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

Report Nos.: 50-438/84-12 and 50-439/84-12

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

Docket Nos.: 50-438 and 50-439

License Nos.: CPPR-122 and CPPR-123

Facility Name: Bellefonte 1 and 2

Inspection Dates: May 1 - June 30, 1984

Inspection at Bellefonte site near Scottsboro, Alabama

Inspector: _____ for _____ 7/18/84
J. W. York Date Signed

Approved by: _____ 7/18/84
Caudle A. Julian, Section Chief Date Signed
Project Branch No. 1
Division of Reactor Projects

SUMMARY

Areas Inspected

This routine, announced inspection involved 157 inspector-hours on site in the areas of licensee action on previous enforcement matters, independent inspection, safety-related pipe support and restraint systems, licensee identified items and inspector followup items.

Results

Of the five areas inspected, no violations or deviations were identified in four areas; one apparent violation was found in one area (Failure to follow procedures for hanger inspections - paragraph 6).

REPORT DETAILS

1. Persons Contacted

   Licensee Employees

   *L. Cox, Project Manager
   *B. Thomas, Quality Manager
   *R. Young, Construction Engineer
   *H. Johnson, Assistant Quality Manager
   *D. Bridges, Assistant Quality Manager
   *T. Brothers, Assistant Construction Engineer
   *J. Barnes, Section Supervisor, OQA
   *R. Norton, Supervisor, Welding QC
   *R. Delay, Supervisor, Hanger QC
   *P. Mann, Nuclear Licensing Supervisor
   *D. Smith, Compliance Supervisor, Nuclear Power

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

   *Attended exit interview

2. Exit Interview

   The inspection scope and findings were summarized on July 2, 1984, with those persons indicated in paragraph 1 above. The licensee was informed of the inspection findings listed below. The licensee acknowledged the inspection findings with no dissenting comments.

   Violation 438, 439/84-12-01, Failure to follow procedures for hanger inspections, paragraph 6.

   Inspector Followup Item 438/84-12-02, Variation in heat treatment of expansion anchors, paragraph 8d.

3. Licensee Action on Previous Enforcement Matters

   a. (Closed) Violation 438/82-33-04, Operation of safety-related equipment. TVA's letter of response dated February 25, 1983, has been reviewed and determined to be acceptable by Region II. The inspector held discussions with the licensee and examined the corrective actions as stated in the letter of response. The inspector concluded that TVA had determined the full extent of the subject violation, performed the necessary survey and followup actions to correct the present conditions, and developed the necessary corrective actions to preclude recurrence of similar circumstances. The corrective actions identified in the letter of response have been implemented.

b. (Closed) Violation 438/83-02-04, Inadequate Construction Operating Instructions. TVA's letter of response dated December 2, 1983, has been reviewed and determined to be acceptable by Region II. The inspector held discussions with the licensee and examined the corrective actions as stated in the letter of response. The inspector concluded that TVA had determined the full extent of the subject violation, performed the necessary survey and followup actions to correct the present conditions, and developed the necessary corrective actions to preclude recurrence of similar circumstances. The corrective actions identified in the letter of response have been implemented.

c. (Closed) Unresolved Item 438, 439/84-01-01, Acceptability of pipe in the Main Steam Relief Line. During a previous inspection, the inspector questioned the acceptability of a 2-inch schedule 160, ASME SA-106 (heat number N-54697) carbon steel pipe being installed. The piping had extensive pitting on both the ID and OD surfaces.

The licensee sent two 12" long pieces to their Singleton Materials Engineering Laboratory for acceptability analysis. The material was purchased to ASME Code, Section II, Part A, 1974 thru winter 1976 addenda. This code states that pits are acceptable on this material provided they are not deeper than 1/16" and do no exceed 12½% of the nominal wall thickness. The maximum depth found by the laboratory was 0.034 in., which is acceptable. The report recommends that the unused portion of this heat of pipe be rejected and that the installed part be accepted. The licensee will accept this recommendation. The inspector visually examined all of this heat of pipe that was installed. The following is a list of this piping located by the weld maps:

- Piping between welds 1CF00-139 thru 142
- Piping between welds 1CF00-208 thru 208F
- Piping between welds 1CF00-244 thru 247
- Piping between welds 1SV00-182A thru 190
- Piping between welds 1SV00-234 thru 286E
- Piping between welds 2SM00-168B thru 168C
- Piping between welds 2SM00-081A thru 081B
- Piping between welds 2SM00-105D thru 105E

The first three listed areas of piping are in the feedwater system and the remaining piping is in the main steam system. Visually the installed piping appears to have a much lesser pitting condition than the pipe that was questioned. There is no violation of the ASME Code and this item is considered resolved and closed.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection Effort - Units 1 and 2 (92706)

   a. The inspector visually examined the piping and hanger welds in Boric Acid Pump Rooms 1A-A, 1B-B, 2A-A and 2B-B.

   b. The inspector held discussions with the licensee personnel concerning the system used for tentative and final transfer of systems from Construction to Nuclear Power. Details of the walkdown inspections for each of these transfers were discussed. The inspector reviewed portions of the following procedures or instructions.

      - ID-QAP-1.2, Transfer of Responsibility for the Plant from OEDC to Power.

      - Standard Practice BLA 7.7, Transfer of Plant Features.

      - Mechanical Maintenance Section Instruction Letter MMSIL-6.21, Review - Tentative Transfer of Plant Features.

