U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION IV

Report No. STN 50-482/77-10

Docket No. STN 50-482 Category A2

Licensee: Kansas Gas and Electric Company
Post Office Box 208
Wichita, Kansas 67201

Facility Name: Wolf Creek, Unit No. 1 (SNUPPS)

Inspection at: Wolf Creek Site, Burlington, Coffey County, Kansas

Inspection conducted: September 12-15, 1977

Inspectors: C R Oberg 9/29/77
C. R. Oberg, Reactor Inspector, RIV Date
(Paragraphs 1, 2, 5, 6 & 8)

for C R Oberg 9/29/77
T. C. Elsasser, Reactor Inspector, RI Date
(Paragraph 4)

R E Hall 9/29/77
R. E. Hall, Chief, Engineering Support Section, RIV Date
(Paragraph 3)

for C R Oberg 9/29/77
R. Haynes, Chief, Engineering Support Section, RI Date
(Paragraph 7)

Approved: C. R. Oberg 9/29/77
for W. A. Crossman, Chief, Projects Section Date

8412200173 840627
PDR FOIA
BROSIUS84-244 PDR

Inspection Summary:

Inspection on September 12-15, 1977 (Report No. STN 50-482/77-10)
Areas Inspected: Routine, unannounced inspection. Review of QA implementing procedures for structural steel, Cadwelding operations and welding program related to essential service water system yard piping; observation of concrete placement, receipt inspections for structural steel and Cadwelding for containment base mat reinforcing bar; QA records for Cadwelding and structural steel. The inspection involved ninety-one inspector-hours on site by two NRC inspectors and two NRC Supervisors.
Results: Of the eight areas inspected, no apparent items of noncompliance were identified in seven areas. One apparent item of noncompliance was identified in one area (infraction - failure to follow procedure - paragraph 3).

DETAILS

1. Persons Contacted

Principal Licensee Personnel

*J. O. Arterburn, Superintendent of Nuclear Development
*E. W. Creel, Director, Quality Assurance
M. E. Clark, Manager, Quality Assurance, Site

Daniel International

*W. E. Hitt, Project Manager
*C. T. Kinney, Construction Manager
*I. Hussain, Project QA Manager
*G. W. Pointer, Administrative Assistant
*D. L. Jones, Quality Control Manager
*A. S. Harper, Engineering Manager
C. Luebbert, Area Civil Engineer
C. Emery, Assistant Construction Superintendent
J. Albridge, QC, Lead Receiving Inspector
D. Anderson, Receiving Inspector
J. Roach, Welding Engineer
R. Greer, Mechanical Engineer

SNUPPS

*R. D. Brown, Site Representative

The inspectors also held discussions with and interviewed several other licensee and constructor employees including members of the technical and engineering staff and QA/QC personnel.

*denotes those present at the exit interview.

2. Site Tour and Project Status

The inspectors conducted a site tour to observe the status of the project and the work being conducted. Approximately 980 constructor and subcontractor personnel are presently working on site. Work is being done on concrete forms, and placement of rebar, embeds and concrete for the tendon access gallery walls. Cadwelding operations have been started for the containment base mat.

The inspectors also observed back shift work including preparation for concrete placements and concrete curing operations.

No items of noncompliance or deviations were identified.

3. Cadwelding Operation Inspection

During this inspection, fabrication of Cadweld reinforcing steel splices for the containment base mat was inspected. Documentation reviewed included:

Daniel Work Procedure WP-IV-100, "Reinforcing Steel Field Erection," Rev. 0, 12/7/76

Daniel Work Procedure WP-IV-101, "Reinforcing Steel Placement," Rev. 1, 2/23/77

Daniel Work Procedure WP-IV-102, "Mechanical Splicing of Reinforcing Steel," Rev. 0, 12/9/76

Bechtel "Specification for Performing Mechanical Splicing of Reinforcing Bars for the Standardized Nuclear Unit Power Plant System (SNUPPS)" No. 10466-C-115, 7/28/77

Daniel Quality Control Procedure QCP-IV-102, "Mechanical Splicing of Reinforcing Steel," Rev. 1, 9/1/77

Erico Products Manual, "Cadweld Rebar Splicing," RBM 10 M 974 (1974)

ANSI Standard N45.2.5 - 1974, "Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants."

