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

Report Nos.: 50-390/83-56 and 50-391/83-44

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 1 and 2

Inspection at Watts Bar site near Spring City, Tennessee

Inspectors: R. C. Carroll Jr. for
M. B. Shymlock — 2/16/84 Date Signed

R. C. Carroll Jr. for
W. B. Swan — 2/16/84 Date Signed

R. C. Carroll Jr. for
W. E. Holland — 2/16/84 Date Signed

Accompanying Inspector: S. D. Butler

Approved by: P. E. Fredrickson for
C. A. Julian, Section Chief — 2/16/84 Date Signed
Division of Project and Resident Programs

SUMMARY

Inspection on December 25, 1983 - January 20, 1984

Areas Inspected

This routine inspection involved 305 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; Verification of As-builts; Draft Technical Specification Review; and TMI Task Action Items.

Results

No violations or deviations were identified in the six areas inspected.

REPORT 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. B. Bounds, Assistant Power Plant Superintendent
*H. J. Fischer, Construction Engineer
*S. Johnson, Jr., Quality Manager - Construction
E. L. Burke, Assistant Construction Engineer
C. O. Christopher, Assistant Quality Manager - Construction
J. C. Cofield, Assistant Quality Manager - Construction
*E. R. Ennis, Assistant Power Plant Superintendent
*R. A. Beck, Health Physics Supervisor
*W. L. Byrd, III, Plant Compliance Supervisor
*J. L. Collins, Mechanical Maintenance Supervisor
*G. T. Denton, Operations Supervisor
*T. W. Hayes, Nuclear Licensing Unit Supervisor
*M. K. Jones, Engineering Supervisor
L. B. Kuehn, Preoperational Test Supervisor
*A. W. Rogers, Supervisor, Site QA Unit
*G. L. Williams, Instrument Maintenance Supervisor
*J. E. Englehart, Nuclear Power Compliance Staff, Engineer
*J. F. Bledsoe, Jr., OQAB
*G. R. Owens, ENDES NEB-NLS
*R. C. Manley, Nuclear Power Planning and Scheduling
*B. S. Willis, Nuclear Power Staff
*R. D. Greer, Nuclear Power Electrical Maintenance
*D. F. Bailey, Nuclear Power Management Services
*T. L. Howard, Nuclear Power - FQE

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 January 20, 1984, with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Enforcement Matters (92702)

a. (Closed) Violation (50-390/80-23-06 and 50-391/80-17-04): Failure to Control Construction Test. TVA's Interdivisional Quality Assurance Program (ID-QAP) number 11.2, Construction Test Control, was approved and issued March 9, 1981. This document contained specific details for the development, review, and approval of construction test procedures. Quality Control Test Procedures (Volume III) of the Watts Bar Quality Control Manual for Construction currently contains generic procedures reviewed and approved to accomplish these construction tests. G-50, Torque and Limit Switch Settings for Motor-Operated Valves, was also revised September 16, 1981 to correct specific items identified by the NRC.

b. (Closed) Violation (390/82-05-01; 391/82-03-01): Criterion XVI Failure To Take Prompt Corrective Action to Preclude Repetition.

Regional letter to TVA dated August 9, 1983, concerning the subject violation says, in part "After review of your responses of November 9, 1982, and March 18, 1983, the NRC staff concurs that adequate corrective action was taken in this case and the example should be cited against Criterion V only; therefore, the citation against Criterion XVI is hereby rescinded."

Also "It is requested, however, that TVA supplement the May 24, 1983, response to address TVA's programs to assure that appropriate quality assurance measures are applied to those structures, systems and components important to safety as defined in 10 CFR 50, Appendix A and in particular, describe the quality assurance measures applied to heat tracing on safety-related components."

TVA internal memorandum dated December 15, 1983, from R. D. Greer, Power Plant Electrical Maintenance Supervisor, to H. B. Bounds, Assistant Power Plant Superintendent, entitled "Freeze Protection Program," stated: "NRC items 390/82-05-01 and 391/82-03-01 and DPP-N38M2 address concerns over Nuclear Plant Freeze Protection Programs.

At WBNP we have established a preventative maintenance (PM) program that checks the operability of those heat trace circuits not monitored by a heat trace panel. This program is PM # 234X-O-HTR-001 and is to be done each month September thru March. The remaining heat trace circuits are monitored on heat trace panels, and upon failure, Operations will issue MR's for repair. In view of the established program, the previously mentioned NRC items should be signed off as complete."

