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

Report Nos. 50-518/81-11, 50-519/81-11, 50-520/81-11, 50-521-81-11

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

Facility Name: Hartsville Nuclear Plant

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

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

Inspection at Hartsville Nuclear Plant near Hartsville, TN

Inspector: A R Herdt 7/15/81
for J. L. Coley Date Signed

Approved by: A R Herdt 7/15/81
A. R. Herdt, Section Chief Date Signed
Engineering Inspection Branch
Engineering and Technical Inspection Division

SUMMARY

Inspection on June 22-26, 1981

Areas Inspected

This routine, unannounced inspection involved 33 inspector-hours onsite in the areas of previous inspection findings (Units A1, A2, B1 & B2), safety-related components - observation of work and work activities (Unit A1), safety-related piping - observation of work and work activities (Unit A1), safety-related pipe welding - observation of work activities (Unit A1) and safety-related components - review of Q.A. implementing procedures.

Results

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

REPORT DETAILS

1. Persons Contacted

Licensee Employees

R. T. Hathcote, Project Manager
*W. T. Quinn, Construction Engineer
*R. E. McClure, Mechanical Engineering Branch, Supervisor
*S. P, Stagnolia, Welding Engineering Branch, Supervisor
*J. J. Ritts, ENDES-Licensing, Knoxville
*D. Hudson, ENDES-Licensing, Knoxville
*R. D. Zill, Construction QAB, Knoxville
*A. W. Crevasse, Division of Power QA, Chattanooga

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

NRC Resident Inspector

*W. B. Swan, NRC Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on June 26, 1981 with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below:

(Open) Unresolved item 50-518/81-11-01: Verification of Valve Locking Devices, paragraph 8.b.

(Open) Inspector Follow-up item 50-518/81-11-02: Craft Training on Lifting Restrictions, paragraph 7.a.

3. Licensee Action on Previous Inspection Findings

a. (Closed) Unresolved Item 518, 519, 520 & 521/81-04-05, Computer print-out does not agree with pipe markings. NRC had reported that welders on the computer readout for weld numbers A1ARH0130002 and A1ARH0130004 did not agree with the welders stencil on the welds in the field. The licensee investigated this item and found that this was an isolated example which had resulted from a computer operator's misinterpretation of a welder's I.D. on the weld data cards. Based on a review of the licensee investigation into this matter, this item is considered closed.

b. (Closed) Unresolved Item 518, 519, 520, 521/81-04-06, Control of Limited Thickness Welders. NRC had reviewed TVA's General Construction Specification G-29M, Process Specification 1.M.2.2(a), Performance Qualification Test No. GT-SM-6-4-0-3-L Revision 2 and found that the licensee had been granting welders unlimited thickness qualification based on this test. ASME Interpretation IX-78-92 dated September 25, 1978 limits the qualification on a tested welder for the above tested conditions to 1-½ inch thickness maximum. The licensee reviewed all welds made by welders qualified to the above welding performance qualification test and did not find any welder who had violated this restricted certification. In addition the licensee has presently retested and recertified approximately 43 welders to a heavier wall welding procedure. Ten welders remain to be recertified and their certification to the above process specification has been restricted until their recertification is complete. This item is considered closed.

c. (Closed) Infraction 518 & 520/80-17-01, Inadequate Magnetic Particle Examination Program. TVA Hartsville Nuclear Project (HNP) letter of September 22, 1980 with supplemental letters of October 27, 1980 and January 13, 1981, have been reviewed by Region II. The inspector held discussions with the licensee and examined corrective action taken by the licensee. The inspector concluded that TVA-HNP had determined the full extent of the subject noncompliance, issued a change to QCIN-201 rev. 7 to clarify lighting requirements, examination coverage, powder application and removal, and had developed the necessary corrective action to preclude recurrence of similar circumstances. This item is considered closed.

d. (Closed) Infraction 518, 520/80-17-02, Inadequate Qualification Requirements for Visual Inspectors. TVA-HNP letter of September 22, 1980 with supplemental letters of October 27, 1980 and of January 13, 1981 have been reviewed Region II. The inspector held discussions with the licensee and examined corrective action taken by the licensee. The inspector concluded that TVA-HNP had determined the full extent of the subject noncompliance, performed the necessary followup actions correct the present condition and developed the necessary corrective action to preclude recurrence of similar circumstances. This item is considered closed.

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. New unresolved items identified during this inspection are discussed in paragraph 8.b.(3).

5. Independent Inspection Effort - Construction Activities (Unit A1 and A2)

The inspector conducted a general inspection of Units A1 & A2 fuel auxiliary and reactor buildings to observe construction progress and construction activities such as welding, nondestructive examination, material handling and control, housekeeping and storage.

Within the area inspected no violations or deviations were identified.

