



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

Report Nos. 50-390/84-28 and 50-391/84-23

Licensee: Tennessee Valley Authority
500 Chestnut Street
Chattanooga, TN 37401

Docket Nos.: 50-390 and 50-391

License Nos.: CPPR-91 and CPPR-92

Facility Name: Watts Bar 1 and 2

Inspection at Watts Bar site near Spring City, Tennessee

Inspectors:

M. B. Shymlock
M. B. Shymlock

May 10, 1984
Date Signed

W. B. Swan
W. B. Swan

May 10, 1984
Date Signed

W. E. Holland
W. E. Holland

May 10, 1984
Date Signed

Approved by:

C. A. Julian
C. A. Julian, Section Chief
Division of Reactor Projects

5/11/84
Date Signed

SUMMARY

Inspection on March 24 - April 20, 1984

Areas Inspected

This routine inspection involved 332 resident inspector-hours on site in the areas of licensee action on previous enforcement matters, licensee action on previous inspection items, followup on licensee identified items, IE Bulletin close out, preoperational test program implementation, comparison of as-built plant to FSAR description, safety committee activity, and independent inspection effort.

Results

Of the eight areas inspected, no violations or deviations were identified.

DETAILS

1. Persons Contacted

Licensee Employees

R. M. Pierce, OEDC Project Manager for Watts Bar
*W. T. Cottle, Power Plant Superintendent
G. Wadewitz, Construction Project Manager
*R. C. Miles, OEDC Project Management Office
H. J. Fischer, Construction Engineer
C. H. Jetton, General Construction Superintendent
E. R. Ennis, Assistant Power Plant Superintendent
W. L. Byrd, III, Plant Compliance Supervisor
G. T. Denton, Operations Supervisor
*T. W. Hayes, Nuclear Licensing Unit Supervisor
M. K. Jones, Engineering Supervisor
*L. B. Kuehan, Preoperational Test Supervisor
S. M. Anthony, Nuclear Power Compliance Staff, Mechanical Engineer
*J. E. Englehart, Nuclear Power Compliance Staff, Engineer
J. F. Bledsoe, Jr., OQAB

Other licensee employees contacted included engineers, technicians, nuclear power supervisors, and construction supervisors.

*Attended exit interview

2. Exit interview

The inspection scope and findings were summarized on April 24, 1984, with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Enforcement Matters (92702)

- a. (Closed) Unresolved (390/84-13-16), Review of survey records performed by the field QA group and audits performed by the operational QA section appear to indicate that an adequate review of the program was performed.
- b. (Closed) Violation (390/83-32-01), Failure to perform preoperational testing as required during TVA-22 Auxiliary Feedwater System. The Preoperational Test Section supervisory discussed specific requirements with those test personnel associated with the test. Monitors were also assigned for the duration of the test. All Preoperational Test Section personnel are receiving training on administrative controls. This refresher training will continue on a routine basis throughout the remainder of the preoperational test phase. There has been additional survey effort that is being performed by the Field Quality Engineering Section.

- c. (Closed) Violation (390/82-18-03 and 391/82-15-03), Failure to initiate a nonconforming condition report for recognized design deficiencies in the diesel generator lube oil system drawings issued for construction under Engineering Change Notice 2856. This problem has been corrected by construction cancelling the procedure. Quality Control Instruction WBNP-QCI-1.27, Design Information Request Preparation and Documentation was cancelled. Design Information Requests (DIRs) are to be discontinued. In the future, Field Change Request shall be used to obtain additional design information. The proper work was performed.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Licensee Action on Previous Inspection Items (92701)

