

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

REGION IV

Report No. STN 50-482/79-07

Docket No. STN 50-482

Category A2

Licensee: Kansas Gas and Electric Company
P. O. Box 208
Wichita, Kansas 67201

Facility Name: Wolf Creek, Unit No. 1

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

Inspection Conducted: April 9-12, 1979

Inspectors: C. R. Oberg 5/11/79
C. R. Oberg, Reactor Inspector, Projects Section
(Paragraphs 1, 2, 3, 4, 5, 12 & 13) Date

R. E. Hall 5/11/79
R. E. Martin, Reactor Inspector, Engineering Support
Section (Paragraphs 8, 9, 10 & 11) Date

A. C. Cerne 5/11/79
for A. C. Cerne, Reactor Inspector (RI)
(Paragraphs 6 & 7) Date

Approved: W. A. Crossman 5/11/79
W. A. Crossman, Chief, Projects Section Date

R. E. Hall 5/11/79
R. E. Hall, Chief, Engineering Support Section Date

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Inspection Summary:

Inspection on April 9-12, 1979 (Report No. STN 50-482/79-07)

Areas Inspected: Reactor pressure vessel; safety related concrete; polar crane supports; electrical; and licensee action on previously identified items. The inspection involved sixty-six inspector-hours on site by three NRC inspectors.

Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

Principal Licensee Personnel

- *M. E. Clark, Manager, Quality Assurance, Site
- *T. C. Newman, QA Auditor
- *D. W. Prigel, QA Engineer
- *G. W. Reeves, QA Engineer

SNUPPS

- *R. D. Brown, Site Representative

Daniel International

- *A. S. Harper, Engineering Manager
- *M. E. Tanner, Services Manager
- *V. J. Turner, QA Manager
- *I. Hussain, Assistant to Project Manager
- *D. L. Jones, QC Manager
- *J. E. Steely, Administrative Manager
- L. Benefield, QC Documents Lead Inspector
- R. Coots, Lead Cadweld Inspector
- *D. J. Dennison, Assistant QC Manager
- J. R. Ferguson, Services QC Engineer
- J. Gresh, Reactor Building Area Civil Engineer
- C. Rowlett, Radwaste and Fuel Area Civil Engineer
- R. Ayres, QC Batch Plant Inspector

Bechtel

- G. Nutwell, Site Lead Liaison Engineer
- F. Wilks, Site Civil Liaison Engineer
- N. Hottel, Site Electrical Liaison Engineer

*denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance Item (STN 50-482/78-10): Drypack Mortar Applied Under Reactor Vessel Supports Without an Approved Procedure. An approved Procedure WP-IV-1, Rev. 2 (11/29/78) has been issued for application

and testing of drypack mortar. All mortar is now placed on 4000 psi (minimum) concrete. A review of mortar cube tests (November and December 1978 and January 1979) show strengths well above 5000 psi. This item is considered closed.

(Closed) Noncompliance Items (STN 50-482/78-08): Failure to Provide Timely Response to Audit Findings and Failure to Provide Adequate Responses to Audit Findings. The constructor has issued AP-II-12, Rev. 0 (9/13/78), "Project Audit Responses." A log has been instituted for all audit reports requiring response. The response form required by AP-II-12 specifies a full and complete response. The IE inspector determined that the procedure is being followed except for the proper response time limit of 30 days. The KG&E QA Manager issued a memo, dated January 17, 1979, concerning the lateness of responses. A Daniel corporate audit, dated March 25, 1979, also identified the problem of responses being from 3-5 days late.

During a discussion of these items with licensee representatives, the IE inspector indicated that the area of QA audits would be examined in a subsequent inspection.

(Closed) Noncompliance Item (STN 50-482/78-11): Failure to Document Housekeeping Inspection. All records relating to periodic housekeeping inspections are now forwarded to Document Control for storage. This was verified by the IE inspector by examining the file in Document Control. This item is considered closed.

