UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report Nos.: 50-390/85-62 and 50-391/85-51

Licensee: Tennessee Valley Authority
6N11 B Missionary Ridge Place
1101 Market Street
Chattanooga, TN 37402-2801

Docket Nos.: 50-390 and 50-391 License Nos.: CPPR-91 and CPPR-92

Facility Name: Watts Bar 1 and 2

Inspection Conducted: November 4 - 7 and 13 - 15, 1985

Inspector: for Nick Economos 12/10/85
Date Signed

Approved by: J. J. Blake, Section Chief 12/10/85
Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection entailed 42 inspector-hours on site in the areas of welder qualification renewal test program, and the corrective actions resulting from the conformation of action letters on this issue dated August 23 and September 17, 1985.

Results: No violations or deviations were identified.

8512240173 851218
PDR ADOCK 05000390
Q PDR

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*E. R. Ennis, Acting Site Director and Plant Manager
*G. Wadewitz, Construction Project Manager
*H. B. Bounds, Maintenance Superintendent
W. L. Byrd, Project Manager of Employee Concerns
*K. A. Hastings, Supervisor Welding Engineering Unit, Construction
J. Inger, Codes and Standards Supervisor

Other licensee employees contacted included construction craftsmen, engineers, technicians, and office personnel.

Other Organizations

Quality Technology Corporation (QTC)
W. S. Schurn, Employee Response Team (ERT)

*Attended entrance and subsequent inspection progress discussions.

2. Exit Interview

Because of the nature of this work effort, no formal exit interview was held with the licensee. Instead, the inspector held several informal meetings where the licensee provided progress reports on corrective actions, both proposed and underway.

The following item was identified: Unresolved Item, 390/85-62-01, 391/85-51-01 - Retests Allowed on Welder Performance Qualification Renewal.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

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.

5. Welder Performance Qualification Renewal, Units 1 & 2

This work effort was performed in order to review TVA's corrective actions prompted by employee concerns on welder performance qualification renewals at Watts Bar Nuclear Plant (WBNP). A special inspection was conducted earlier by Region II staff, to review TVA's implementation of welder performance qualification program and to evaluate TVA's program for implementing the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (AMSE Code) and American Welding Society (AWS) requirements for maintaining welder performance qualifications of WBNP's site welders.

The requirements of ASME and AWS code(s) are as follows:

a. QW-322 Renewal of Qualification - ASME Section IX, 1983 Edition

The performance qualifications of a welder or welding operator shall be affected under the following conditions: (1) when he has not welded with a process during a period of three months or more, his qualifications for that process shall be expired; except when he is welding with another process, the period may be extended to six months; (b) when he has not welded with any process during a period of three months, all his qualifications shall be expired including any which may extend beyond three months by virtue of (a) above; (c) when there is a specific reason to question his ability to make welds that meet the specification, his qualification, which supports the welding that he is doing, shall be considered expired.

Renewal of qualification for a specific welding process under (a) or (b) above may be made in a single test joint (plate or pipe) on any thickness, position, or material to reestablish the welder's or welding operator's qualification for any thickness, position, or material for the process for which he was previously qualified.

b. AWS D1.1-8, Structural Welding Code, Section 5.30, Period of Effectiveness

The welder's qualification as specified in this code shall be considered as remaining in effect indefinitely unless (1) the welder is not engaged in a given process of welding for which he is qualified for a period exceeding six months or unless (2) there is some specific reason to question a welder's ability. In case (1), the requalification test need be made only on material 3/8 in. (9.5 mm) thick.

The above work effort was performed between July 31 and August 22, 1985. Results were documented in Region II Report 50-390/85-56, 50-391/85-45. In the aforementioned report, the licensee was cited for failure to follow procedures and the violation is currently under consideration for escalated enforcement action by the Commission. On August 23, 1985, Region II management discussed with the licensee the results of that inspection,

particularly the concern over inadequate and potentially inaccurate records of welder performance certification renewals at WBNP. Subsequently, Region II issued a Confirmation of Action Letter (CAL) dated August 23, 1985, with the stipulation that effective August 23, 1985, all safety-related welding activities would stop until certain corrective actions had been implemented and concurred with by Region II. One of the actions required that TVA conduct a thorough review of the recertification program for those welders who fabricated welds per the requirements of the ASME code or the AWS structural welding code. By memorandum from H. G. Parris to J. N. Grace dated September 11, 1985, the licensee reported that, (1) the review of both the WBNP construction and operation welding programs had been completed, (2) procedures controlling welder certification maintenance were revised and the people charged with implementing them had been trained, and (3) recertification of construction welders with certifications other than ninety (90) days was under way. Also, as part of the corrective action the licensee reported that any welding performed by welders who failed the recertification test would be evaluated to verify that it (welding) met applicable standards/codes. Because of these completed and planned actions, the licensee requested NRC's concurrence to resume welding activities at WBNP.