6. Previously Identified Inspector Followup Items

(Closed) Inspector Followup Item 518; 520/80-17-03, Improper placement of lead letter "B" on film cassette. This item reported that the lead letter "B" used to detect back scattering on a radiographic film is not always positioned behind the specimen being radiographed. The inspector reviewed film cassettes of the sizes that would be used for radiographic inspection of pipe welds and found that all film cassettes observed had lead letter "B" at the corner and in the center of the cassette. Based on this review item is considered closed,

(Closed) Inspector Followup Item 518; 520/80-17-04, Inadequate practical exam for radiographic film reader. This item reported that the practical examination for Level II film readers did not include film depicting two major defects: cracks and root oxidation. The licensee has now included film with these types of indications into the practical examination for the Level II film reader. The inspector reviewed this film and considers corrective actions taken by the licensee to be satisfactory. This item is considered closed.

(Closed) Inspector following item 518, 520/80-17-5, Inadequate test specimen's for the training qualification of ultrasonic examiners.

This item reported that the training/qualification program does not include a test specimen of a weld joining a pipe to an elbow fitting. This test specimen was considered important since examination of weld from the elbow side, particularly on the inner bend of the elbow, presents difficulty in ultrasonic examination. The licensee has fabricated test specimens that now include a weld joining a pipe to an elbow and this test specimen has now been included into the training/qualification program. The licensee corrective action for this item is considered satisfactory and this item is considered closed.

Within the area inspected, no violations or deviations were observed.

7. Safety-Related Piping (Unit A1)

The inspector observed non-welding and welding work activities for safety-related piping outside of the reactor coolant pressure boundary as described below to determine whether applicable code and procedure requirements were being met. The applicable code for safety-related piping is the ASME B&PV Code, Section III, Subsections NC and ND, 1974 edition with addenda through summer 1974.

a. Observation of Non-Welding Activities

Observation of specific work activities were conducted to determine conformance, where applicable, with the following; inspection and/or work procedures, record keeping requirements, installation specifications or plans, specified materials, specified NDE, calibration requirements and use of proper test equipment and qualified inspection and NDE personnel.

ACTIVITY	SYSTEM COMPONENT	CLASS	UNIT
Handling	Spool pc 17AB COND 3-1	2	A1
	Spool pc 17AB COND 18-3	2	A1
	Spool pc 17AB HPCS 5-1	2	A1
	Spool pc 17AB MS-206-4	3	A1
Protection	16" Dia Valve; MPL #E22F001	2	A1
	10" Dia Valve; MPL #E22F011	2	A1
	24" Dia Valve; MPL #E22F015	2	A1
	Spool pc 17AB HPCS 5-1	2	A1
Storage	Spool pc 17FBFPCC 20-8	3	A1
NDE	Pipe Hanger on Spool pc #17ABRHR7-4	2	A1
Installation	Spool pc #17ABRHR 7-4	2	A1
	Spool pc #17ABRHR 9-3	2	A1
	Spool pc #17ABMS206 - 4	3	A1

With regards to the above inspection on June 28, 1981 the inspector observed a chainfall rigged from a 12" diameter pipe (spool pc 17AB COND 18-3) and apparently supporting an 18" pipe (spool pc 17AB COND 3-1). Riggers in the area observed the inspector recording this condition and demonstrated for the inspector that the full load of spool pc #17AB COND 3-1 was not supported by spool pc 17AB COND 18-3. However when the inspector question the riggers concerning lifting restrictions as delineated in the licensee's procedure SOP-65 the riggers were not aware of these requirements. The inspector noted that SOP-65 had recently been written and implemented at Hartsville. This

apparent failure of the craft to be aware of contents of this instruction was discussed in detail with the licensee. A memo was written by the Supervisor of Mechanical Engineering Branch to the General Construction Superintendent and the Construction Engineer to insure that SOP-65 is distributed to the craft and that craftmen are informed of its content. In addition project engineering groups would be required to list SOP-65 as a reference in future work packages or process control documents. The licensee's action appears satisfactory, however the inspector reported this item as inspection followup item 50-518/81-11-02, Rigger's Training on Lifting Restrictions, so that implementation of SOP-65 requirements can be verified at the craft level on a subsequent inspection.

b. Observation of Welding Activities

The inspector observed in-process welding activities of safety-related piping field welds as described below to determine whether applicable code and procedure requirements were being met.

(1) Welding

The welds listed below were examined in process to determine: whether work was conducted in accordance with travelers; welder identification and location; welding procedure; WPS assignment; welding technique and sequence; materials identity; weld geometry; fit-up; temporary attachments; gas purging; preheat; electrical characteristics; shielding gas; welding equipment condition interpass temperature; interpass cleaning; process control systems; identity of welders; qualification of inspection personnel; and weld history records.

