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

Report Nos.: 50-390/85-61 and 50-391/85-50

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: October 28 - November 1, 1985

Inspector: T. D. Gibbons 12/5/85
T. D. Gibbons Date Signed

Approved by: T. E. Conlon 12/6/85
T. E. Conlon, Section Chief Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection entailed 38 inspector-hours on site in the areas of instrumentation cables and terminations, work activities.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

   Licensee Employees

   *G. Wadewitz, Project Manager
   *E. Burke, Assistant Construction Engineer
   *S. Johnson, Quality Manager
   *A. W. Rogers, QA Supervisor Construction
   *H. J. Fischer, Construction Engineer

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

   NRC Resident Inspectors

   *W. E. Holland, Resident Inspector
   C. Caldwell, Resident Inspector

   *Attended exit interview

2. Exit Interview

   The inspection scope and findings were summarized on November 1, 1985, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

   Unresolved Item 390/85-61-01 and 391/85-50-01, Use of Panduit Tie Plates in the Control Room (paragraph 5).

   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. One new unresolved item identified during this inspection is discussed in paragraph 5.

5. Independent Inspection Effort

Construction Progress

The inspector conducted a general inspection of the auxiliary and control buildings to observe construction progress and construction activities such as electrical equipment installation, material handling and control, housekeeping and storage. The inspector observed testing and the wire checking of a relay cabinet, R10. While in the control room on the Unit 2 side, the inspector observed the use of Panduit Tie Plates for providing separation. The inspector was directed to drawing 45W1640, Revision 2. This drawing controls the critical wiring braid installation. The drawing note 2 specifies that "In no case should wiring assemblies from different trains touch or be able to migrate with time to touch." The licensee implemented this requirement by use of Westinghouse FDSK-CW-OS1976, Revision 0 dated May 19, 1976, which was transmitted from Westinghouse on May 25, 1976, for Sequoyah Units 1 and 2 and Watts Bar Units 1 and 2. The FDSK shows the Panduit Tie Plate fastened to one cable and providing stiffening to the bundle. The Tie Plates used at Watts Bar are used as spacers by tying one cable to each end of the tie plate, which is not per the FDSK. This item is unresolved pending clarification of the usage at Watts Bar. The drawings should indicate all approved uses. The inspector also questioned the addition of the Panduit Tie Plates as an added combustible. This unresolved item will be identified as 390/85-61-01 and 391/85-50-01, Use of Panduit Tie Plates in the Control Room.

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

6. Instrumentation (Cables and Terminations I-II) - Observation of Work and Work Activities (52063, 52064)

The inspector selected 26 instrument cables for examination to verify that the requirements of the SAR and QAM were complied with in the areas of storage, handling, use of specified material, identification, procedure adherence, size and type of cable location, routing, physical separation, protection, raceway identification, raceway loading, and terminations. The cables selected are as follows.

2-2PM-1-1491-F	2-2PM-30-1857-D	2-2PM-47-2021-D
2-2PM-3-1291-D	2-2PM-85-768-F	2-2PM-47-2022-D
2-2PM-3-1403-F	2-2PM-85-858-G	2-2PM-72-2234-F
2-2PM-3-1548-D	2-2PM-68-608-D	2-2PM-72-5280-F
2-2PM-63-3871-D	2-2PM-68-627-F	2-2PM-74-483-B
2-2PM-63-3883-F	2-2PM-68-712-F	2-2PM-74-484-B
2-2PM-63-4783-D	2-2PM-68-745-F	2-2PM-74-489-A
2-2PM-63-4803-F	2-2PM-68-792-D	2-2PM-74-490-A
2-2PM-68-813-F	2-2PM-68-1015-F	

The cables inspected were routed in cable trays and short conduits between relay cabinets. The inspector verified the size and type of cable by observing the licensee cable identification. Each cable was identified at

each end. The routing was verified by use of the cable card. The separation was verified during the routing inspection. The raceway identification was adequate to allow full verification. The inspector verified that cable tray fill was not exceeded. The terminations for each cable were inspected using the controlled termination drawings in the area.