In response to this memorandum, Region II issued Revision 1 to the initial CAL, dated September 17, 1985, stating in part that the program for renewal of welder certifications and current program implementation had been reviewed by Region II staff and found acceptable.

In reference to this matter, Revision 1, also requested, in part, that for any individual (welder), who failed the recertification program, all safety-related welds performed by such individual be reinspected. Other related areas addressed in Revision 1, included those individuals directly involved in the falsification of welder recertification records and the corrective actions to be taken by TVA.

On September 25, 1985, Region II management called for a meeting between members of TVA management, representatives from NRR, and TVA's contractor hired to interview employees having concerns. The meeting was called to discuss concerns and issues arising from welding certification procedures at the WBNP. During this meeting, TVA representatives stated that approximately 528 welders were given a qualification renewal test of which 123 failed the first test and of these, 33 failed on the second attempt. Allowing those welders who failed the initial test to be retested has caused Region II to question whether retesting was permitted by Section IX of the ASME Code.

Thus, in order to help resolve the issue, Region II requested by memorandum from A. F. Gibson to H. L. Thompson dated November 1, 1985, that NRR provide an NRC position on the interpretation of Paragraph QW-320 of Section IX of the ASME Boiler and Pressure Vessel Code. Specifically, the request stated, in part, that Region II has a differing interpretation on the application of subparagraph QW-321 to the renewal testing. Enclosed are the paragraphs in question.

TVA's interpretation is that because subparagraphs QW-321 and QW-322 are grouped together under the heading of QW-320, "Retests and Renewal of Qualification," the retest provisions of QW-321 apply to the renewal tests allowed by QW-322.

Region II's interpretation is that the lead subparagraph of QW-321 does not state that the retest provisions apply to the tests allowed by QW-322 and therefore does not apply. A welder who fails in his initial attempt to renew his qualification should have to start over with an initial qualification test as if he were a new hire.

Region II feels that it is important that an NRC position be established prior to the closeout of the Region II Confirmation of Action letters, dated August 23 and September 17, 1985, concerning suspension of welding.

In response to this differing of interpretation, the licensee pulled the qualifications of the welders who failed the renewal test once, which precluded them from welding at WBNP until further notice. Following completion of this inspection and subsequent to a telephone conversation with Region II and/or about November 21, 1985, the licensee authorized the welders to return to work, but is maintaining an account of their work for tracking purposes.

In an effort to resolve this issue, on November 8, 1985, TVA requested via inquiry an interpretation from the appropriate ASME Section IX Code Committee on the subject matter. Specifically, TVA's inquiry was as follows:

Inquiry -

A welder or welding operator's qualification for a process has expired because he has not welded within the time periods required by QW 322(a) and (b). There is no specific reason to question his ability to make welds that meet the specification.

Does QW-322 prohibit the use of QW-321 for retest of qualification where a welder has failed the single renewal test joint as provided by the last sentence of QW-322?

Reply - No.

In that as of this writing Region II has not received a position from NRR, this issue has not been resolved and thereby is identified as an Unresolved Item 390/85-62-01, 391/85-51-01 - Retests Allowed on Welder Performance Qualification Renewal.

November 4 - 7 and 13 - 15 inspection:

At the time of this inspection, requalification tests had been completed and, consistent with the stop work order and TVA's response to the CAL dated October 29, 1985, there was no welding of safety-related piping/structures

in Unit 1 except for that contained in work instructions that had special provisions for ensuring adequate attention and detail. The inspector accompanied by J. W. York, resident inspector Bellefonte Nuclear Plant, performed a walk-through inspection of Unit 2 to observe the operation of Weld Material Control Center No. 2 and thereby ascertain whether requirements of procedure QCI-4.01, Rev. 5 Storage, Issue, and Control of Welding Material, were being met. Areas of particular interest included, issue and control of material, recordkeeping; oven temperature control; calibration of instruments and cleanliness. Also, the inspectors observed a repair in progress on weld 2-063A-D122-10AC. The weld had been rejected by radiography for nonfusion indications at the 4 to 5 and 5 to 0 positions. A review of the field fabrication records showed them to be in order.