- a. (Closed) 390/84-13-13, Installation of High Range Containment Radiation Monitor (SER 12.7.2) NUREG 0847, paragraph 12.7.2 stated that the licensee has committed to install redundant high range radiation monitors in containment. The inspector verified installation of these monitors in inspection report 50-390/84-09, paragraph 11.a for Unit 1 only.
- b. (Closed) 390/84-13-12, Installation of Missile Protection for the Fuel Oil Storage Tank Vent Lines (SER 9.5.4.2). NUREG 0847, paragraph 9.5.4.2 stated that the licensee committed to provide missile protection for the fuel oil storage tank vent lines. The inspector verified that the missile protection has been installed for the vent lines supporting the four diesel generators required for Unit 1 fuel load.
- c. (Closed) 390/84-13-04, Installation of Redidual Heat Removal (RHR) System Flow Alarm, (SER 5.4.3). NUREG 0847, paragraph 5.4.3 stated that the licensee committed to install an RHR flow alarm which would alert the operator to low flow conditions in the system. The inspector verified that this alarm has been installed and that the alarm will annunciate RHR low flow conditions in the control room.

6. Followup on Licensee Identified Item (92700)

- a. (Closed) CDR 390/83-16; 391/83-15 Offset Lead-In Guides on Wachter Spent Fuel Cells - WBRD-50-390/83-16; WBRD-50-391/83-16.

On March 18, 1983, TVA disclosed the subject deficiency documented under NCR W-115-P. The bottom edge of some lead-in guides and the bottom edge of the fuel cell assembly did not meet in a vertical plane, thus interfering with insertion or withdrawal of a fuel assembly. Also, some cells were found to be smaller than required by the approved Wachter drawings; however, each of these cells passed a minimum dimensional gauge required by the fuel supplier, Westinghouse (W), so enlargement of the cells was not required.

TVA Engineering Design (EN DES) evaluated the interface nonconforming condition and issued EN DES drawing 48W1710-1 to correct the mismatch problem and set a maximum offset limit of 0.010 inch to meet acceptance criteria; also, to ensure that the offset limit would not be exceeded during fuel handling, an additional mold clip was added to each lead-in guide. Welds and lead-in guide interfaces were ground smooth blending the interface surfaces.

After drag testing with a calibrated W dummy fuel assembly, TVA accepted the Wachter Spent Fuel racks with W written concurrence.

By review of TVA and W documents and discussions with the W site manager and the responsible TVA engineer, the senior resident construction inspector found that the nonconformances have been corrected.

- b. (Closed) CDR 390/81-09; CDR 391/81-08 High Density Spent Fuel Racks; WBRD-50-390/81-09 and WBRD-50-391/81-08.

The licensee reported on December 17, 1980 that NCR WBN CEB 8012 had disclosed written procedure deficiencies in that acceptance tolerance limits were not stipulated for the installation of the high density spent fuel racks in the areas of verticality, base plate levelness, and dummy fuel cell drag insertion.

On June 18, 1981, TVA reported that Measurement Procedure TVA-T-198 "Verticality and Pedestal Plate Inspection Procedure for Spent Fuel Storage Racks had been replaced by a new verticality measurement procedure based on a technique developed and used successfully by W the fuel supplier. TVA received written concurrence from W on modification of levelness measurement tolerance. TVA Data on verticality and levelness for all racks were evaluated by W who advised that 16 cells were unacceptable for storage of fuel unless modifications and retesting were done. Additional TVA work and testing under FCRA-754 led to acceptance of five of these 16 cells by W. The remaining eleven cells were abandoned and plugged to prevent their use. The plugging details were recorded on EN DES drawing 48W1710-02.

By review of W documents with the W site project manager and the TVA responsible engineer, the senior resident inspector construction has concluded that the concerns under the subject CDR have been resolved.

Fuel for Units 1 and 2 has been stored, part of it in the spent fuel racks.

- c. (Closed) CDR 390/83-17, CDR 391/83-16 Loose Materials in Steam Generator. During inspection of Unit 1 steam generators before closure for filling operations, loose materials were observed inside the steam generators. This inspection was performed through the four 2-inch sludge lancing ports. The cause was apparently due to lack of work controls during fabrication and on site modification.

The generators were cleaned and all future entries into the secondary side will be controlled by using an engineer's system material log book to account for all materials. WBN Procedure MI-68.9 "Steam Generator Secondary Side Inspection", has been revised to include controls while work is being performed and to include inspection for loose parts prior to closure. This control includes accountability log for all material entering the work area.