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

7. Licensee Identified Items

a. (Closed) Item 390/CDR 85-21 and 391/CDR 85-20 "Environmental Qualification of Unit 2 Equipment Needed for Unit 1 Operation" (10 CFR 50.55(e)).

The final report was submitted on July 29, 1985, and a revised final report submitted on September 4, 1985. The report has been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the report have been completed.

There were 53 items identified in the report. The licensee identified that 17 items were qualified and that ten additional items were in a mild environment which required no corrective action. Four items were found to have been deleted from the design and never installed. The licensee issued four Engineering Change Notices (ECNs) to replace eight unqualified components with qualified items and removed two components. There are administrative controls preventing operation of 12 additional flow solenoid valves.

The following ECNs and Work Packages were examined.

ECN	Work Package	Components
3800	E-3800-1	2-Flow Element-30-194 2-Flow Element-30-195
4063	3968	2-Temperature Switch-30-194A 2-Temperature Switch-30-195A
4126	3796	2-Motor-30-194 2-Motor-30-195
5704	E-5704-1	2-Flow Switch-30-200 Removed 2-Flow Switch-30-207 Removed 2-Temperature Switch-30-200A 2-Temperature Switch-30-207A

The following Flow Solenoid Valves are administratively controlled by Hold Orders and ECNs.

Device	Hold Order	ECN
2-FSV-65-7	20019	
2-FSV-65-9	20019	
2-FSV-65-29	20019	
2-FSV-65-50	20019	
2-FSV-67-127		5317
2-FSV-67-128		5317
2-FSV-67-147		5317
2-FSV-67-81		5317
2-FSV-67-82		5317
2-FSV-67-223	32302	

There are two valves which are controlled by other interface isolations. The two valves are 2-FSV-65-4 and 2-FSV-65-5.

b. (Closed) Item 390/CDR 85-18 "Undervoltage Condition on 125 VDC Vital Control Power System (10 CFR 50.55(e))

The final report was submitted on June 27, 1985, and a revised final report was submitted on July 19, 1985. The reports were reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the report have been completed. The licensee has issued ECN 5696 and Work Plan E5696-1 to replace cable 1SG220A with 2 conductor #4AWG. The existing cable made a spare cable and assigned number 0-3SP-285-1002A. The cable was installed and all required inspections were completed. All fire seals which were breached during cable installation were resealed and inspected.

One motor operated valve 1-FCV-1-51-MTR had a minimum operating voltage of 112.5V dc. The vendor Limitorque Corporation was contacted to obtain assurance that the operator will operate at 100V dc which is considred to be the worst case. Limitorque certified that the operator will operate at 100V dc. The new cable will assure that adequate voltage is now supplied to the motor. The worst case voltage of 105V dc at the distribution panel is at the end of a two-hour discharge at rated loads.

To prevent recurrence of this item, the licensee issued a design input memo to WB-DC-30-2, Revision 0, "Design Criteria for the 125 Volt Vital Battery" specifying the voltage range of the battery. The design staff and procurement personnel have been familiarized with this information.

c. (Closed) Item 390/CDR 85-26 "Independent Control Power Supply to Auxiliary Feedwater Pumps" (10 CFR 50.55(e)).

The final report was submitted on August 14, 1985. The report has been reviewed and determined to be acceptable. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that the corrective actions identified in the report have been completed. The licensee identified that the control power for the turbine driven auxiliary feedwater pump (AFWP) was not independent from the control power for motor driven AFWP. The work necessary to provide independent power for the AFWPs was performed under ECN 5816 and Work Plan E5816-1. Two new cables 1-3PV-3-594-A and 1-3PV-3-595-B were added and wiring was modified in the panel. The work was inspected and post modification testing was completed.