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

#### REGION IV

Report No. STN 50-482/77-13

Docket No. STN 50-482

Category A2

Licensee: Kansas Gas & 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: November 28-30, December 5-8 and December 12-14, 1977

Inspectors:

C. R. Oberg, Reactor Inspector, Projects Section

(Paragraphs 1, 2, 6-8,7) Sen 14

12/24/77\_ Date

R. C. Stewart, Reactor Inspector, Projects Section (December 5-8 only)

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Gilbert, Reactor Inspector, Engineering Support Section (December 7-8 only)

J. I. Tapia, Reactor Inspector-Intern, Engineering Support Section (Paragraph 3) (November 28-30 only)

1.B. Rosen Jen

12-29-77 B. Rosenberg, Reactor Inspector, Engineering Support Date Section (Paragraphs 4 & 5)

Other Accompanying Personnel:

R. E. Hall, Chief, Engineering Support Section (December 7-8 only)

Approved:

W. A. Crossman, Chief, Projects Section

. Hall, Chief, Engineering Support Section 8412200201 840627

PDR FOIA BROSIUS84-244 PDR

12/29/71 Date 12/30/27

#### Inspection Summary:

Inspection during the period November 28 - December 14, 1977 (Report No. STN 50-482/77-13)

Areas Inspected: Routine, announced inspection of construction activities relative to structural concrete placement operations for the reactor base mat; review of procedures, observation of work and work activities; and review of Quality Assurance records for installation of trumpets, base mat rebar and equipment supports. The inspection involved one hundred thirtynine inspector-hours by five NRC inspectors.

<u>Results</u>: Of the eight areas inspected, no apparent items of noncompliance were identified in seven areas. One apparent item of noncompliance (infraction - failure to properly clean construction joint area) was identified in one area.

#### DETAILS

#### 1. Persons Contacted

#### Principal Licensee Employees

\*J. O. Arterburn, Superintendent of Nuclear Development \*M. E. Clark, Manager, Quality Assurance, Site \*E. W. Creel, Director, Quality Assurance \*W. G. Eales, Jr., QA Engineer \*G. W. Reeves, QA Engineer

#### Daniel International

- \*W. E. Hitt, Project Manager
  \*I. Hussain, Quality Assurance Manager
  \*C. T. Kinney, Construction Manager
  \*A. S. Harper, Engineering Manager
  \*D. L. Jones, Quality Control Manager
  \*S. K. Chandhary, Civil QC Engineer
  E. Dickson, QC Services
  F. Beach, Document Control
  C. W. Luebbert, Civil Engineer
  T. E. Corbin, QC Engineer
- J. L. Herzner, Area Engineer
- T. Green, Civil QC Engineer

The inspectors also interviewed several other construction personnel.

\*denotes those attending the exit interview.

2. Plant Status

The inspectors conducted a general tour of the site to observe construction status. KG&E reported the overall status as follows:

Design and Engineering	55%	(11/1/77)
Procurement	86%	(11/1/77)
Construction	8.6%	(12/1/77)

Construction status of power block is as follows:

a. Reactor Building

Base mat has been placed. (Reference paragraph 5 of this report) CB&I is scheduled to begin containment liner work on December 18, 1977. The Reactor Building is 6.7% complete for all phases of construction.

# b. <u>Control Building</u>

The foundation has been completed. Walls for first lift have been completed. ESSW pipe in basement level has been started; it is now 8.2% complete.

## c. Radwaste Building

Mud slab has been placed and the piping tunnel started; it is less than 1% complete.

# d. Auxiliary Building

Foundation is complete; walls have been started. Structural steel has started; it is 3.4% complete. One charging pump and one safety injection pump have been installed and stored in place.

e. Fuel Building

Not started.

# f. Diesel Generator Building

Not started.

# g. Essential Services Water Piping

Welding and placement of piping is currently in progress. Approximately 500 ft. of piping have been placed out of 20,000 ft. required.

h. General

The Turbine Building is approximately 3.8% complete; turbine pedestals are 20% complete; circulating water piping is approximately 42% complete with about 1600 ft. of pipe installed out of approximately 3900 ft. required.

Work on saddle dams and main dam has been started. Work on the railroad spur is continuing.

There are approximately 1200 contractor and subcontractor personnel at work on site. The weekend shift is manned with 25 personnel for concrete curing and maintenance work.

