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

Report No. 50-390/91-12 and 50-391/91-12

Licensee: Tennessee Valley Authority
6N 38N Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

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

Facility Name: Watts Bar

Inspection Conducted: June 10-14 and June 18-21, 1991

Inspector: C. Julian for 7/11/91
C. Smith Date Signed

Approved: C. Julian for 7/11/91
M. Shymlock, Chief Date Signed
Plant System Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope:

This special announced inspection was conducted in the areas of high-potential (HI-POT) testing of spares and abandoned cables, including reviews of design output documents, test instructions, maintenance requests, and work request/work orders.

Results:

In the areas inspected, violations or deviation were not identified.

The licensee has successfully completed HI-POT cable tests for cables contained within conduits specified in Design Change Notice No. 15964A. Additionally, pullback of cables ABN2570B and ABN2571B was completed in accordance with the requirements specified in the above Design Change Notice. Examination of these cables did not reveal any pullby damage.

Walkdown of 28 low risk conduits has resulted in identifying six additional spare/abandoned cables. Preliminary calculation of sidewall bearing pressure (SWBP), assuming the newly identified cables were pulled under the worst case conditions, did not result in any conduit having a change in risk classification. Only minor changes in ranking order, for most conduits in the low risk

population, occurred as a resulted of including the cables in Calculation No. WBPEVAR 9006013.

Now that the calculation has accurately modeled the as-built plant configuration for the low risk conduit population, the calculated values of SWBP corroborates that previously assigned conduit risk categorization.

Also, validation of the threshold between the rework category of the high risk and the accept-as-is low risk conduit population, will finally be demonstrated by successful HI-POT testing of the newly identified spare/abandoned cables.

REPORT DETAILS

1. Person Contacted

Licensee Employees

*S. Crowe, QC Manager
*J. Cruise, Licensing Engineer
*J. Garrity, Site Vice President
*A. Gentry, Specialist
*S. Gibson, Project Engineer Unit 2
*T. Hughes, Engineering Specialist
*B. Johnson, Modifications Facility Manager
*A. McLemors, Modifications Engineering Manager
*C. Nelson, Maintenance Manager
*P. Pace, Compliance Supervisor
*G. Pernell, Site Licensing Manager
*R. Purcell, Plant Program Manager
*J. Scalice, Plant Manager
*J. Tortora, Senior Engineering Specialist
*H. Weber, Engineering Modifications Manager
*P. Wilson, Special Projects Manager
*J. Woods, Supervisor, Systems Engineering

Other licensee employees contacted during this inspection included craftsmen, engineers, operators, mechanics, technicians, and administrative personnel.

Other Organization

*M. Good, Comex Consultant

NRC Resident Inspectors

*G. Walton, Senior Resident Inspector
*B. Crowley, Resident Inspector

2. (Open) URI 50-390, 391/91-07-01, Verification of unknown numbers of spare and abandoned cable in low-risk conduit population.

The licensee identified six additional spare/abandoned cables based on walkdowns of 28 low risk conduits. The walkdowns were performed in accordance with the requirements specified in DCN Nos. Q15964A and Q-16170A and the results were documented on the following MRs:

Conduit I.D.	MR Number	Cables Found
1PM7253K	A-665987	1
MC924B	A-665790	2
MC926B	A-665971	1
2PM7252K	A-665976	1
1PM7248J	A-665986	1

The inspector determined that the cables contained in conduits MC924B and MC926B were included in design output documents and had been incorporated within the CCRS data base. The remainder of the newly identified cables had never been part of CCRS. A preliminary run of Calculation No. WBPEVAR was performed, for the worst case conditions, to determine the values of SWBP for the listed conduits when the newly identified cables were included. The results showed no change in risk category for the conduits and only minor change in ranking conduit population. The most significant change in ranking order occurred for conduit MC926B which changed from a rank of 14 to a new rank of 9. Now that the calculation has accurately modeled the actual as-built plant configuration of the low risk conduit population, the calculated values of sidewall bearing pressures corroborate the previous assigned conduit risk categorization. Discussions with the licensee management revealed that the conduits would be walked down for cable route verification and a DCN would be prepared and issued to have the cables HI-POT tested.

Additionally discussions with licensee's engineering personnel were held concerning whether-or-not the newly identified cables in the 28 low risk conduit population is representative of the entire plant installation. The inspector was informed that the Trend Analysis Program provides the capability to address this issue. This program is an ongoing activity intended to address the generic problem of spares and abandoned cables identified throughout the plant.