There is also a requirement for a monitor to be stationed in or near the area while maintenance is being performed.

Also, during December 1983, a team of steam generator inspectors performed a thorough visual inspection of the steam generators. At the completion of this inspection, no items capable of causing tube damage were identified in the bundle periphery, tube lane, or adjacent tubes based on this inspection.

- d. (Closed) CDR 390/81-94, Fire Prevention Spray Protection for Oil Lift Assembly and Upper Bearing Cooler. The licensee has modified the spray shields around the oil lift assembly and upper bearing cooler for the reactor coolant pumps located in Unit 1. Refer to inspection report 50-390/84-23 for details. The inspector verified the modifications were made for Unit 1.
- e. (Open) 390/84-13-03 Upgrading ERCW System to Seismic Category I (SER 3.2.1., 3.2.2, and 9.21).

This item was generated during a review of the Watts Bar SER (NUREG 0874). The licensee commitments had been set forth in the June 1982 issue of the SER following issuance of CDR 390/81-33; 391/81-32, Improper Classification of ERCW System Piping and Components, under NCR WBN NEB 8106 on March 24, 1981. This item (CDR 390/81-33) was closed in Report 50-390/84-13; 50-391/84-11 on pages 4 and 5.

On April 10, 1984, the licensee reported determination that classification of Essential Raw Cooling Water (ERCW) piping and valves in the intake pumping station ERCW screen wash system had been erroneously installed as Class G and should have been Class C, Seismic Category I; and that stainless steel pipe was required instead of the carbon steel pipe already installed.

The construction inspector inspected replacement work on the subject piping for Unit 2 traveling screen wash, on April 15, 1984 and inspected the nearly completed replacement of piping and modification of support for Unit 1. The modification drawing and work packages were reviewed and found to be satisfactory.

7. IE Bulletin Closeout (92703)

(Closed) IE Bulletin 83-08 (83-BU-08) Electrical Circuit Breakers with an Undervoltage Trip Feature in Use in Safety-Related Applications Other than the Reactor Trip System.

By letter dated March 29, 1984, the licensee stated that review of equipment scheduled for use at Watts Bar revealed that breakers with an undervoltage trip attachment have not been specified for use on safety-related systems exclusive of the reactor trip system.

This bulletin is not pertinent to Watts Bar.

8. Preoperational Test Program Implementation (70302)

The inspector conducted a review of the preoperational test program implementation with regards to preparation of test procedure scoping documents by engineering/design (EN DES) personnel in the Knoxville offices. The inspector discussed the EN DES responsibilities with engineering management concentrating on areas of training and experience of the engineering test representatives. The inspector conducted interviews of three test representatives.

All test representatives appeared to be knowledgeable on the systems covered in their tests and each confirmed that the scoping documents and the FSAR were in agreement. The inspector also reviewed scoping documents for the reactor protection system test, Integrated Engineered Safety Features Test and Emergency-Standby Power Supply System Test to verify agreement with FSAR requirements.

During a discussion concerning review of test procedure changes, the inspector asked if safety-related changes made to tests for the Nuclear Steam Supply System (NSSS) received a review by the NSSS vendor. The licensee indicated that the changes only received EN DES review. The inspector stated that Watts Bar Nuclear Plant Administrative Instruction (AI) 6.2 indicated in Attachment 3 that the NSSS site manager reviewed NSSS safety-related changes. The licensee is investigating. Until the licensee reviews this issue of NSSS vendor review of safety-related changes to NSSS test this item is identified as inspector followup item (IFI 390/84-28-01). No violations or deviations were identified during this inspection.

9. Comparison of As-Built Plant to FSAR Description (37301)

Diesel Generator Support Systems

The inspector completed a walk down of the diesel generator starting air system and the 480V Diesel Auxiliary boards for the four diesel generators required for Unit 1 operation.