#### 3. Tendon Trumpets and Baseplates

#### a. Material Receipt and Certification

The inspector reviewed two Receiving Quality Control Inspection Reports, two Receiving and Storage Inspection Checklists and two Material Receiving Reports for two partial shipments of tendon trumpet assemblies consisting of eighty-four and eighty-eight assemblies each. The visual inspections were conducted in accordance with Quality Control procedure No. QCP-I-Ol, Revision 1, entitled, "Receipt, Storage and Preservation of Safety Related Materials and Items." The following Quality Control documents were also reviewed:

- Two Manufacturer's Certificates of Guarantee that the trumplate assemblies conform to the licensing requirements of the United States Nuclear Regulatory Commission for performance and characteristics.
- (2) Two Manufacturer's Certificates of Conformance with American Society for Testing and Materials specification No. A-123-73 for galvanizing.
- (3) Four Steel Mill Reports of tests and analysis for chemical and mechanical properties of trumpet baseplate material.
- (4) Sixteen Manufacturer's Certificates of Inspection.
- (5) A Manufacturer's Certification of carbon weld wire conformance to American Welding Society specification No. A5.18 E70S-3, along with the actual analyses results.
- (6) Two reports of chemical data performed in accordance with American Society for Testing and Materials specification No. A-513-76 for electric-resistance-welded carbon and alloy steel mechanical tubing.

#### b. Installation of Trumpet Assemblies

The inspector conducted a field inspection of the in-place tendon trumpet assemblies in order to verify tightness of joints, integrity of sheaths and capping of sheaths. All tendon trumpet extensions were inspected and found to extend from the trumpet to a point one foot above the top of the base mat as required by Bechtel Technical specification No. 10466-C155, Revision 5, entitled, "Furnishing, Fabricating and Delivering Reactor Building Post-Tensioning System."

The inspector verified that the inspection of tendon trumpets would be accomplished and documented according to Quality Control procedure No. QCP-IV-106, Revision 1, entitled, "Concrete Pre-Placement, Placement, and Post-Placement." The procedure contains the Tendon Sheathing and Embedded Anchorages Inspection Checklist which is to be performed both before and after the concrete base mat placement.

#### c. Damages and Repairs to Trumpet Assemblies

The inspector reviewed Nonconformance Report I-069-C dated October 27, 1977, which was initiated due to minor surface damage to eight trumpets. The installation of reinforcing steel between trumpets resulted in the scratching of six trumpets and the flame cutting of the bar ends caused the burning of the galvanized surface on two trumpets. In no case was any trumpet abraded in excess of three percent of the surface galvanized. The Inryco Corp. approved Trumpet Fabrication procedure No. PTP-4 which allows the repair of abraded galvanized surfaces less than three percent of the total surface area with galvanizing steel touch up paint. The damaged trumpets were painted with Tnemec #93 galvanizing steel touch up paint and are now considered satisfactory.

No items of noncompliance or deviations were identified.

#### 4. Review of Quality Records - Containment Embedments

The inspector selected three embedments in the containment base mat for review of quality records:

Steam Generator Anchor Assembly25-A-8Reactor Coolant Pump Anchor Assembly26-A-6Crossover Leg Anchor Assembly27-A-5

The following records for embedments 25-A-8 and 26-A-6 were reviewed and found to be consistent with Daniel procedure AP-IX-04:

Material Receiving Reports

Receiving QC Inspection Reports

Material Heat Number Sheets

NDE Reports

Heat Treat Reports

Shop Releases

The Material Receiving Report for embedment 27-A-5 was reviewed; however, the additional documentation was not readily retrievable due to a filing error. The inspector was informed that the requested data were compiled the day after it was requested affor a search of the files. Additically, the inspector was informed that review by Quality Control revealed that some documents were missing or not received and had to be requested from the fabricator, Chicago Bridge and Iron.

This matter is considered unresolved and will be reviewed during a future inspection.

# 5. Observation of Work - Containment Base Mat

#### a. Preplacement

The inspectors observed preplacement activities for the containment base mat. The lower mat rebar for the southwest quadrant and the upper mat, shear bars and vertical wall reinforcing for the northwest quadrant were verified for count and size against the construction drawings. The count and approximate locations of sixty-three embedments were also verified against the construction drawings.

The inspector verified that the preplacement inspections had been signed off by Quality Control (QC) prior to commencing placing of concrete. Quality Control signed the Concrete Placement Card at 8:30 a.m. on December 12, 1977. The QC sign-off indicated a sector from 180° to 360° of azimuth (the west half of the mat). The card also indicated that the east half of the mat needed more work for clean up and wet down.

At 3:15 p.m. on December 12, 1977, after concrete placement had commenced, the inspector observed quantities of debris, including dust, concrete chips and cigarette butts on the construction joint around the reactor cavity and instrument tunnels. The debris was observed on the side of the reactor cavity which had been signed off at 8:30 a.m. as well as the side which had not been signed off. Once brought to the attention of the licensee, immediate action was taken to properly clean the affected area before concrete placement had reached that area. A survey of the areas above the tendon gallery revealed clean construction joints in the areas which had been cleared for placement.

Specification 10466-C-103-(Q), "Technical Specification for Contract for Forming, Placing, Finishing and Curing of Concrete for (SNUPPS)," identifies construction joint preparation by reference to American Concrete Institute (ACI) publications. Procedure QCP-IV-106, "Concrete Pre-Placement, Placement, and Post-Placement," includes a Pre-Placement Checklist. This checklist does not follow thru with the detail of the ACI references (ACI-30-473 and SP-2-1975) for construction joints or the detail for other portions of the checklist such as "Rebar" or "Formwork" which do have a line item for "Clean."