The inspector reviewed Scheduled Maintenance Package No. 234X-0-HTR-001 under which a clamp-on ammeter is used to verify that the heat trace circuits are operable for HT circuits not fed from heat trace panels. By review of PM program surveillance records, the senior resident construction inspector has verified that PM 234X-0-HTR-001 is being implemented, most recently from December 5 thru December 10, 1983.

c. (Closed) Violation (391/83-35-01): Failure to Control Activities Affecting Quality. The licensee corrected all the discrepancies listed in the violation and instituted the following corrective steps to avoid further violations: All future entries into the primary side of the steam generators will be monitored by construction personnel to ensure that the openings are adequately covered during periods of nonwork.

In addition to the monthly report required by WBNP-QCP-1.36, attachment A, an individual has been assigned to walk through the reactor and auxiliary buildings on a daily basis to check the areas for piping and component openings which are required to be closed and piping which is to be protected. The individual will ensure that any items identified are corrected immediately.

d. (Closed) URI (390/81-26-05) Adequacy of Reactor Coolant System Cold Hydrostatic Test with Filled Steam Generators. The licensee informed the inspector that Westinghouse site engineers concurred that the Reactor Coolant System Cold Hydrostatic Test could be performed with filled steam generators prior to performance of the test. The inspector discussed the method of performing the test with regards to filled steam generators with Region II management. Region management contacted the Chemical Engineering Branch of NRR and all persons contacted concurred that the test method was satisfactory. The inspector reviewed the completed test procedure (WBNP-QCT-4.41, RO; Hydrostatic Test Package No. 1-068-4/W813-1-3-01) and concluded that the test had been performed in accordance with procedure and that the proper reviews were performed on the test results.

e. (Closed) URI (390/82-27-03; 391/82-24-03) Evaluation and Documentation of Cutting of Reinforcing Steel Pending Further Review by NRC. The concern was that drawings, calculation records and design review procedures did not appear to be adequate to assure that the cumulative effect of reinforcing steel (rebar) cuts on a reinforced concrete structure could be adequately evaluated by a designer considering the structural effects of proposed additional rebar cuts. Specifically, that TVA had not prepared a master set of prints depicting rebar cuts made prior to June 1982, and that calculations had not been made to evaluate the effects of cumulative cuts.

By Memorandum 83 0908 013 dated September 8, 1983, the Design Project Manager described to the WB Construction Manager that rebar cuts made prior to June 1982, had been identified from Construction records and posted on a master set of prints of seismic Category I structures and the prints were to be microfilmed as a permanent record. Rebar cuts

made after June 1982, have been and will continue to be fully documented on design drawings by Engineering Change Notice (ECN) or Field Change Request (FCR). The cumulative effect of all rebar cuts thru August 1, 1983, were microfilmed; and notes were made on reinforcing drawings per ECN S1 referencing the microfilmed calculations to enable design engineers to retrieve these calculations in evaluating effects of additional cuts in a particular area. These actions alleviate the subject concerns.

All of the seismic Category I structural concrete for Units 1 and 2 has been completed; so additional rebar cuts will come from drilling for support anchors or penetration changes. The senior resident construction inspector has concluded that the design evaluation program as established is adequate to assure structural integrity.

f. (Closed) URI (390/82-05-03; 391/82-03-09) Verification of Adequacy of Systems, Structures, and Components. These concerns are being tracked by two 50.55(e) deficiency items and follow-up of Black and Veatch Independent Review findings.

The CDR items are: 390/81-63; 391/81-59, Design Review Interface Coordination Activity, Audit JA 8100-03, Deficiency C-1 and 390/82-05; 391/82-05, Generic Deficiency in Design Review, Audit M 81-13 Deficiency 5. The senior resident construction inspector concurs in the elimination of the inadvertent duplication.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Licensee Action on Previous Inspection Items (92701)

a. (Closed) IFI (390/81-29-04, 391/81-26-04); Inservice Inspection (ISI) Program Development. The licensee issued Technical Instruction (TI) 31.4 in April 1982. TI 31.4 is a summary of Watts Bar's ASME Section XI Inservice Testing Program for Pumps and Valves. The inspector reviewed the instruction and considers that TI 31.4 describes how the various requirements of Section XI are to be implemented and serves as a point of reference to identify and describe which plant activities are being utilized to fulfill Section XI requirements. The instruction provides for a means for maintaining a current record of tests for pumps and valves and also a means of requesting changes to the plants inservice test program requirements.

b. (Closed) IFI (390/82-32-12; 391/82-29-12) CEB Reports Control. The subject IFI was opened after the resident inspector reviewed NCR GEN QAB 805 and judged it to be an example of an NCR that should have been reported to the NRC. At the time there was no formal procedural control of CEB (Civil Engineering Branch) Reports. The NCR was initiated by EN DES Internal Audit P 81-1-Deficiency 2 - Completion of Corrective Action.

