

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

Report Nos: 50-390/83-14 and 50-391/83-10 Licensee: Tennessee Valley Authority 500A Chestnut Street Chattanooga, TN 37401 Docket Nos: 50-390 and 50-391 License Nos: CPPR-91 and CPPR-92 Facility Name: Watts Bar

Inspection at Marts Bar site near Spring City, Tennessee Inspector: Approved by J. J. Blake, Section Chief Engineering Programs Branch Division of Engineering and Operational Programs

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Date Signed

SUMMARY

Inspection on April 26 - 29, 1983

Areas Inspected

This routine, unannounced inspection involved 26 inspector-hours on site in the areas of seismic analysis for as-built safety-related piping systems (IE Bulletin 79-14).

Results

Of the seven areas inspected, no violations or deviations were identified in five areas; two apparent violations were found in two areas (Criterion V - Failure to follow procedure for valve installation inspection - paragraph 5.a., and failure to follow procedure for hanger weld inspection - paragraph 5.b.).

REPORT DETAILS

1. Persons Contacted

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Licensee Employees

- *G. Wadewitz, Project Manager
- *R. Olson, Construction Engineer
- *T. Brown, Assistant Construction Engineer
- *L. Johnson, Assistant Construction Engineer
- *C. Christopher, Assistant Quality Manager
- *H. Fisher, Assistant Construction Engineer
- *T. Hayes, Supervisor Nuclear Licensing Unit
- *R. McKay, Supervisor, IEB 79-14 Program
- *G. Peck, Nuclear Licensing Unit
- *J. Engelhardt, Compliance Nuclear Power
- *F. McQueen, Construction QA
- *P. Wilson, Nuclear Licensing Unit

Other licensee employees contacted included inspection engineers, QC inspectors, technicians and office personnel.

NRC Resident Inspectors

*W. Swan

T. Heatherly

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on April 29, 1983, with those persons indicated in paragraph 1 above. The licensee was informed of the inspection findings listed below. The licensee acknowledged the inspection findings with no dissenting comments.

(Open) Violation, 390/83-14-01, Failure to Follow Procedure for Valve Installation Inspection, paragraph 5.a.

(Open) Violation, 390/83-14-02, Failure to Follow Procedure for Hanger Weld Inspection, paragraph 5.b.

(Open) Unresolved Item, 390/83-14-03, Use of Epoxy Grout on Hanger Installations, paragraph 5.c.

(Open) Unresolved Item, 390/83-14-04, Installation of Potential Nonconforming Pipe, paragraph 5.d.

(Open) Unresolved Item, 390/83-14-05, Using Calibrated Instrument for Determining Pipe Wall Thickness, paragraph 5.e.

(Open) Unresolved Item, 390/83-14-06, Valve Orientations on IE Bulletin 79-14 Walkdown Inspection, paragraph 5.f.

(Open) Inspector Followup Item, 390/83-14-07, Verification of Thermal Well Installation on Feedwater Piping, paragraph 5.g.

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items

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Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 5.

 IE Bulletin 79-14, Seismic Analysis for As-Built Safety-Related Piping Systems (25529)(Unit 1)

Watts Bar started Phase I of the IE Bulletin 79-14 walkdown program in November 1982, and is scheduled to be completed by October 1, 1983. Phase I consists of a walkdown inspection of all of the safety-related piping referenced in IE Bulletin 79-14. Phase II of the program for this bulletin involves a sampling reinspection of the Phase I part of the program. Phase II of the program will be performed independently by a group of inspectors from outside the TVA organization and is tentatively scheduled for July 1983.

A separate team has been established at Watts Bar to perform the IEB 79-14 walkdown inspection. Each inspection package is inspected by both a mechanical QC inspection team and a hanger QC inspection team. Currently there are four inspection teams for each of the two types of inspections. Each team consists of an engineer and an inspector. At the time of this inspection, the teams had walked down 120 inspection packages out of approximately 302.

