



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

Report Nos. 50-518/81-09, 50-519/81-09, 50-520/81-09, and 50-521/81-09

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

Facility Name: Hartsville Nuclear Plant

Docket Nos. 50-518, 50-519, 50-520, and 50-521

License Nos. CPPR-150, CPPR-151, CPPR-152, and CPPR-153

Inspector: P. A. Taylor for  
W. B. Swan Senior Resident Inspector

6-23-81  
Date Signed

Approved by: F. S. Cantrell  
F. S. Cantrell, Section Chief, Division of  
Resident and Reactor Project Inspection

6/24/81  
Date Signed

SUMMARY

Inspection on May 1-31, 1981

Areas Inspected

This routine inspection involved 101 resident inspector-hours on site in the areas of safety-related piping; plant B extended shutdown; A-1 steel containment; A-1 biologic shield wall around RPV; A-1 drywell wall; A-1 fuel building shipping cask storage pit; open items and independent inspection effort.

Results

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

## DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*R. T. Hathcote, Site Project Manager
- W. T. Quinn, Construction Engineer; Acting Project Manager
- R. E. Young, Assistant Construction Engineer, Project Engineering
- J. T. Dorman, Assistant Construction Engineer, Quality Control
- H. S. Sheppard, Assistant Construction Engineer, Quality Control
- P. F. Gillespie, Supervisor, Technical Services
- B. F. Huffaker, Supervisor, Materials QC Unit
- R. C. Nixon, Supervisor, Document Control Unit
- F. E. Laurent, Unit Supervisor, STRIDE Mechanical Project Engineering
- G. A. Gonzalves, QA Unit Supervisor
- M. U. Rudolphi, Unit Supervisor, Project Engineering, Hangers and Supports
- R. E. McClure, Unit Supervisor, Mechanical Quality Control

Other licensee employees contacted included document control personnel, craftsmen, QC technicians, and project engineers.

\*Attended exit interview

### 2. Exit Interviews

The inspection scope findings were summarized with the Site Project Manager on May 8, 15, 29, 1981.

### 3. Licensee Action on Previous Inspection Findings

(Open) Infraction 518, 519, 520, 521/80-18-01

Failure to Take Timely Corrective Action on Drawing Control Findings (Reference 50.55(e), Item 518, 519, 520, 521/81-03-03 Deficient Drawing and Document Control). On May 12, 1981, the site QA unit reported a sampling audit of drawing control had been completed. Of 200 prints checked, one discrepant print was found. The licensee plans to perform a 100% audit in June 1981. This item remains open until adequate drawing control is verified by follow up on QA units audits and this inspector's confirming observations.

### 4. Unresolved Items

Unresolved items were not identified during this inspection.

## 5. Independent Inspection Effort

The inspector made surveillance tours during which the status of project work was noted, and construction activities were inspected on nuclear safety-related structures, systems and facilities. The inspection was concentrated on Plant A power block structures, but included outlying structures such as the Plant A essential service water pump stations and earthfill for the spray ponds.

Open Site Items Control: Nonconformance Reports (NCRs), significant Quality Control Inspection Reports (QCIRs) and QA Unit audit findings were reviewed for pertinence to the inspection program and for adequacy of corrective actions.

Containment Erection: The inspector inspected fit-up of the eighth steel ring of the A-1 containment cylinder wall. Joint tolerances were being assured by the steel strap inserts, and preheating was established for welding and weld repair. During this inspection period, installation of the vendor fabricated equipment hatch frame assembly into the A-1 steel containment was performed. The inspector inspected the fit-up operations and inspected the welding of stainless cladding on the horizontal seam below the hatch. This work was controlled by a sketch, page 5 of Work Package DC-MI, Welding Procedure SM 11-B-9, C. F. Braun Drawing S-089, and Specification 300-13, and ASME Section III Subsection NE.

In the areas inspected, no violations or deviations were identified

A-1 Biologic Shield Wall: The inspector found that concrete filling of the annular space in the radiation shield around the reactor pressure vessel had been completed. The inspector inspected the welding of the steel capping plate at the top of the shield wall (elevation 50' 4") and verified that the shielded metal arc procedure SM-U-8, dated 5/7/81 was being used, and that the correct 1/8" electrode was being used on joints one inch wide, beveled 10 degrees, as shown on Industrial Engineering Works Drawing 820 117-00-021, Rev. 6, Section F.

No violations or deviations were identified in the areas inspected.