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

6. Safety Related Pipe Support and Restraint Systems - Units 1 and 2 (50090)

   In order to ascertain the effectiveness of the licensee's hanger QC inspection program, the inspector chose 12 hangers for reinspection whose final inspection had been completed since February 1984. The following 12 hangers were selected and reviewed for conformance to QCP 7.5, Visual Examination of Weld Joints, and QCP 6.17, Seismic Support Installation and Inspection:

   Hanger No. 2RJ-0176 in the Essential Air Instrumentation System
   Hanger No. 1RE-0002F in the Dimeneralized Water System
   Hanger No. 2KE-3315S Sht. 1 in the Essential Raw Cooling Water System
   Hanger No. 2NB-X002F in the Chemical Addition and Boron System
   Hanger No. 1ND-0621 in the Decay Heat Removal System
   Hanger No. 2KE-1035 in the Essential Raw Cooling Water System
   Hanger No. 1KC-0059F in the Component Cooling System
   Hanger No. 1NM-0007F in the Spent Fuel Cooling System
   Hanger No. 2CA-0127 Sht. 2 in the Auxiliary Feedwater System
   Hanger No. 1KE-2058 in the Essential Raw Cooling Water System
   Hanger No. 1NM-074F in the Spent Fuel Cooling System
   Hanger No. 1NM-075F in the Spent Fuel Cooling System

   The following problems were identified: On hanger No. 2KE-1035 ("D" Weld) an area of weld rollover approximately 3/16" long was found and on hanger No. 1NM-007F two undersize fillet welds were identified. In addition to the welds, two additional hangers noted when inspecting the twelve selected hangers appeared to deviate from the drawing and inspection criteria. Hanger No. ORE-97 Sht. 1 was found to have an angle greater than ±4° (acceptance criteria) between the snubber and pipe clamp axis. Hanger No. ONM-0233 (a sliding support) was found to have inadequate clearance (½" to 5/8") between the sliding plate and a concrete wall to allow for the thermal movement of the pipe indicated on the hanger drawing (±0.70").

These failures to meet the acceptance criteria of QCP 7.5 and QCP 6.17 were identified to the licensee as violation 438, 439/84-12-01, Failure to follow procedure for hanger inspections.

7. Licensee Identified Items - Units 1 and 2 (92700)

The inspector reviewed the in-progress status of the following LIIs:

438/84-30	2991	Contaminated MUPU Piping
438/84-31 439/84-29	BLN CEB 8404	Error in seismic data used in Auxiliary Control Building
438/84-32 439/84-30	3011	Alterations for fire doors
438/84-33 439/84-31	BLN MEB 8403	Fire damper installation and closure problems
438/84-34	3069	Conduit support stiffener plates not installed per drawing
438/84-35 439/84-32	3102	Use of incorrect adaptors on instrumentation lines
438/84-36 439/84-33	BLN CEB 8407	Failure to impact test support material
438/84-37 439/84-34	1885	Failure of SSD anchors in concrete walls

Within the areas inspected no violations or deviations were identified.

8. Inspector Followup Items - Units 1 and 2 (92701)

a. (Closed) Inspector Followup Item 50-438, 439/83-05-04, Status of HVAC leak testing documentation. Prior to the issuance of Construction Test Procedure (CTP) 6.4 the licensee had an informal documentation system for the tests conducted on safety related HVAC systems. These system tests are now included under the formal documentation system. The inspector reviewed formal documentation packages for two of the eight safety related HVAC systems. This item is considered closed.

b. (Closed) Inspector Followup Item 50-438, 439/83-05-05, Testing of boundary joints between separate test runs. Construction Specification G37 and site Construction Test Procedure CTP-6.4 did not address the testing or inspection of HVAC boundary joints between separate test runs. Revision 1 to G37 paragraph 3.3.3.3 and revision 1 to CTP-6.4 paragraph 7.1.4 now give instructions for testing these areas. This item is closed.

c. (Closed) Inspector Followup Item 50-438, 439/83-05-06, Modification of acceptance criteria for HVAC inspection. This item concerned the acceptance criteria for "unacceptable damage" and "interference with other components or systems" found in QCP-6.4. In a revision to QCP-6.4 paragraphs 7.2.3 and 7.2.4, these acceptance criteria are now adequately defined and this item is closed.

d. (Closed) Inspector Followup Item 50-438/84-01-03, Evaluation of expansion anchors. During a previous inspection, the inspector noted several self-drilling expansion anchors being removed from the concrete. The inspector questioned the licensee about the degree of rusting on the anchor shells. The licensee reported in Laboratory Report No. M86-84-0066 that there was no apparent difference in wall thickness between the corroded anchor and several new anchors supplied for comparison. However, metallographic analysis revealed a difference in the microstructure of the corroded anchors, and the new anchors. This difference is also reflected by the following table of hardness values included in the report.

Average Converted Microhardness Data

(Reported as Rockwell B and C Units)

Corroded Anchor	-	expander plug
Outside Edge - 55C		Outside Edge - 60C (case only -.012 deep)
Core - 86B		Core - 81B
Inside Edge - 52C		
New Anchor	-	**expander plug**
Outside Edge - 54C		Outside Edge - 55C
Core - 31C		Core - 53C
Inside Edge - 55C		

This data indicates different heat treatment methods were used for the corroded anchor vs. the new anchors. The significance of this varying heat treatment is being evaluated by the licensee. This matter was identified to the licensee as inspector followup item 438/84-12-02, Variation in heat treatment of expansion anchors.