This item will remain open pending preparation and issue of a DCN which specifies requirements for HI-POT testing of the newly identified cables.

3. Electric Cable Work Observation (51063)

DCN No. Q-15964A, paragraph 6.0, specifies requirements for pullback of cables ABN2570B and ABN2571B from conduit MC1008B to facilitate inspection for pullby damage. Permission for performing this activity was given to TVA by the NRC on June 4, 1991, and is documented in NRC Report 50-390, 391/91-09. Pullback of the cables was scheduled to be performed using the newly implemented WR/WO process.

The inspector observed the training of personnel, (involved in the above activities), in the administrative controls delineated in AI-9.2.8, Work Request/Work Order Program for Maintenance, Revision 0. This instruction establishes the new work control practices for preventive maintenance performed using the WR/WO process. No deficiencies were identified during

this observation. Additionally evaluation of personnel training was performed by review of the training attendance records for TI-43, "Specialized Training," for all participants in the HI-POT test activities. Based on review of objective evidence and discussion with licensee management the inspector determined that all personnel involved in the HI-POT tests activities had (1) satisfied training requirements for performing work under the new WR/WO process and (2) satisfied training requirements for job qualification/certification for TI-43.

A prejob briefing was conducted with the craft by the Maintenance Engineer along with a job safety planning conducted by the craft foreman. Based on observation of field activities the inspector verified that all work was performed in accordance with the requirements of W.O. No. 9100097-0. Configuration changes were performed under the guidance of the NED representative and was second party verified as required by the W.O. Implementation of the new work site controls delineated in administrative instruction AI-9.2.8 was determined to have been adequately implemented based on the good performance of the work crew.

The inspector performed a post-removal examination of cables ABN2570B and ABN2571B in order to identify any cable pullby damage. No indication of pullby damage was revealed by this examination. Additionally, configuration changes made to facilitate pullback and examination of these cables were left unrestored as directed by WO No. 91-00097-0. Restoration of these changes will be made upon NRC's approval of this type of work activity.

4. Reviews of Electric Cable DCN, MRs and TI, (51061)

The inspector reviewed seven MRs in order to verify that HI-POT testing of cables within the low-risk conduit population had been performed in accordance with the requirements delineated in approved TIs, and had met test acceptance criteria specified in DCN No. Q-15964A. Test anomalies were reviewed and discussed with licensee's engineering personnel to determine the nature of the anomalies, the corrective action taken, and the potential impact for invalidating the results of the high potential tests. No deficiencies were identified during this effort.

The MRs documenting completion of the following high potential cable tests were reviewed by the inspector:

MR No	Test Conduit	Type Test
A-676844	IRM509B	Dry
A-676842	IVC4595A	Wet
A-676842	IVC4449A	Wet
A-676848	IPM6499A	Wet
A-676846	IPLC2852A	Wet
A-676840	IM4389B	Wet
A-676841	IPM566IE	Dry
A-676839	MC925A	Dry

Based on review of objective evidence and discussions with licensee engineering personnel, the inspector concluded that all cables within the above listed conduits had met test acceptance criteria specified in DCN No. Q-15964A. Validation of the threshold between the high risk and low risk conduit population has therefore been clearly demonstrated for the group of conduits specified within the scope of this DCN. However, because newly identified cables, not within the scope of DCN No. Q-15964A have been found in the low risk conduit population, additional tests will be required. Validation of the threshold between the rework category of the high risk and the accept-as-is low risk conduit population, will finally be demonstrated by successful HI-POT- testing of these cables. This issue is discussed further in paragraph 2.0 of this report. Additionally, training requirements which are pre-requisites for participating in test activities are addressed in paragraph 3.0 of the report.

5. Exit Interview

The inspection scope and results were summarized on June 21, 1991, with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection results. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

6. Acronyms and Initialisms

AI	Administrative Instruction
CCRS	Computerize Cable Routing System
DCN	Design Change Notice
HI-POT	High Potential
MR	Maintenance Request
PER	Problem Evaluation Report
PI	Polarization Index
SWBP	Sidewall Bearing Pressure
TI	Test Instructions
TVA	Tennessee Valley Authority
URI	Unresolved Item
WO	Work Order
WR/WO	Work Request/Work Order