A-1 Drywell Wall: The inspector made inspections of rebar placement, cadwelding of rebar joints and the placement of steel penetration frames in the A-1 drywell. The inspector inspected the installation of the concrete forming for placement of concrete in a 210 degree segment of the drywell to elevation 12' 6"; and also observed the checking operations to verify the positioning of embedments and the cleanup prior to concrete pouring. Progressive signoff of the pour authorization was verified. (Refer to paragraph 8 for controlling documents).

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

A-1 Fuel Building Shipping Cask Storage Pit: For the placement of concrete for this pit, the stainless steel liner was preplaced and used as the inner form. During concrete placement, the displacement of temporary caulking permitted grout to enter the vertical leak chases behind liner welds. The bottom horizontal leak chase was plugged effectively blocking gravity flow of any future leaking liquid to a sump. A Nonconforming Condition Report (NCR) was prepared under which the stainless liner was removed to expose the blocked leakage channels near the bottom of the pit. The inspector inspected the exposed blocked channels and the start of clearance operations. The inspector had reviewed the NCR, discussed the matter with the project engineers and found the proposed corrective actions acceptable. The Construction Engineer had referred this problem to General Electric. This problem was judged nonsignificant and determined to be nonreportable under 10 CFR 50.55(e). Additional inspections will be made as the work progresses.

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

Trenching for the installation of piping south of the A-2 essential service water pumphouse involved rock removal by blasting. The inspector inspected blasting operations and timing, and verified that adequate measures were taken to protect newly placed concrete in the pump house, the nearest structure, as stipulated in Specification N6C-875, Earth and Rock Foundations and Fills, Section 4.2.1.3, Blasting During and After Placement of Concrete, and PSAR Section 2.5.

The inspector inspected the placement of a fill concrete pad, over the rock excavation which will serve as the base for the foundation of the valve "vault" structure for the A-2 spray pond, under the provisions of sub-section 4.2.2, Foundation Treatment, Specification N6C-875. The inspector verified compliance with QCI C-102, Foundation and Fill, Earthfill Control Testing and with Section 4.2.2 of Construction Specification N6C-875, Earth and Rock Foundations and Fills.

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

Review of Revised Procedures: The inspector reviewed revisions to the following construction engineering procedures:

- Revision 1 to CEP 3.02, Configuration Control for Drawings
- Revision 13 to CEP 4.01, Procurement Document Control
- Revision 7 to CEP 15.03, Control of Nonconformance Reports
- Revision 4 to CEP 17.01, Quality Assurance Records

The revisions addressed the system configuration control drawing lists (SCCDL) and drawings; quality control of field procured items; clarifies the determinations of "significant" conditions adverse to quality and imposes

detailed responsibility on the Documentation Control Unit to insure completeness of stored quality assurance records. Revisions to these procedures are governed by CEP 5.01, which established the method and responsibilities for review, approval and revisions of CEPs.

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

6. Licensee Identified 50.55(e) Items

a. Previously Identified Items

(Open) 518, 519, 520, 521/80-10-02, Design Deficiency of T-Head Section of Anchor/Darling Gate Valves (NCR-6). TVA's **Architect** Engineer, C. F. Braun Co., rejected the vendor's proposed modification to the valves. Deficient valve disks are to be replaced by new disks and cast to the proper configuration. The NRC inspector was informed that seven valves were returned to the vendor and that the other seven are being held in the Hartsville warehouse, pending final resolution.

(Closed) 518/520/80-27-02) Inadequate Wedge Bolt Expansion Anchors by Rawlplug (NCR HTM-CDB-8002). The licensee has determined that one-inch anchors are adequate for STRIDE supports already installed. Rawlplug anchors are inadequate for certain STRIDE pipe systems and for TVA designed systems in balance of plant (BOP) structures. The inspector has determined that one-inch Rawlplug anchors have been removed from stock and are isolated pending a resolution to scrap or ship them off site.

7. Plant B Construction

The inspector inspected preparations for placement of concrete to protect rebars and containment anchor bolts at the base of Unit B-1 containment during the indefinite suspension of construction. The completed placement and curing operations were inspected. The inspector made an inspection of concrete flaw removals throughout the B-1 complex and the preparations for patch repairs. The controlling documents are C. F. Braun Specification 300-01 Concrete-TVA STRIDE, and TVA quality control instructions C-201 Concrete - Concrete Placement and C-208 Sampling and Testing of Plastic Concrete which appear to be adequate to protect the rebar, chair welds and anchor bolts from corrosion.

