UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-390/82-30 and 50-391/82-27

Licensee: Tennessee Valley Authority
500A Chestnut Street
Chattnooga, TN 37401

Facility Name: Watts Bar

Docket Nos. 50-390 and 50-391

License Nos. CPPR-91 and CPPR-92

Inspection at Watts Bar site near Spring City, Tennessee

Inspector R. V. Crlenjak for 9/15/82
T. L. Heatherly Date Signed

Approved by: D R Quick 9/16/82
D. R. Quick, Section Chief, Division of Project and Resident Programs Date Signed

SUMMARY

Inspection on July 21 - August 20, 1982

Areas Inspected

This routine, announced inspection involved 53 resident hours on site in the areas of Licensee Action on Previous Inspection Findings; Review of Periodic and Special Reports; independent inspection effort; and followup on Licensee Identified Items.

Results

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

DETAILS

1. Persons Contacted

   Licensee Employees

   *R. W. Olsen, Construction Engineer
   *E. Burke, Assistant Construction Engineer
   *C. O. Christopher, Assistant Construction Engineer
   *H. J. Fischer, Assistant Construction Engineer
   *T. Hayes, Nuclear Licensing Unit Supervisor
   *S. Johnson, Assistant Construction Engineer

   Other licensee employees contacted included six construction craftsmen, two engineers, and four office personnel.

   *Attended exit interview

2. Exit Interview

   The inspection scope and findings were summarized on August 23, 1982, with those persons indicated in paragraph 1 above.

3. Licensee Action on Previous Inspection Findings

   a. (Closed) Unresolved (390/80-11-01, 391/80-08-01) Incorrect wedge bolt dimensions. The inspector reviewed the results of a licensee survey taken to determine the disposition of undersized wedge bolts. The survey indicated that ninety-six of thirty-six hundred wedge bolts had been lost (possibly installed). This percentage is well within the allowable ninety-five percent confidence level specified in IE Bulletin 79-02. All remaining bolts had been surplused. The inspector verified that all wedge bolts stored on the construction site met the licensee's construction specification. Based upon this review and verification this item is closed.

   b. (Closed) Open Item (390/81-16-06) Limitorque terminal blocks derating. The inspector reviewed the contents of a letter from Limitorque Corporation to TVA dated June 12, 1981. The letter briefly described Limitorque's success with Marathon 300 series terminal blocks over the past ten years and referenced previous testing performed to verify terminal block suitability for six hundred volt service, based upon review of Limitorque's position this item is closed.

4. Unresolved Items

   Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve noncompliance or deviations. One new unresolved item identified during this inspection is discussed in paragraph 5.a.

5. Review of Periodic and Special Reports

The Watts Bar Nuclear Plant Safety Analysis Report (SER) was published in June 1982. The inspector reviewed certain portions of the report. The licensee also conducted a special investigation into the safety-related hanger inspection program and provided the inspector with their initial findings. Findings from the review of the SER and the investigation were as follows:

a. Information contained in a letter from TVA to NRR dated September 11, 1981, and subsequently transcribed into the Watts Bar Safety Evaluation Report (SER) appears inaccurate. Paragraph 1 of the enclosure "Watts Bar Nuclear Plant Units 1 and 2 Generic Unresolved Safety Issues A-1 Water Hammer" states: "System design changes and testing requirements necessary to prevent this type of water hammer have been implemented in accordance with Westinghouse report Minimization of Series D2/D3 Steam Generator Preheating Pressure Transient," dated June 30, 1977. Wat-D-3023, dated September 6, 1977, paragraph 8, recommended temperature sensing be added to the unpurged line associated with main feedwater check valves for #1 and #4 steam generators and incorporated into system logic to ensure setpoint temperatures are attained prior to admitting main feedwater to these steam generators. Physical drawing 47W401-9, Rev. 7 identifies surface mounted thermocouples TE-95 and TE-96 in the appropriate locations to satisfy the Westinghouse recommendation. However, neither logic diagram 47W611-3-6 Rev. 1 nor control diagram 47W610-3-5 Rev. 5 utilize these thermocouples for more than indication. WAT-D-3929, dated April 8, 1980, recommends a permanent pressure transducer in the feedwater line. A pressure transducer is not shown on the feedwater system physical, logic or control diagrams. Until the licensee reviews the apparent disparity between statements contained in the SER and actual design this item is unresolved. (390/82-30-01)

b. On August 5, 1982, the licensee informed the inspector that an investigation was being conducted to determined if twenty-five safety-related hangers were appropriately failed by site hanger inspection group personnel. After a review of the licensee's intial investigation the inspector concluded that the acceptance criteria for hanger acceptance or rejection might have been subject to interpretation and therefore inadequate. Licensee management stated that a thorough investigation would be conducted and all questionable hangers totally reinspected. Any acceptance criteria identified as inadequate or unspecified would be documented and corrective action initiated. Until the licensee completes its' investigation of these safety-related hanger inspections and takes appropriate corrective action this item is open. (390/82-30-02)