Records for all previously completed Cadweld splices fabricated during the interval from August 12, 1977 to September 14, 1977 were inspected to determine that all splices were inspected as required by Daniel Procedure QCP-IV-102. From these records, the identities of all involved Cadwelding personnel were determined, and the records of personnel qualification were inspected to assure that all Cadwelders had been qualified for the splicing they had performed. Records of in-process testing of production Cadweld splices were reviewed to determine satisfaction of sampling frequencies prescribed in Bechtel Specification No. 10466-C-115 and ANSI N45.2.5 for Cadweld splices completed through September 13, 1977.

Field inspections were performed of Cadweld splicing of containment base mat rebar on September 13, 14 and 15. During these inspections, it was verified that all involved personnel were qualified, and that the procedures provided in the Erico Products Manual and Daniel Work Procedure WP-IV-102 were being followed. Random selective inspection of twelve Cadweld splices fabricated on September 14 confirmed that the splices inspected satisfied acceptance criteria provided by the Erico Products Manual and Bechtel Specification No. 10466-C-115. Storage of Cadweld sleeves, powder cartridges and other components was found to meet the requirements of the Bechtel Specification.

Quality Contol (QC) activities were inspected by interview of quality control inspectors and by accompaniment of one inspector during his inspection of ten Cadweld splices on September 15, 1977. During this accompaniment, it became apparent that formal QC records were not being generated by the QC inspector during his field activities, and that formal QC records were prepared after-the-fact based on sketchy notes and memory. This reliance upon memory for preparation of formal QC records, rather than upon a more precise method involving generation of inspection records as observations are made was discussed with the inspector and his supervision as an item of inspector concern.

On September 15, 1977, the NRC inspector observed the QC inspector completing "Daily Cadweld Inspection Report Forms" provided as Exhibit C to Daniel QC Procedure QCP-IV-102. These forms included the QC inspector's certification of his pre-ignition and post-ignition visual inspections and his acceptance of each Cadweld splice. He was observed to be completing records from memory without apparent reliance upon field notes or other records. Procedure QCP-IV-102 and apparent past practice as observed by the NRC inspector would have required that all Cadweld splices passing the QC acceptance as indicated on this form would have been marked by a white paint mark to signify this acceptance. The NRC inspector found that the following Cadweld splices were not so indicated, even though the "Daily Cadweld Inspection Report Form" was completed to signify inspection and acceptance of the following splices:

F 18H 61, 62

N 18H 26, 27, 31

H 18H 54, 55, 56, 58, 60

L 18H 71, 72

P 18H 60

This is considered an item of noncompliance (infraction) with the requirements of 10 CFR 50, Appendix B, Criterion V, since the inspection procedures of QCP-IV-102 were not being followed, and Criterion XIV since the status of inspections was not being marked on the splices as required by QCP-IV-102 indicating final acceptance.

4. Observation of Work and Review of Quality Related Records, Containment Structural Concrete

a. The inspector observed the following completed work or work in progress relating to the placement of structural concrete in the reactor containment:

(1) The inspector verified that rebar installed around the instrumentation cavity liner was in accordance with the following drawings:

Bechtel C - OC 2905 (Q), Rev. 8

Paper Calmenson RO 211 - 018

(2) The inspector observed preparations, the preplacement inspection and actual placement of the inner tendon gallery wall - 291° to 351° (Placement Nos. OC 221 W05 and OC 221 W06). The following specific items were observed by the inspector:

- Forms properly secure, leak tight and clean
- Rebar properly placed, secured and free of excessive rust
- Proper preparation of construction joints
- Preplacement inspection, completed prior to actual placement, QC personnel properly qualified
- Testing at placement location
- Adequate crew, equipment and techniques utilized
- QC inspection during placement

b. The inspector reviewed the following quality related records which pertain to the placement and QC inspection of concrete in the containment structure:

(1) The inspector reviewed those sections of the following audit reports which pertain to review of activities related to production, placement and testing of structural concrete:

- QAR No. 22, 7/ ,77
- QAR No. 23, 8/9/77
- QAR No. 24, 9/7/77

Audited areas included:

- QC laboratory operations
- Concrete placements
- Concrete mixing and batching
- Concrete placement records
- Batch plant operations

c. The inspector reviewed the qualification records of a sample of civil QC inspectors to verify that qualification was in accordance with the provisions of ANSI N45.2.6 and Daniel Procedure AP-VI-01, Rev. 1, 4/12/77. The inspector reviewed qualification records of:

- One QC batch plant inspector
- Four QC concrete placement inspectors
- One QC rebar inspector

d. Nonconformance and deficiency reports pertaining to concrete production and placement were reviewed by the inspector. The inspector ascertained that the records are legible, complete, retrievable and that corrective action had been specified. The following reports were reviewed:

- Deficiency Report C-107, 7/14/77
- Nonconformance Report (NCR) 1-018C, 8/30/77

e. The following quality records relating to the tendon gallery wall placement (OC 221 W05 and OC 221 W06) observed by the inspector during this inspection were reviewed:

- Preplacement check list
- Batch plant ticket #1743
- Results of concrete testing performed at placement location

The inspector verified that the above work and records were in accordance with the applicable Bechtel Specifications and Daniel QCPs and WPs.

No items of noncompliance or deviations were identified.

5. Review of QA Implementing Procedures - Containment (Steel Structures and Supports

The inspector reviewed the below listed documents relative to the receiving inspections for safety related steel structure and supports:

Daniel Procedures

AP-VI-08, "Identification and Status of Material, Parts and Components," Rev. 0, 12/13/76

AP-VIII-02, "Material and Equipment Receiving (Warehouse)," Rev. 1, 9/19/75

AP-VIII-05, "Material Storage and Control (Warehouse)," Rev. 0, 11/5/76

QCP-I-01, "Receipt, Storage and Preservation of Safety Related Materials and Items," Rev. 1, 3/28/77

WP-I-01, "Receipt, Storage and Preservation of Safety Related Materials and Items," Rev. 0, 10/13/76

31 Deficiency Reports on steel structural material received from American Bridge during the period May 4, 1977 to August 17, 1977

The inspector determined that the procedures contain appropriate requirements for identification of material and items, including hold points where witnessing and inspections are required.

Receiving inspection procedures contain requirements for (1) assuring that components are undamaged and in conformance with specifications; (2) appropriate marking of items; (3) cleanliness and protection requirements; and (4) receipt inspection reports.

The inspector also determined that QC procedures adequately cover storage, protection, issue, identification, and records of materials and components. Requirements are also established to verify that QC procedures have been followed.

No items of noncompliance or deviations were identified.

6. Observation of Safety Related Structural Steel Work Activities (Receipt Inspection and Storage

The inspector reviewed the deficiency reports on fifteen selected structural steel components and verified their accuracy by inspecting the items in the laydown areas. It was determined that the materials were appropriately marked and identified, in proper class of storage and that adequate dunnage was provided.

Under the direction of KG&E, Daniel International is conducting full visual inspection on all structural steel components and embeds.

No items of noncompliance or deviations were identified.

7. Essential Service Water System Yard Piping

Preparations were underway for the installation of the yard piping portion of the essential service water system. This installation was scheduled to begin before the end of September and reportedly this is the first safety related piping to be installed at this site. The piping involved is 30 and 42 inch diameter carbon steel piping which is coated for underground installation.

The inspector reviewed the following specifications and procedures for those activities affecting the quality of the subject piping:

- Bechtel Specification No. 10881-M-201C(Q), Revision 4, dated 5/4/77 for the ". . . Supply and Fabrication of Essential Service Water Piping to ASME Section III . . . ."
- Bechtel Specification No. 10466-M-204(a), Revision 11, dated 7/18/77 for the ". . . Field Fabrication and Installation of Piping and Pipe Supports to ASME Section III . . . ."
- Daniel Procedure CWP-506, Revision 0, dated 4/25/77 entitled "Welding of Carbon Steel."
- Daniel Procedure CWP-503, Revision 1, dated 4/7/77 entitled "Control of Welding Consumables."
- Daniel Procedure CWP-502, Revision 2, dated 4/18/77 entitled "Qualification of Welders."
- Daniel Procedure CWP-510, Revision 0, dated 3/28/77 entitled "Maintenance of Welder Qualifications."
- Daniel Procedure WP-VII-201, Revision 0, dated 12/29/76 entitled "Installation of Pipe."
- Daniel Procedure WP-VII-202, Revision 1, dated 8/8/77 entitled "Coating and Wrapping of Pipe."
- Daniel Procedure WP-VII-209, Revision 1, dated 9/13/77 entitled "Preparation and Processing of Travelers."
- Daniel Procedure WP-VII-211, Revision 0, dated 3/14/77 entitled "Hydrostatic and Pneumatic Testing."