The licensee's corrective actions included: 1. CEB-EP 21.38, Preparing and Distributing Civil Engineering Support Branch Reports, was issued April 25, 1983, to provide direction for the preparation, review, approval, issue and control of CEB reports. 2. All previously issued CEB reports were classified as controlled or uncontrolled. For each controlled report still current, a memorandum was issued to the report holder informing him that the report is controlled, requiring him to certify that he has the latest revision and that he has nullified previous issues. 3. EN DES - EP 3.53, Construction Requirements Manual - Review, Approval, Issue and Revision, was issued July 20, 1983, and requires that the Construction Requirements Manual include CEB reports on a list entitled "Types of EN DES Approved Documents that Establish Requirements for Inspection". 4. The Chief of the CEB asserted that CEB reviews identified no compromise to plant design due to inadvertent use of CEB reports.

The senior resident construction inspector has reviewed documentation and has found the licensee's corrective actions were responsive and adequate.

c. (Closed) IFI (390/82-41-02) Potentially Defective ITT Barton Transmitters Models 763 and 764. The inspector's inquiry in December 1982, was triggered by a problem with these transmitters reported at another utility's site. TVA had already prepared NCR NEB 8208 and on April 9, 1982, gave notice by CDR 390/82-36 Ambiguous Output from Barton Pressure Transmitters in the Reactor Coolant System. Corrective actions for this CDR are not expected to be completed until the first outage.

The matter will be tracked under CDR 390/82-36; so this IFI is an unnecessary duplication. The senior resident construction inspector concurs.

6. Followup on Licensee Identified Items (LII) (92700)

(Closed) LII CDR 390/83-45 Incorrectly Installed Pressurizer Instrument Line. The final report was submitted on October 3, 1983. The report stated that Engineering Change Notice (ECN) 4249 would correct the control diagram 47W610-68-5, Rev. 9 in accordance with drawing 47W600-172, Rev-10. The inspector reviewed the ECN and determined that control diagram 47W610-68-5, Rev-10, corrected the discrepant drawing and that haroware corrections were completed by December 8, 1983.

7. Comparison of As-built Plant to FSAR Description (37301)

Reactor Coolant System

On January 5, 17, 18 and 19, 1984, the inspectors conducted a walk down of the plant's reactor coolant system (RCS) for Unit 1. The RCS was inspected for conformance with TVA drawing 47W813-1, Rev. 18 (Flow Diagram - Reactor Coolant System, During the inspection the following discrepancies wre noted:

a. The following valves did not have identification tags at the time of the inspection: 68-441A, 443A, 445A, 555, 566, 575, 576, 571, 572, 573, 404A, 405A, 509, 512, 425A, 426A, 529, 531, 532, 535, 578, 579, 581, 582, 435A, 537, 540, 542, 543, 544 and 598.

b. Power operated relief valves numbers 334 and 340 were not installed in the system.

c. The pressurizer level transmitter downstream of valve #569 was not installed.

d. Some valve identification tags attached to pressurizer and loop valves were curled-up/partially-melted apparently due to the heat generated during hot functional testing.

e. The electrical cable for TW68-329A was pulled out of its connector fitting.

f. A temporary tygon level indicator line was installed between valves 451A and 452A on the pressurizer relief tank.

g. TE68-398 was not installed on the reactor head vent piping.

h. The reactor head vent piping downstream of FSV 68-397 was not modified per ECN 3890. The inspector was informed by the licensee that this work would be complete by February 15, 1984.

h. The preceding deficiencies were discussed with the licensee and will be identified as inspector followup item (IFI) 390/83-56-01.

