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

Report Nos. 50-518/81-15, 50-519/81-15, 50-520/81-15 and 50-521/81-15

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

Facility Name: Hartsville

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

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

Inspection at Hartsville site near Hartsville, Tennessee

Inspector: A R Herdt 8/27/81
B. R. Crowley Date Signed

Approved by: A R Herdt 8/27/81
A. R. Herdt, Section Chief Date Signed
Engineering Inspection Branch
Engineering and Technical Inspection Division

SUMMARY

Inspection on August 11-14, 1981

Areas Inspected

This routine, unannounced inspection involved 30 inspector-hours onsite in the areas of previous inspection findings (Units A1, B1 A2 and B2), safety related pipe (Units A1 and A2), and safety related structures (Units A1 and A2).

Results

Of the three areas inspected, no violations or deviations were identified in two areas; one violation was found in one area (Violation - Failure to Follow Procedures for Stud Welding, Paragraph 8.b.(1)).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. T. Hathcote, Project Manager
*W. T. Quinn, Construction Engineer
*G. A. Gonsalves, Site QA Supervisor
S. R. Stout, EN DES, NEB - NLS
W. K. Anders, OEDC - QA
*S. P. Stagnolia, Welding QC Unit Supervisor
*B. F. Painter, General Construction Superintendent
*J. W. Davenport, Civl QC Unit Supervisor
R. E. McClure, Mechanical QC Unit Supervisor
F. E. Laurent, Mechanical Project Engineering Unit Supervisor
*T. L. Carden, Assistant Supervisor - Welding QC Unit
G. R. Hudson, Civil Project Engineering - Shift Engineer
T. H. Carrell, Civil Project Engineering - Shift Engineer
J. E. Brown, Civil Project Engineering - Engineer
J. R. Lewis, Civil QC Engineering - Engineer
*R. B. Stamps, Site QA Lead Mechanical Auditor
D. J. Ward, Site QA Lead Electrical Auditor
J. T. McGhee, Engineering Management Assistant

Other licensee employees contacted included construction craftsmen, QC inspectors, security force members, and office personnel.

NRC Resident Inspector

*W. B. Swan

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on August 14, 1981 with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

(Open) Violation 520/81-15-01, Failure to follow procedures for stud welding, paragraph 8.b(1).

(Open) Inspector Followup Item 520/81-15-02, Clarification of stud welding inspection requirements, paragraph 8.b.(2).

3. Licensee Action on Previous Inspection Findings

(Closed) Violation 518/81-04-04, Failure to follow bead width procedure requirements. TVA letter of response dated April 17, 1981 has been reviewed and determined to be acceptable by Region II. The inspector held discussions with responsible licensee personnel and examined 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 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.

(Closed) Violation 518, 519, 520, 521/81-04-03, Inadequate measures to control welders qualification and repair welding. TVA letter of response dated April 17, 1981 has been reviewed and determined to be acceptable by Region II. The inspector held discussions with responsible licensee personnel and examined 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 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.

(Closed) Violation 518, 519, 520, 521/81-04-02, QCIR report mishandling. TVA letter of response dated May 15, 1981 has been reviewed and determined to be acceptable by Region II. The inspector held discussions with responsible licensee personnel and examined corrective actions as stated in the letter of response. This examination included review of licensee revised procedures (QAI-4, revision 2 and CEP 15.01, revision 14) and a site QA audit which had been completed but not yet issued. The inspector concluded that TVA had determined the full extent of the subject violation, performed the necessary 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.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection Effort (Units A1 and A2)

The inspector conducted a general inspection of the reactor buildings, auxiliary buildings, fuel buildings, and control buildings to observe construction progress and construction activities such as welding, material control, housekeeping, and storage.