The following procedures used in the walkdown inspections were partially reviewed by the inspector:

- EN DES special engineering procedure 82-13, Program for NRC-OIE Bulletin 79-14, Phase I inspections at Watts Bar Nuclear Plant, Unit 1, Rev. 2
- Construction specification No. N3C-912, Support and Installation of Piping Systems in Category I Structures, Rev. 1
- General Construction specification No. G-32, Bolt Anchors Set in Hardened Concrete, Rev. 7

- WBNP-QCP-4.56, IE-79-14 Walkdown, Rev. 4

- WBNP-QCI-4.56, IE-79-14 Accountability, Rev. 1

- WBNP-QCP-4.23-4, Support Visual Examination of Weld Joints, Rev. 0

- WBNP-QCP-4.10-9, Valve Installation Inspection, Rev. 3

In order to measure the effectiveness of the walkdown program, the inspector observed a walkdown reinspection by the IEB 79-14 group using two different inspection packages. These two inspection packages had been previously inspected, accepted and documented by the IEB 79-14 walkdown team. The first Inspection Package No. 1R68-47W465-202, dated March 3, 1983, for the Reactor Coolant System (RCS) piping was reinspected by the team QC inspectors to verify whether the discrepancies identified during this walkdown were consistent with the previous one. The following additional discrepancies were noted resulting from the walkdown reinspection:

a. Valve Installation Inspection

Valve Tag No.	Orientation Shown on Isometric Drawing	Orientation from actual installation
1-DRV-68-551-S (At node point 33A)	Vertical to horizontal plane	Rolled approx. 45° from original position
1-DRV-68-550-S (At node point 13A)	Rolled approx. 45° from pipe axial direction	No roll from pipe axial direction
1-DRV-68-549-S (At node point 11A)	Rolled approx. 45° from pipe axial direction	No roll from pipe axial direction

Above valves with orientation are shown on Mechanical Isometric Drawing No. 47W465-202 R1. These valves were inspected and accepted by both the Mechanical QC Unit dated May 16, 1982 and the IEB 79-14 walkdown team dated March 3, 1983. In accordance with paragraph 7.7 and Attachment A of QCP 4.10-9, the Mechanical QC inspectors are required to verify valve orientation corresponding to the physical drawings. Furthermore, the locknut on top of the valve operator should be tight (QCP 4.10-9). The inspector examined five installed valves during the walkdown inspection and it was noted that locknuts on three valves (Valve Tag Nos. 1-DRV-68-549, 1-DRV-03A-589 and 1-DRV-03A-590) were not tight. The QC inspectors failed to identify orientations on three valves and locknut tightness on top of the valve operators during the valve inspection. This is a violation of 10 CFR 50, Appendix B, Criterion V and is identified as Violation, 390/83-14-01, Failure to Follcw Procedure for Valve Installation Inspection.

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b. Hanger Inspection

There are ten pipe supports in the piping system. Support No. 1068-1-68-336 and Support No. 1068-1-68-338 were inspected and accepted by the Mechanical QC Unit dated September 17 and 26, 1981. In accordance with Attachment A of QCP 4.23-4, the Mechanical QC inspectors are required to verify weld size and weld location corresponding to the support detail drawings. Weld size and location shown on the aforementioned two supports were not properly identified in two places for each of the two supports. The support detail drawing shows all-around welds (four sides) versus three side welds actually found at the connection joints identified during the walkdown reinspection. The Mechanical QC inspectors failed to follow procedure for verifying weld size and location on these two supports during the weld inspection. This is a violation of 10 CFR 50, Appendix B, Criterion V and is identified as Violation, 390/83-14-02, Failure to Follow Procedure for Hanger Weld Inspection.

c. Epoxy Grout on Hanger Installation

The inspector reviewed pipe support Drawing No. 1-68-336 kev. 901 for conformance to the as-built configuration. It was noted that epoxy grout was specified on the detail drawing to be used for the grouted anchor dated June 24, 1982. The licensee's response to violations (Region II Inspection Report 50-390/81-26, 50-391/81-24) dated February 5, 1982, stated that on or before April 1, 1982, epoxy grouted anchors would not be allowed in safety-related applications. Paragraph 3.4 of the General Construction Specification G-32 was revised (Rev. 7) to reflect that epoxy grout shall not be used in nuclear plant safety-related structures. Furthermore, the mechanical hanger drawing general notes item 140 shown on Mechanical Drawing No. 47A050-IS dated January 7, 1982, stated that epoxy grout shall not be used incide the reactor building or in the valve rooms; a subscitute grout must be used per Construction Spec. G-32. In addition, construction has the option to substitute premixed grout (5 star or equal) for epoxy grout in any other areas of the plant not addressed above. Epoxy grout must not be used in areas where the operating temperature is greater than 120°F. the note on Mechanical Drawing 47A050-15 supersedes any note on any of the other hanger drawings. At the time of the inspection the licensee was not able to verify whether epoxy grout was used in the aforementioned support. Pending more information to be furnished by the licensee for further review, this matter is identified as Unresolved Item, 390/83-14-03, Use of Epoxy Grout on Hanger Installations.