The above matter relating to the observation of debris found on the construction joint in an area signed off by QC is considered ar item of noncompliance.

## b. Delivery and Placement

Two inspectors on opposite shifts observed the placement of the base mat, which took approximately twenty-eight hours. The following areas observed were found to be in accordance with specifications C-1Ci-(Q), C-103-(Q) and C-191-(Q):

Concrete mix delivered to placement 42-CIA-N

Concrete mixing and transporting

Temperatures in the placement area

Concrete testing of the placement 3 observations which included slump, air, concrete temperature and preparing test cylinders

Concrete placement including consolidation and proper use of equipment

QC inspection

Training records for forty-four preplacement, placement, batch plant and laboratory QC personnel

No items of noncompliance or deviations were identified.

c. Concrete Materi s and Batch Plant Operation

Materials testing and batch plant operation were reviewed during the placement. The following areas observed were found to be in accordance with specifications C101-(Q) and C-191-(Q):

Sieve ana	lyses	-	33	for for	sand 3/4 inch	aggregate	
Moisture	content	-	53	for for	sand 3/4 inch	aggregate	

-3-

Organic matter - 1 for sand

Scale calibration GI-62 Sieve analyses GI-201 Sieve analyses GI-100 Aggregate GI-102 Water GI-103 Cement

Water/cement ratios from batch tickets - 5

No items of noncompliance or deviations were identified.

#### 6. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. An unresolved item disclosed during the inspection is discussed in paragraph 4. в,

#### 7. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on December 14, 1977. The inspector summarized the scope of the inspection and the findings. The licensee acknowledged the item of noncompliance and the unresolved item.

#### INSPECTION PLAN

IE Inspection Report No. STN 50-482/77-13 \*\*

Licensee: Kansas Gas and Electric Company

Location: Wichita, Kansas

Facility: Wolf Creek, Unit 1

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

Type of Inspection: Routine, Announced

Dates of Inspection: December 12-14, 1977

Dates of Previous Inspection: October 17-20, 1977

Inspectors: Oberg, Rosenberg

SCOPE OF INSPECTION

\*\* This plan covers the time extension of the inspection originally scheduled for November 28 - December 9. The base mat placement was scheduled for December 7, but due to bad weather was rescheduled. The inspection scope approved on 11/22 and 11/23 is applicable.

C.R. Olegy 1/28

for W.A. Crossman Dat

#### INSPECTION PLAN

IE Inspection Report No. STN 50-482/77-13\*

Licensee: Kansas Gas & Electric Company

Location: Wichita, Kansas

Facility: Wolf Creek, Unit 1

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

Type of Inspection: Routine, Announced

Dates of Inspection: December 6-9, 1977

Dates of Previous Inspection: October 17-20, 1977

Inspectors: Oberg, Rosenberg, Stewart, Grossman, Hall, Schweibinz (RIII), Gilbert

SCOPE OF INSPECTION

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47053B	-	Observation of Work and Work Activities (Base Mat Placement)
		2. Delivery and Placement
		6. Batch Plant Operation
48051B	-	Review of QA Procedures Containment - Steel Structures & Supports - not completed **
55051B	-	Containment - Structural Steel Welding - Not completed
55061B 55071B 55081B		Reactors Coolant Pressure Boundry Piping (Welding) - not completed ** Safety Related Piping - not completed **

\*This is a supplement to the inspection plan dated 11/22/77. It incorporates SNUPPS assists from Region III

\*\*Inspection terminated morning of 12/8/77. Areas not examined

Reactor Inspector / Date

walnum 11/23

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Dates of Inspection: November 28-30, 1977

Dates of Previous Inspection: October 17-20, 1977

Inspectors: Oberg, Rosenberg, Tapia

# SCOPE OF INSPECTION

30703B - Entrance & Exit Interview
02706B - Independent Inspection Effort
AZOCID OA Procedures
4/0516 - On Proceeder Concrete (Containment)
Structural of Specific Materials
2.b Control of Specific Processes
2.c Control of Specific Processes
(Latest Changes to Procedures)
A70538 - Observation of Work and Work Activities (base have)
1 Placement Preparation
A Pohar Splicing
4. Reparts and Cement Storage
5. Aggregate and concords (Containment Base Mat)
47055B - Review of quality records (of possible)
1.a Preplacement Preparation (11 possible)
47061B - OA Procedures (Prestressing)
2.b Installation of Trumplate
ATOGOR - Observation of Work and Work Activities
4/0030 - Observationent Prestressing)
Turninent Installation
1. Trumplate Installation Activities
48053B - Observation of work and work Accertion
2 (a-f) (All Requirements)
(Select three major equipment supports)

Reactor Inspector () Date

Welliam 11/22/77