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

6. Safety Related Piping (Units A1 and A2)

The inspector examined the work activities described below for safety related piping to determine whether applicable code and procedure requirements were being met. The applicable code for this welding is the ASME Boiler and Pressure Vessel Code, Section III, Subsections NC and ND, 1974 Edition with addenda through Summer 1974.

a. Observation of welding Activities

The inspector observed the following in-process welds at the stages indicated:

Weld	Size	Class	Unit	Status
A1ARH0362R01	4"X.237"	IIIC2	A1	Welding Fill Passes
A1ARH0350004	4"X.237"	IIIC2	A1	Welding Fill Passes
A1ARH034003	4"X.237	IIIC2	A1	Root Pass Welded
A2AHP0061004	10"X.719"	IIIC2	A2	Final Weld
A2ARH0211010	4"X.237"	IIIC2	A2	Fitup, Welding Root Pass
A2FFC0313R02	3"X.148"	IIIC3	A2	Fitup, Welding Root Pass

The welding was examined to determine whether:

(1) Work is conducted in accordance with a document which coordinates and sequences operations, references procedures, establishes hold points, and provides for production and inspection approval.

(2) Weld identification and location are as specified.

(3) Procedures, drawings, and other instructions are at the work station and readily available.

(4) WPS assignment is in accordance with applicable code requirements.

(5) Welding technique and sequence are specified and adhered to.

(6) Welding filler materials are the specified type and traceable to certification

(7) Alignment of parts is as specified.

(8) Preheat and interpass temperatures are in accordance with procedures.

(9) Electrodes are used in positions and with electrical characteristics specified.

(10) Shielding gas is in accordance with the welding procedures.

(11) Welding equipment is in good condition.

(12) Interpass cleaning is in accordance with applicable procedures.

(13) Temporary attachments are removed in accordance with applicable procedures.

(14) Welding personnel are qualified.

(15) Weld History records are adequate

b. Welder Qualification

The inspector reviewed the welder qualification records for the welds listed in a. above.

c. Observation of Non-Welding Activities

The inspector observed the following activities:

Unit	Weld	Status
Fitup, Handling	A2	Spool Pc. 18AB-RHR-36.1
Fitup Inspection, Alignment	A2	Spool Pc. 18FB-FPCC-13-2 weld A2FFC0313R02
Receiving Inspection	A1, A2	4" Random Length Stainless Steel Pipe - A312, type 304L, Ht. 08515

The work was examined in the areas of:

(1) Conformance with QC and work procedures
(2) Conformance with record keeping requirements
(3) Conformance with construction specifications
(4) Performance of prescribed inspections
(5) Use of qualified inspection personnel

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

7. Steel Structures and Supports - Observation of Welding Activities Within Containment (Units A1 and A2)

The inspector examined welding activities for the containment structure as described below to determine whether applicable code and procedure requirements are being met. The applicable code for containment welding is the ASME Boiler and Pressure Vessel Code, Section III, Subsection NE, 1974 Edition including Addenda through Summer 1974.

a. Observation of Welding Activities (Free-Standing Steel Containment)

The inspector observed the below listed in-process welds at various stages of completion:

Unit	Weld	Status
A1	A1CS00910	Capping Weld
A1	A1CS00922	Finished Weld
A1	A1CS00923	Capping Weld
A2	A2CS00313	Welding Fill Passes
A2	A2CS00435	Welding Fill Passes
A2	A2CS00436	Fitup
A2	A2CS00434	Capping Weld
A2	A2CS00433	Welding Fill Passes

The inspector examined this work to determine whether:

(1) Work is conducted in accordance with a document which coordinates and sequences operations, references procedures, establishes hold points, and provides for production and inspection approval.

(2) Procedures, drawings, and other instructions are at the work station and readily available.

(3) Welding technique and sequence are specified and adhered to.

(4) Weld joint geometry is in accordance with applicable procedure and inspected.

(5) Electrodes are used in positions and with electrical characteristics specified.

(6) Welding equipment is in good working condition.

b. Welder Qualification

The inspector reviewed the welder qualification records for the welds listed in a. above.

