~D030-01~~

In addition to RT inspection, the welds listed in (1) and (2) above were also visually inspected in accordance with final visual requirements of TVA procedure 3.M.5.1(c). For all radiographs taken, there was excellent comparison between radiographs taken during the study and previous radiographs made by the licensee and/or his contractors. In all cases there were enough radiographic details about each joint to show that the joint radiographed during the study was the same as the joint radiographed by the licensee.

In the areas inspected, no items of noncompliance, except as noted in paragraph 4.e. and 4.f., or deviations were identified.

5. Exit Interview

At the conclusion of the study, the inspector met with the licensee representatives denoted in paragraph 1 and U. S. Testing personnel and summarized the scope and findings of the study. The noncompliance of paragraphs 4.e. and 4.f. was discussed in detail.