JOINT NO.	UNIT	SIZE	STAGE OF FABRICATION	SYSTEM
A1AMS2060003	A1	6" Dia. X .280"	Fit-up	Reaction Core Isolation Cooling Sys.
A1AMS2060003	A1	6" Dia. X .280"	Welding Out	Reaction Core Isolation Cooling Sys.
A1AM52060003	A1	6" Dia. X .280"	NDE of Complete weld	Reaction Core Isolation Cooling Sys.
TA1ALP0002214	A1	12" Dia. X .[illegible]	Welding Out	Low Pressure Air

Within the area inspected no violations or deviations were observed.

8. Safety-Related Components (Unit A1 & A2)

The inspector reviewed implementing procedures and observed component work activities for safety-related components as described below to determine whether applicable code and procedure requirement were being met. The applicable code for safety-related components is delineated in paragraph 7 above.

a. Review of Quality Assurance Implementing Procedure

The inspector reviewed TVA Hartsville OEDC Quality Assurance Manual for ASME Section III Nuclear Power Plan Components (NCM) and TVA's Quality Assurance Program Requirements Manual for Design, Procurement & Construction (PRM) to determine whether adequate quality assurance plans, instructions and procedures for safety related components had been established in the facility QA Manual, and whether these documents conformed to NRC requirements, ASME Code requirements and the QA program as described is section 17 of the licensee's PSAR.

The inspector verified the following elements in the licensee's NCM & PRM:

(1) organizational structure including qualifications, training and stop work authority;

(2) audits including procedures, checklist, scope, frequency and qualifications of auditors;

(3) general quality requirements relative to material specifications, test reports, procurement documents, deviations, and control of components, and systems;

(4) work and inspection procedures including provisions for review, approval and control;

(5) control of material including traceability, handling, shipping storage, and identification or nonconforming material;

(6) procedures for control of processes including special processes;

(7) procedures for corrective action;

(8) document control including control of QA Manual and periodic review for adequacy of document control;

(9) quality records

b. Observation of Work and Work Activities (Unit A1)

The inspector performed an independent evaluation of work performance by direct observation of work in progress, completed work and by verifying the condition of components that are in storage.

(1) The following components were selected for inspection:

(a) Mainsteam Isolation Valve B21F028
serial no. G13952 (storage, protection & maintenance)

(b) Mainsteam Isolation Valve B21F022
serial no. 3-13952 (storage, protection & maintenance)

(c) RHR Pumps E12C002
serial nos. 1428 & 1429 (storage protection & maintenance)

(d) RHR Pump Motors E12C002
serial nos. 103027 & 103028 (storage, protection & maintenance)

(e) RHR Discharge Isolation Valve E12F048A
serial no. E6318-40-1 (installation, protection & maintenance)

(f) RHR Valve E-12F003A
serial no. E6318-39-1 (installation, protection and maintenance)

(g) RHR Valve E-12F029A
serial no. E6318-15-1 (installation, protection and maintenance)

(h) Reactor Core Isolation Cooling Pump & Turbine Pump MPL #E51-C001 serial no. 152-10032
Turbine MPL #E-51-C002 serial no. 14N-7134-0 (installation, protection and maintenance)

(2) The following attributes were verified for the components identified above:

(a) Storage Handling and Protection

1 Storage environment and protection
2 Handling
3 Identification, issue and records
4 Cleanliness preservation
5 Surveillance during storage

(b) Installation

1 Work and inspection activities
2 Location
3 Placement and mounting/supporting
4 Generation and maintenance of inspection records

(c) Protection After Installation

1 Inspection activities - scope and frequency

2 Protection provided as required, including protection against adverse temperature, humidity and foreign material

(d) Nonconforming Components or Activities

1 Records
2 Identification
3 Segregation
4 Corrective action

(e) Utilization of QA Inspection (QC) Personnel

1 Number and qualification of those at the construction site - commensurate with the work in progress

2 Performance of their assigned duties and responsibilities.

(3) With regard to the inspection of components in storage, on June 25, 1981, the inspector noted that most of the valve locking plates on the bottom spring cap for mainsteam isolation valves B21F028 & B21F022 were not bent against the flat of the fasteners. In one instance where an attempt had been made by the vendor to bend the valve locking plate, the locking plate had been damaged.

The inspector was concerned that failure on the part of the vendor to properly engage these locking devices could go entirely through the licensees planned inspection program (receiving inspection, installation inspection and operational checks) and not be detected, since no inspection attribute presently exist that would verify design safety features such as locking devices are correctly installed.

The inspector noted that the licensee's operational inspection procedure for these valves had not been prepared at this time. Discussions were held with the licensee concerning inserting an

attribute in the operational inspection procedure that would verify design safety features of these valves. The licensee agreed to add this attribute, in addition the licensee stated that other corrective action would be initiated at the vendor level. This item was reported as unresolved item 518/81-11-01, verification of valve locking devices.

Within the areas inspected no violations or deviations were observed.