d. Installation of Potential Nonconforming Pipe

During the IEB 79-14 walkdown reinspection, the inspector observed several readings from the calibrated ultrasonic thickness measuring instrument. These readings were 0.208", 0.204" and 0.199" recorded on pipe segments 16, 21 and 22E, respectively, on April 27. 1983, by the Mechanical QC inspectors. The nominal wall thickness for 2" pipe schedule 40 is 0.154" and schedule 80 is 0.218." The licensee stated that all UT measuring instrument used for walkdown inspections were calibrated by qualified personnel. It appears that schedule 80 pipe was installed in the piping system rather than schedule 40 pipe specified on the piping drawing based on actual measurements from the instrument. At the time of the inspection the licensee was not able to verify whether schedule 80 pipe was actually installed. Pending further verification to be performed by the licensee, this matter is identified as Unresolved Item, 390/83-14-04, Installation of Potential Nonconforming Pipe.

e. Using Calibrated Instrument for Determining Pipe Wall Thickness

The inspector reviewed previous records on Isometric Drawing No. 47W465-202 R1 in regard to pipe wall thickness. These records were taken from the calibrated instrument and documented in the inspection package by the QC inspectors dated March 3, 1983. A comparison of the records between the two walkdowns is as follows:

MEASUREMENT	PRE NAL INS	VIOUS KDOWN PECTION	WALKDOWN REINSPECTION	READING DIFFERENCE
Pipe Segment	16	0.171"	0.208"	0.037"
Pipe Segment	11	0.367"	0.386	0.025"
Pipe Segment	4-5	0.340"	0.383"	0.043"

It is noted that the instrument (Ultrasonic Denth Gage, used for the IEB 79-14 walkdown inspection was calibrated by qualified personnel at the TVA central laboratories. One instrument (Model KK/DM-2/Report No. USTVA 489575) that was tested and calibrated on January 3, 1983, had accuracy of ± 0.005 ." It can be seen from the table above that the difference between the two inspections are well above the accuracy range (i.e., ± 0.005 "). The licensee could neither identify the reasons why the differences were so great nor provide acceptance criteria with regard to the readings. Pending further information to be furnished by the licensee, this matter is identified as Unresolved Item, 390/83-14-05. Using Calibrated Instrument for Determining Pipe Wall Thickness.

f. Valve Orientations on IEB 79-14 Walkdown Inspection

During the walkdown reinspection, the inspector observed that three valves (1-DRV-68-549, 1-DRV-68-550 and 1-DRV-68-551) were not installed in accordance with the piping drawing (No. 47W465-202 R1) with regard to orientations. Paragraph 6.2.4 and attachment B of QCP 4.56R4, and paragraph 4.1.2 and Attachment 1 of EN DES-SEP 82-13 R2 indicated that the IEB 79-14 walkdown QC inspectors were required to verify by physical measurement all valve operator (manual, motor or air) orientation shown on the EN DES inspection drawing. The valves were inspected and accepted by the QC inspectors during the previous walkdown inspection. The licensee stated that EN DES did not require identification of valve (manual only) orientations in the piping analysis. Furthermore, the licensee __ated that inspection procedures involved with valve (manual only) orientations will be revised to eliminate such requirements. Pending further information to be furnished by the licensee, this matter is identified as Unresolved Item, 390/83-14-06, Valve Orientation on IE Bulletin 79-14 Walkdown Inspection.

g. Verification of Thermal Well Installation

The second Inspection Package No. 1R03-47W401-210 dated January 17, 1983, was reinspected by the IEB 79-14 Walkdown QC Inspectors to verify whether additional discrepancies could be identified. During the reinspection, it was noted that the thermal well located at node point 18C was installed in the horizontal direction (North). The mechanical piping drawing (No. 47W401-210R1) showed that the thermal well should be installed in the vertical direction (downward). At the time of this inspection it could not be determined whether the thermal well was properly installed. This matter is identified as Inspector Followup Item, 390/83-14-07, Verification of Thermal Well Installation on Feedwater Piping.

The inspector noted that the materials used in the piping system were not properly designated in the "pipe material" column on Drawing No. 47W465-202R1. In addition, Revision 2 (March 22, 1983) of the same drawing should be reviewed for conformance with the Inspection Package No. 1R68-47W465-202 dated March 3, 1983.

Within the areas inspected, two violations were identified.