Electrical System

On January 6, 10, 12 and 13, 1984, the inspectors conducted a walk down of the following portions of the plant's electrical system:

a. The switchyard, 6.9KV unit boards for Unit 1 and the 6.9KV common boards (Units 1 and 2) were inspected for conformance with TVA drawing 15E500 (Station Aux Power System).

b. The 6.9KV shutdown boards 1A-A, 2A-A, 1B-B and 2B-B were inspected for conformance with TVA drawing 45W724 (Wiring Diagrams - 6900V shutdown board - single line).

c. 480V shutdown board 1A1-A was inspected for conformance with TVA drawing 45W749-1 (Wiring Diagrams - 480V shutdown Bd 1A1-A - single line).

d. The 125V Vital Battery Board I was inspected for conformance with TVA Drawing 45N703-1 (Wiring Diagrams - 125V Vital Battery Boards - Single Line).

e. The 120V AC Vital Instrument Power Boards were inspected for conformance with TVA Drawing 45N706-1 (Wiring Diagram - 125V AC Vital Inst Power BDS - Connection Diagram).

During the inspection, the following discrepancies were noted:

a. On TVA drawing 45W724-1 Rev 12 (Wiring Diagrams-6900V shutdown BD 1A-A single line) the alternate #2 supply from CSST D is identified for breaker 1932 on the diagram; however, the actual panel breaker is not labled.

b. On TVA drawing 45W724-2 Rev 12 (Wiring diagrams - 6900V shutdown BD 1B-B - single line) the alternate #1 supply from CSST D is identified for breaker 1728 and the alternate #2 supply from CSST C is identified for breaker 1934; however, the actual panel breakers are not labeled.

c. On TVA drawing 45W749-1 Rev 15 (Wiring Diagrams - 480V shutdown BD 1A1-A - Single line) the electrical board room AHU A-A is identified as 0-MTR-31-30B-A; however, the actual breaker identification is 1-MTR-31-30B-A.

d. On TVA drawing 45N703-1 Rev 10 (Wiring Diagrams - 125V Vital Battery Board I single line) breakers 323 and 324 are not identified on the circuit schedule; however the identification nameplate for breaker 323 reads "Unit 1 Reactor Coolant Pump 1 UV and UF Relay" and the identification nameplate for breaker 324 reads "Unit II Reactor Coolant Pump 1 UV and UF Relay."

e. On TVA drawing 45N706-1 Rev 10 (Wiring Diagram - 120V AC Vital Inst Power Bds 1-I2-I-Connection Diagram) breaker 17 on board 1-I is identified as "Post Accident Sampling Valves", however the panel label identifies the breaker as "AFPT FLOW CONT NOR". Also the drawing identifies breaker 47 on board 1-I as "Reactor Vessel Level Instrumentation System"; however the panel label identifies the breaker as "spare".

The preceding deficiencies were discussed with the licensee and will be identified as inspector followup item (IFI) 390/83-56-02.

No violations or deviations were identified in this area.

8. Technical Specification Review (71301)

The inspectors reviewed the licensee's draft technical specifications (TS) proposed for the Unit 1 operating license. The TS were reviewed to ensure that the proposed requirements were clear and enforceable as written.

No violations or deviations were identified in this area.

9. TMI Task Action Items

(Open) TMI (80-RD-17) Auxiliary Feedwater System (AFWS) Evaluation

A review of the subject item (NUREG-0737, item II.E.1.1) was conducted by the NRC staff with regards to the Watts Bar AFWS. The review concluded that Watts Bar's AFWS meets the requirements of the March 10, 1980 letter and NUREG-0737 (See NUREG-0847, paragraph 10.4.9) except for the following: The applicant committed to incorporate all short-term and long-term recommendations of the March 10 1980 letter before receiving an operating license. The inspector reviewed the applicant's commitments and determined that all had been completed except for recommendation 5.3.2., for which the applicant states that a 48 hour endurance test will be performed on the AFWS after initial criticality at a reactor power level of no more than 10%. Until the applicant completes the preceding test, this item remains open.

(Closed) TMI (80-RD-18) Auxiliary Feedwater System Initiation and Flow Indication.

A review of the subject item (NUREG-0737, Item II.E.1.2) was conducted by the NRC staff (See NUREG-0847, paragraph 7.8.2) and found to be acceptable.

(Closed) TMI (80-RD-19) Emergency Power for Pressurizer Heaters.

A review of the subject item (NUREG-0737, Item II.E.3.1) was conducted by the NRC staff (See NUREG-0847, paragraph 8.3.3.4) and found to be acceptable.

(Closed) TMI (80-RD-37) Immediate Upgrade of RO and SRO Training and Qualifications; TMI (80-RD-44) Administrative of Training Programs; TMI (80-RD-45) Revise Scope and Criteria for Licensing Exams.

A review of the subject items (NUREG-0737, Items I.A.2.1, I.A.2.3 and I.A.3.1) was conducted by the NRC staff (See NUREG-0847, paragraph 13.2.1) and found to be acceptable.