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

8. Steel Structures and Supports - Observation of Welding Activities Outside Containment (Units A1 and A2)

a. The inspector observed field welding of steel structures at various stages of weld completion. The applicable code for this welding is the AWS Structural Welding Code D1.1, Revision 2-74. The following welds were observed:

Unit	Structure	Weld	Dwg.
A2	Control Bldg. Structural Steel	Stud Welding to Beam 8A at Elevation + 11'	S-826
A1	Auxiliary Bldg. RCIC Pump Room Structural Steel	Connection Angle 2518CA to Beam 2518A2 and Plate 7487023 at Elevation - 32'	

The inspector observed the work to determine whether:

(1) Work is conducted in accordance with a document which coordinates and sequences operations, references procedures, establishes hold points, and provides for production and inspection approval.

(2) Weld identification and location are as specified.

(3) Procedures, drawings, and other instructions are at the work stations and readily available.

(4) WPS assignment is in accordance with applicable code requirements.

(5) Welding technique and sequence are specified and adhered to.

(6) Welding filler materials were specified type and traceable to certification.

(7) Weld joint geometry is in accordance with applicable procedure and inspected.

(8) Alignment of parts is as specified.

(9) Preheat and interpass temperatures are in accordance with procedures.

(10) Electrodes are used in positions and with electrical characteristics specified.

(11) Welding equipment is in good condition.

(12) Interpass cleaning is in accordance with applicable procedures.

(13) Temporary attachments are removed in accordance with applicable procedures.

(14) Process control system has provisison for weld repairs.

(15) Welding and inspection personnel are qualified.

(16) Weld history records are adequate

b. During observation of the stud welding in the Unit A2 control building identified above, the inspector noted the following problems:

(1) The inspector requested the stud welding procedure covering the work in progress. The personnel performing the work did not have a copy of the procedure and could not locate a copy. After searching for some time, a copy of the work package was found. In review of the work package, B262-C2, the inspector noted that no reference was made to the stud welding procedure or the QCI for inspecting the stud welds. Project Engineering later determined that this lack of reference to stud welding procedures in the work package also applied to other work packages (C-022-C2, C-268-C2, and B-020-C1) for structural steel. Paragraph 2 of revision 5 to CEP 5.04, "Work Packages", requires that documents, quality control instructions, and other special instructions and/or procedures necessary to perform the work be identified in the work package. Additionally, discussions with the QC inspector and stud welding personnel revealed that the two pre-production test stud welds for the work observed by the inspector had not been made as required by paragraph 3.0 of QCI N-504, Revision 0, "Stud Welding, AWS, Examination and Testing". Failure to reference procedures for stud welding in the work package and failure to comply with testing requirements of QCI N-504 is considered to be in violation of 10 CFR 50, Appendix B, Criterion V and is identified as item number 520/81-15-01, Failure to follow procedures for stud welding.

(2) During review of QCI N-504, the inspector noted that the procedure is not clear as to when the inspection requirements for shear connectors apply and when the inspection requirements for concrete anchors apply. Paragraph 2.0 of the QCI indicates that differentiation between shear connectors and concrete anchors cannot be

made at the construction level and unless design drawings specifically identify welded studs as one or the other, studs are to be tested as "unidentified". However, the field considers that the parts are identifiable as sheer connectors or concrete anchors based on the vendor's catalog number. The licensee agreed to clarify this matter, which will be identified as inspector followup item 520/81-15-02, Clarification of stud welding inspection requirements.

Within the areas inspected, no violations, except as identified in paragraph 8.b.(1), or deviations were identified.

9. Inspector Followup Items

(Open) Inspector Followup Item 519/80-01-01, MT Indications on Anchor/Darling Globe Valve. The licensee has obtained the radiographic film for the valve body and is attempting to correlate the MT indications with weld repair areas. This item will be reviewed further during future inspections.