The inspector found that the codes and standards delineated in the specifications for this work included the ASME Boiler and Pressure Vessel Code, 1974 Edition through Summer 1975 Addenda, Sections II, III and IX as applicable for nuclear Class 3 components, AWWA C-203 (1973) Standard for "Coal-Tar Enamel Protective Coatings for Steel Water Pipe"; ANSI Standards N45.2.2 (1972) and N45.2.6 (1973); and applicable portions of ANSI B16.5 (1968), B16.9 (1971), B16.11 (1973), B36.10 (1970), ASTM, AWS, API-605 (1967-1973), and PFI Standards ES-3 (1972), ES-5 (1975) and ES-24 (1972).

No inconsistencies were identified by the inspector with respect to the specification requirements and the licensee's commitments to the NRC for the subject piping. Also, no significant inconsistencies were observed by the inspector with respect to the controls provided by these specifications and the associated procedures nor with the licensee's quality assurance program.

The inspector also reviewed Daniel Welding Technique Sheet No. N-1-1-BA-1, Revision 0, dated 2/24/77, to be used for the field welding of the subject piping. This technique specified GTAW/SMAW combination process, manual welding of P-1 carbon steel pipe with 0.188-inch to 0.750-inch wall thickness and 2-7/8-inch O.D. and greater. The technique was qualified for open root and all positions according to the Daniel record -- Procedure Qualification Test (PQT) 43, dated 11/12/75. No significant inconsistencies were identified by the inspector with respect to this procedure and its qualification in meeting the requirements of the ASME B&PV Code, Section IX, 1974 Edition through Summer 1975 Addenda. The inspector did bring to the attention of the Daniel Welding Engineer and the licensee that the technique sheet called out direct current straight polarity (DCSP) for the SMAW process instead of direct current reverse polarity (DCRP). This was determined to be a typographical error and the licensee stated this would be corrected.

The inspector also brought to the licensee's attention that Bechtel Specification M-201C(Q) imposed on the pipe vendor the requirement that the minimum wall thickness of piping 26 inch O.D. and greater is the nominal wall minus 0.010 inch. Thickness for the field work per Bechtel Specification M-204(a) is 87-1/2 percent of the nominal wall thickness. In this instance, the nominal wall was noted to be 0.375 inch. The design pressure specified for the 30 and 42 inch diameter piping was 200 psig and 50 psig, respectively. The inspector stated that although the lesser wall thickness appeared to be adequate, the difference in requirements was noteworthy. The licensee stated that they would have Bechtel review this matter.

No items of noncompliance or deviations were identified.

8. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on September 15, 1977. The inspectors summarized the purpose and the scope of the inspection and the findings. The item of noncompliance was discussed. The project inspector requested that Region IV be kept informed of changes to the construction schedule that would affect the reactor containment base mat placement now scheduled for December 1-15, 1977.

INSPECTION PLAN

IE Inspection Report No. 50-482/77-10

Licensee: Kansas Gas & Electric Company

Location: Burlington, Kansas

Facility: Wolf Creek, Unit No. 1

Type of Licensee: W, PWR, 1130MWe (SNUPPS)

Type of Inspection: Routine, Unannounced

Dates of Inspection: September 12-15, 1977

Dates of Previous Inspection: August 1-3, 1977

* Inspectors: C. R. Oberg, RIV; T. Elsasser, RI

SCOPE OF INSPECTION	Oberg	Elsasser	Hall	Haynes
30703 - Entrance & Exit Interview	X	X	X	X
92701 - Follow up on Insp. Iden. Problem	X			
92706 - Indep. Insp. Effort	X	X	X	X
47051 - QA Procedures-Containment Concrete		X		
47053 - Observation-Containment Concrete		X		
47055 - Records-Containment Concrete		X		
48051 - QA Procedures-Containment Steel	X			
48053 - Observation-Containment Steel	X			
48055-- Records-Containment Steel	X			
48061 - QA Procedures-Safety Related Struc.	X			
48063 - Observation-Safety Related Struc.	X			
48065 - Records-Safety Related Struc.	X			
55051 - QA Procedures, Welding				X

*Other Accompanying Personnel: R. Haynes, RI; R. Hall, RIV; C. Heck, RIV

Approve/Disapprove

Chester R. Oberg 9/7/77
Reactor Inspector Date

W. Johnson 9/7/77
Date