UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-390/79-25 and 50-391/79-21

Licensee: Tennessee Valley Authority
500A Chestnut Street Tower II
Chattanooga, Tennessee 37401

Facility Name: Watts Bar Nuclear Plant

Docket Nos. 50-390 and 50-391

License Nos. CPPR-91 and CPPR-92

Inspection at Spring City, Tennessee

Inspector: _____ 7/9/79
E. H. Girard, RC&ES Branch — Date Signed

Approved by: _____ 7/9/79
A. R. Herdt, Section Chief, RC&ES Branch — Date Signed

SUMMARY

Inspection on May 29 - June 1, 1979

Areas Inspected

This routine, unannounced inspection involved 27 inspector-hours on-site in the areas of licensee action on previous inspection findings (Units 1 and 2) and safety-related piping (welding) - observation of work and work activities (Units 1 and 2).

Results

Of the two areas inspected, no apparent items of noncompliance were identified in one area; one apparent item of noncompliance was found in one area. (Infraction - Omitted liquid penetrant inspection and documentation of weld size - paragraph 3).

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DETAILS

1. Persons Contacted

Licensee Employees

*T. B. Northern, Project Manager - WBNP
*S. Johnson, Assistant Construction Engineer - WBNP
*L. C. Northard, Supervisor, Welding Engineering Unit - WBNP
*R. L. Heathery, Supervisor, QC&R Unit - WBNP
T. E. Puckett, Mechanical Engineer - WBNP
J. F. Smalley, Mechanical Engineer - WBNP
M. N. Bressler, Supervisor, Nuclear Standards & Materials - Division of Engineering Design
R. M. Jessee, Supervisor, Welding & Materials Engineering - Division of Engineering Design
E. A. Merrick, Metallurgical Engineer - Division of Engineering Design

NRC Resident Inspector

*B. J. Cochran

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on June 1, 1979, with those persons indicated in Paragraph 1 above. The item of noncompliance described in Paragraph 3 was discussed.

3. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (390/78-31-02): Inadequate control of interpass temperature. The inspector questioned six welders and the fitters assisting them regarding their control of weld maximum interpass temperature on stainless steel piping and monitored cool down rates of several welds with a temperature indicating crayon. In addition, during this and several previous inspections the inspector verified that maximum interpass temperature was not being exceeded while witnessing welding in progress on 14 weldments. Based on the information obtained, the inspector is satisfied that interpass temperature controls are adequate.

(Open) Noncompliance (390/79-09-01 and 391/79-07-01): Chemical Volume Control System Holdup Tanks girth welds have reinforcement exceeding the ASME Code maximum. The licensee provided the inspector with ASME Code Data Reports for these Holdup Tanks and for the Monitor Tank as previously requested. Other information requested was not available yet and will be addressed in a later inspection.

(Open) Unresolved Item (390/79-09-02 and 391/79-07-02): Inadequate requirements for control of cold spring in piping. The inspector re-examined the controls provided for use of alignment bead welding, as described in TVA Process Specification 4.M.1.2, and discussed his concern with regard to its use with the TVA Engineering Design (En Des) Division personnel listed in Paragraph 1. In addition, the inspector examined two examples of use of this technique on safety related piping. The inspector's concern with regard to the use of alignment bead welding is that: (1) the licensee exercises no design engineering controls with respect to weld size, shape or location-apparently permitting a wide variation of stress intensity and distribution; and (2) there is no data to show what stress intensity and distribution is produced for any example of use of this technique - such that the presence or absence of harmful conditions may be established for even a very limited situation.

In the inspector's discussion with licensee En Des personnel, the licensee committed to provide Region II the results of a test to be performed to substantiate that alignment bead welding is not harmful. The test is expected to be completed by 6/15/79. The two examples of use of the alignment bead technique which the inspector examined were both in ASME Section III Class 2 austentic stainless steel piping. They are identified below.

(Alignment Bead) Weld No.	Pipe Size	System
1-072A-D063-08A	10" Dia x .365" wall	Containment Spray
2-087A-D017-01A	12" Dia x 1.125" wall	Upper Head Injection

Notes: (1) Weld Nos. starting with 1- and 2- indicate welds from Unit 1 and 2 piping respectively.

(2) Alignment bead weld 2-087A-D017-01A and the shop weld that it overlayed have been cut out and replaced by the licensee for reasons not related to this item of inspection.

In reviewing the records for the above welds the inspector found that 4M1.2 (c) penetrant inspections required by 5.1.3 of Process Specification had not been specified or performed. Also omitted was documentation of the size of the groove or bead, as required by 5.1.4 of the same specification. This failure to follow procedure is considered to be in noncompliance with Criterion V of Appendix B to 10 CFR 50 as implemented by 17.1A.5 of the FSAR and is identified as item number 390/79-25-01 and 391/79-21-01, "omitted liquid penetrant inspection and documentation of weld size". The inspector found that the missed penetrant inspection for weld 1-072A-D063-08A had already been identified by the licensee.

4. Safety Related Piping (Welding) - Observation of Work and Work Activities

The inspector observed field welding of safety related piping outside the reactor coolant pressure boundary at various states of weld completion. The applicable Code for safety-related pipe welding is ASME Section III (71 S 73) as implemented by TVA General Construction Specification 29M.

a. The inspector examined one weld joint in Unit 1 where the root pass (only) has been completed to determine: weld/welder identification, qualified welder/weld procedure, physical appearance of weld and evidence of QC verification. The weld joint examined is identified below.

Weld Number	System
1-087A-D044-06	Upper Head Injection

b. The inspector examined weld joints of pipe to pipe/fitting (PPF) and pipe to pipe (PP) where welding was beyond the root pass to determine: weld/welder identification, qualified welder/weld procedure, periodic checks of welding variables, use of specified weld material, proper interpass temperature and where applicable pre-heat and post-weld heat treatment and physical appearance of weld (e.g., starts, stops, undercut and surface imperfections).

Weld Number	Type	System
1-087A-D044-03	PPF	Upper Head Injection
0-078A-D192-05A	PP	Fuel Pool Cooling & Cleaning
0-078A-D192-06C1	PPF	Fuel Pool Cooling & Cleaning

Note: The weld number starting with 1 is for piping in Unit 1. Those starting with 0 are common to both Units 1 and 2.

Within the areas examined, there were no items of noncompliance or deviations identified.