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

The inspector has determined that equipment being received is stored and provided preventive maintenance under existing requirements and procedures. ENDES personnel have been reviewing existing procedures and requirements for long-term storage. A number of new procedures are being developed. At present, Standard Operating Procedure SOP-58, R2, dated 10/14/80, Periodic Inspection of Delayed Portion of Plant B is used as a base for control and planning of site protective measures. These measures are being periodically audited by the site QA Unit.

The inspector inspected reactor pressure vessel X-21 for Unit B-2. It had been placed on rollers by CB&I preparatory to inspection of its exterior by GE-ISI. The inert gas blanket in the RPV has been maintained. A memorandum to the senior resident inspector dated May 21, 1981, from the assistant construction engineer, site project engineering, stated in part:

"During actual ISI, GE has verified that there will be no need for entry inside the RPV. GE is also preparing a letter allowing us to deviate from their storage requirements until completion of ISI inspection and removal of the rollers. A dehumidifier will be installed to maintain the proper internal atmosphere.

There are no plans at this time to store Plant B vessels vertically. GE has determined that horizontal storage for an extended period of time is acceptable and that no excessive internal distortion will occur".

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

#### 8. Siesmic Category I Concrete

Forming, installation of rebar, positioning of embedments, placements and post placement curing were inspected as work progressed in the Plant A containments, fuel buildings, auxiliary buildings, control buildings, and essential service water pump houses. Specific placements inspected included pour A2KESWPS 85 and 86, consisting of 340 cubic yards for the main floor slab on the A-2 ESW pump station; curing of pour A-1-A 59 and 60 for the floor slab on the east side of A-1 auxiliary building at elevation 28'; preparations for placement of the A-1 control building decking at the same elevation; and forming for placement of the steam tunnel walls to 50' elevation. Additional inspections were made of installations of rebar for the foundations and sump areas of emergency diesel generator buildings at the south sides of Units A-1 and A-2.

During inspection of activities for structural concrete in these areas, the conformance with the requirements of C. F. Braun Specification 300-01, Revision 8 "Concrete", TVA Construction Specification G-2, QCI C-201, Rev. 4, and CEP 9.02, Revision 5, was verified.

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

#### 9. Safety-Related Piping - Observation of Work and Work Activities

During surveillance tours in the Plant A fuel buildings, auxiliary buildings and radwaste building, the inspector made inspections of the fit up and supporting of safety-related piping. For a more detailed inspection of the construction and quality control of a specific system, the inspector chose the Unit A-1 main steam line which was under installation to the reactor core isolation cooling (RCIC) turbine in the low pressure core spray (LPCS) pump room in the bottom of the auxiliary building. Installation of the main steam line in various sizes and elevation 6' in the pipe chase in back of the pump room.

The principal controlling specification of this line and other STRIDE systems is C. F. Braun Specification 400-15, Rev. 3 Field Fabrication and Erection, ASME Section III Piping, TVA STRIDE, supplemented by TVA HNP Standard Operating Procedures SOP-27 HNP ASME III Piping Program and SOP-31 Control of Weld Maps and Fabrication/Installation Sketches; and by Quality Control Instructions QCI M-230 Piping and Pipe Sleeve Inspection and M-305 Surface Cleaning of Fluid Handling Systems.

The installation and control of the section of the main steam line was initiated by site mechanical project engineering and Work Package No. MA 06-M6 which defines the scope of the work, lists material status, prerequisites, instructions/precautions, control documents including weld procedures, isometrics, C. F. Braun drawings and specifications, pipe spool numbers, and supplemental instructions. The work package provides the necessary instructions and details for the craft and QC personnel to perform their respective jobs.

SOP-27, paragraph 5.0, requires that Sequence Control Charts (SCC's) be initiated by project engineering and that QC is responsible for approving the SCC, coordinating the SCC with the ANI and supplying the SCC to craft personnel.

The inspector reviewed SOP-27, sections of Specification 400-15, and the referenced construction drawings, isometrics and weld map. Their uses and implementation were discussed with the responsible project engineer, QC inspector and his supervisor, and the craft foreman. The SCC sheets for this portion of the main steam system were inspected and discussed with QC and craft foreman at the job site. Pipe spools 17AB-MS 203-2, 3, 4, and 6 were found to have been installed, and spool 17AB-MS-203-1, field modified, was being readied for welding to the assembled sections.

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

#### 10. Status of IE Circulars

(Closed) 81-07, Control of Radioactively Contaminated Material. This circular is closed for the Hartsville record since no radioactive material is on site other than in instruments and shield radiographing sources.