The diesel starting air system was inspected for conformance with TVA drawing 47W839-1, Rev 14 (Flow Diagram - Diesel Starting Air System). During the inspection the following discrepancies were noted:

- a. The following valves did not have identification tags at the time of the inspection: D/G/A-A; valve 82-542B-A; D/G 1B-B, valve 82-508A-B; D/G 2A-A, valves 82-501A-A, 526B-A and 540B-A; D/G 2B-B, valves 82-513A-B, 535B-B and 542B-B.
- b. D/G 1A-A valve 82-514A-A had a broken operator.
- c. D/G 2A-A valve FSV82-221 appears to have excessive air leakage.
- d. D/G 2B-B has a fitting leaking air. The fitting is located between valves 82-546B-B and 548B-B.

The 480V Diesel Auxiliary Boards were inspected for conformance with TVA Drawings 45W732-1, Rev 11 (Wiring Diagrams - 480V Diesel Aux BD 1A1-A and 2A1-A), 45W732-2, Rev. 10 (Wiring Diagrams - 480V Diesel Aux BD 1A2-A and 2A2-A), 45W732-3, Rev 11 (Wiring Diagrams - 480V Diesel Aux BD 1B1-B and 2B1-B), and 45W732-4, Rev 9 (Wiring Diagrams - 480V Diesel Aux BD 1B2-B and 2B2-B). During the inspection the following discrepancies were noted:

- a. Diesel Generator Room 1A-A, 1B-B, 2A-A and 2B-B panel vent fan breakers were installed in Aux Boards 1A1-A, 1B1-B, 2A1-A, and 2B1-B respectively; however, the applicable wiring diagram did not show these breakers.
- b. Aux boards 1A1-A, 1B1-B, 2A1-A and 2B1-B each had breakers installed for a control transformer, 480-120V, 1 phase, 1.5KVA; however, the applicable wiring diagrams did not show these breakers.

The preceding deficiencies were discussed with the licensee and will be identified as inspector followup item (390/84-28-02). No violations or deviations were identified during this inspection.

10. Safety Committee Activity (40301B)

The inspector verified that the Onsite Safety Committee, Plant Operations Review Committee (PORC) was established and functioning in accordance with local instructions and commitments. Administrative Instruction (AI) 1.1 establishes the responsibility, organization and method of operation of the PORC at the Watts Bar Nuclear Plant. The AI references Technical Specification 6.5.1 for PORC duties and responsibilities in addition to those covered in AI 1.1. The inspector reviewed AI 1.1 and proposed Technical Specification 6.5.1 and verified that the written program required PORC review of those subjects identified in section 6.5.1.6 of the proposed Technical Specification and in Chapter 13 of the FSAR. The written program also specifies the mechanism for initiating and conducting the review of

subjects identified above. The inspector also reviewed the PORC minutes for meetings conducted during the previous 3 months. No violations or deviations were identified.

11. Independent Inspection Effort (92706)

A deficiency involving Westinghouse Hydrogen Recombiners was brought to the attention of the licensee in March 1984. The deficiency, a 10 CFR 50.55(e) report from Susquehanna Steam Electric Station, involved failure to provide for bushings to protect the heater power cables which pass from a junction box on the side of the recombiner into the recombiner cabinet. The licensee inspected their recombiner cable penetration area and determined that a stainless steel sleeve is installed at the location where the power cables penetrate the recombiner cabinet wall. The inspector verified this condition. The licensee also intends, as an added precaution, to insulate the cables as they pass through the sleeve with Raychem Tubing. No violations or deviations were identified during this inspection.

The inspector reviewed Standard Operating Instruction (SOI) 2/3.1 and verified that instructions are contained in the SOI which provide for forward warming of each main feed line up to the main feed isolation valve (valve shut). When the water temperature exceeds 250°F, the system is realigned to provide for back flow warming of the main feed line from the steam generator (S/G) to the feed water regulator valve. The S/G level is maintained by flow through the feedwater bypass valve to the S/G which keeps the bypass line warm. TVA has requested relief from the requirements of IE Bulletin 79-13 for Watts Bar, based in part on the preceding instruction.