During this inspection the inspectors requested and the licensee provided for review the following documents:

- Employee Response Team (ERT)
  Investigation Report, IN-85-113-003

- 10 CFR 50.55(e) WBRD-50-390/85-32, WBRD-50-391/85-31, Potential Deficiencies in Welder Certification Program - Final Report 9/30/85

- 3QT(h)-85-02, Welder Qualification/Certification - Continuity Maintenance

- Quality Control Instruction (QCI) - 4.01, Rev. 5, Storage Issue, and Control of Welding Material

- QCI-4.02 Rev. 6 Welder and Welding Operator Performance Qualification

- 22SP(a)85-2 Weld Material Control Survey 9/27/85

- Training Records:

- Welding QC Unit, 9/4/85 and 9/10/85 on Procedure QCI-4.02 Rev. 5
  WB-S-85-290-COO, QA Surveillance on Welder Training and Certification 9/5/85

- WB-S-85-287-COO, QA Surveillance on Nondestructive Examination Following Welder Qualification Renewal Tests 9/5/85

- General Orientation for Welders

- WBN-QCI 4.01 R/5
  WBN-QCP 4.13 - FU & VM R/4, 11/1/85 and 11/5/85

In addition, numerous discussions held with cognizant licensee personnel, disclosed that plans were underway to use Standard NCIG-02R/O, Sampling Plan for Visual Reinspection of Welders, to sample the integrity of welds, per applicable code requirements, that were produced by active welders who failed the renewal test. The sample will be selected from welds they fabricated from the October 1, 1984 to the August 23, 1985 time frame. The objective was to provide a 95% confidence that 95% of the welds meet design requirements. In addition, the licensee stated that they would identify those welders, outside of the aforementioned group, whose records showed a break in renewal continuity between October 1, 1984 to August 23, 1985. From these welders, a sample of welds fabricated following the break in the qualification continuity would be earmarked for retesting in accordance with applicable code requirements as stated earlier. In conclusion, the licensee indicated that with the exception of those who failed the test, 224 welders worked on ASME code welds during the aforementioned time frame and fabricated 10,427 welds. Thirty-four (34) of these welders showed a break in renewal continuity. These 34 welders fabricated 385 welds since the continuity renewal break. The licensee indicated that a statistical test sample would be taken for the purpose of establishing a similar confidence factor in this group as was done with the others.

Employee Concerns, Welding:

Discussions with cognizant contractor and licensee personnel disclosed that there were approximately 252 employee concerns dealing with welding issues in safety-related areas. These concerns were grouped initially into 17 separate categories and subsequently consolidated into seven broad categories of related subjects. This was done to help focus in on items of safety significance, to facilitate corrective actions, and to assist in handling of the paperwork on these concerns. The categories, the concerns and their related numbers as they apply to safety-related areas are as follows:

		Number of Concerns
1.	Welding Material/Welding Equipment	
	A. Electrode Control	24
	B. Welding Equipment	12
	C. Welding Electrode Quality	10
2.	Personnel Qualifications	
	A. Welder Performance Qualifications	50
	B. Inspector Qualification (include inspection tools)	23
	C. Engineer Qualification	3
3.	Procedural Deficiencies and/or Violations	
	A. Weld Acceptance Criteria - AISC/AWS, 10 ASME, Safety-Related, 3	13

B. Weld Documentation
C. Undetected Weld Defects (includes painted welds) - 18
- AWS, 13; ASME 5
D. Weld Repair 4
E. Arc Strikes (nonspecific) -

4. Hardware Concerns

A. Specific Components 3
B. Specific Structures 14
C. Specific Systems 22

5. Design Deficiencies (Mostly small box anchors, HVAC) 13

6. Program Concerns

A. Reinspection Criterion/Evaluation Methodology
B. Implications of Evaluation and Samples
C. Vendor Welds - 5
D. Workmanship/Program Effectiveness
Program Concerns Total 30

7. Other Plants 1

Within the areas inspected, no deviations or violations were identified.