6. Independent Inspection Effort

The inspector conducted several plant tours to witness quality assurance activities and conduct as-built verifications. Findings were as follows:

a. The inspector conducted a partial walkdown of the Auxiliary Feedwater system piping in the south valve room to verify that the installed piping matched "as constructed" drawings. Valve classification and orientation were verified to be correct. Within the areas inspected no violations or deviations were identified.

b. The inspector witnessed in progress bolt anchor pull testing. A total of eight anchors (four-three quarter inch and four-seven eight inch anchors) were tested. During testing, one-three quarter inch anchor slipped and was rejected. The anchor was reset and pull tested satisfactorily. Dimensional measurements for all anchors were within acceptance criteria. Two sets of adjacent anchors were noted to be unacceptable. One set had two anchors that hit rebar and another set had been reworked; however, the unacceptable anchors had not been removed. When questioned the craft appeared to be knowledgeable of the controls needed to initiate corrective actions for the deficient anchors. Within the areas inspected no violations or deviations were noted.

7. Followup on Licensee Identified Items

a. (Open) LII (WBRD-50-390/91-10, WBRD-50-391/81-09) Corrosion of carbon steel piping. In a letter from TVA to NRC dated January 29, 1981, (A27 810129 023), the licensee identified that the original criteria for the use of carbon steel piping in raw water systems at TVA plants may not have been adequate. Corrosion had been found to cause greater than predicted pressure drops and pipe wall thinning (corrosion induced) may have not been accounted for in the system design. The condition was noted to be potentially generic to all raw water systems. The stated corrective action was to reevaluate all raw water cooling systems to identify needed changes. However, subsequent letters dated May 22, 1981; September 23, 1981; December 24, 1981; and February 11, 1982, failed to discuss any required design changes to systems other than the Essential Raw Cooling Water system. Specifically the letters failed to discuss any identified or suspected corrosion problems in the High Pressure Fire Protection system including unexpected pressure drops, wall thinning or adverse affects of flaking corrosion products. TVA's licensing group was contacted August 20, 1982, and agreed to discuss the matter with Engineering Design. In subsequent discussions with the resident inspector the licensee agreed to nonconform the fire protection piping and evaluate the nonconformance for reportability to NRC. Until the nonconformance is evaluated and appropriate corrective actions are taken this item will remain open.

b. (Open) LII (SWP 79-W-9) Insufficient flexibility of low head injection test lines. The inspector reviewed the licensee's final report and

found that specific procedures had not been written and implemented to preclude recurrence of the stated problem. However, discussions with the licensee's design personnel indicated that corrective action taken as a result of two recently initiated Construction Deficiency Reports (WBRD 50-390/82-74, 50-390/82-69; WNRD 50-390/82-57, 390/82-54) would ensure that adequate procedures are implemented to perform a correct alternate piping analysis. This item will remain open until procedures are written and reviewed for adequacy.

c. (Open) LII (CDR 79-01) Excessive output fluctuation of Foxboro instrumentation. Joint TVA-Westinghouse testing of Watts Bar Unit 1 instrumentation in February and March, 1982 indicated that the currently installed vital 120 volt AC control power system inverters and Foxboro current repeaters, square root converters, pressurizer heater controllers and bistables did not provide erroneous signals under various supply voltage switching transients. However, there is a relatively small margin between acceptable performance with 2% voltage transients, which are expected, and 4% voltage transients which would cause an erroneous safety injection signal. TVA feels that due to the conservative evaluation of instrument errors the potential still exists for an erroneous safety injection signal. Although contractual obligations have not been resolved TVA has committed to installation of Westinghouse designed and tested modification kits to stabilize the performance of the Foxboro instruments (FCN WATM-10623, WBTN-10603, and others not yet issued). This item will remain open until modifications are made to the appropriate instruments and post modification testing is successfully completed.

8. ACRS Meeting

On August 10, 1982, the inspector attended the Advisory Committee on Reactor Safeguards Subcommittee meeting. The purpose of the meeting was to discuss generic and site specific concerns in preparation for the full committee meeting held on August 13, 1982. The responses to the ACRS concerns will be evaluated and submitted to the Commission as part of the licensing process for Watts Bar Unit 1.