3. Site Tour

The IE inspectors made a tour of the site to observe safety related work in progress.

During the tour, a total of eight small embeds were observed to be improperly stored (in Auxiliary Building) in that the ends of the embedments were immersed in water and accumulated dirt. (This was corrected immediately by Constructor personnel.) The IE inspectors also observed a series of concrete tests (see paragraph 5) and checked for compliance to housekeeping requirements. All other storage of safety related embeds and rebar in the construction areas were observed to be proper and in accordance with procedures.

No items of noncompliance or deviations were identified.

4. Reactor Pressure Vessel Inspection

a. Implementing Procedure Review

The IE inspector reviewed the current procedures in preparation for reactor vessel installation. The reactor vessel (manufactured by Combustion Engineering, under Westinghouse contract, Serial No. 11373) was received on site on January 12, 1979. It is currently stored on a concrete slab near the containment building. Procedures are being written for movement of the vessel from storage to the Reactor Containment Building. Blueprint FD-M-23204, Rev. 1, which contains some details of the installation, was reviewed by the IE inspector. The procedures will include methods for upending and lifting the reactor vessel over the secondary shield wall. Blueprint FD-M-23205, Rev. 1 (2 sheets) contain calculations and information on the methods to be used in the lifting of the vessel. Construction Procedure QCP-I-01, Rev. 5 (2/9/79), "Receipt, Storage, and Preservation of Safety Related Material and Items," was also reviewed for its application to the reactor pressure vessel. This item will remain open pending final issuance of the approved procedures and review by NRC inspector.

No items of noncompliance or deviations were identified.

b. Observation of Storage of Reactor Pressure Vessel

The IE inspector, in company with the assigned Daniel QC inspector, examined the storage of the reactor vessel and reactor vessel head. The following observations were made. ANSI N45.2.2 and QCP-I-01 (referenced above) were used on the basis for the observations.

- (1) Inspections of the reactor vessel and head during storage are being performed.
- (2) Level "C" storage requirements (modified) for the reactor vessel head were not accomplished in that, (a) standing water was observed in the "Kelly Closure" in which the reactor vessel head was stored; and (b) air circulation was restricted due to the amount of tarp covering the head. Other requirements for cribbing, heating and desiccant were accomplished.
- (3) A possibility of damage to the reactor vessel exists from vehicle movement. (When identified to the licensee, immediate steps were taken to provide an I-beam barrier around the concrete pad.)
- (4) A rigging spreader was not placed on cribbing. (However, it was on a dry concrete pad.)

The IE inspector noted that the QC inspections had identified the problem of standing water (DR 1S01471M) on March 29, 1979. The "Kelley Closure" was not watertight. Water had entered as a result of a rainstorm the previous night. Based on the above and discussions of this matter with licensee representatives, storage of the vessel and head is considered unresolved and will be examined in a subsequent NRC inspection.

c. Reactor Vessel Quality Records

The IE inspector reviewed the following records relating to the receiving and storage of the reactor pressure vessel.

Receiving QC Inspection Report, dated 2/10/79

Material Receiving Report (No. 24889), dated 1/29/79

Receiving and Storage Inspection Checklist, dated 2/9/79

NCR 1SN0745M - Vessel Damage

DR 15D1268M - Ice in "O" Ring Containers

Reactor Vessel Surveillance Report 098, dated 3/13/79

Reactor Vessel Surveillance Report 174, dated 4/9/79

No items of noncompliance or deviations were identified.

5. Observations of Concrete Testing Procedures

ASTM C-31, "Making and Curing of Concrete Test Specimens in the Field," requires that concrete test cylinders (6x12 inches) are to be formed in three equal layers and that each layer be "rodded" 25 times with penetration about 1/2" into the layer below. During the forming of cylinder set No. 1574 (Cylinder No. 13215 - 13222), the IE inspector noted that the rodding was not consistent (varied from 20 - 26 strokes per layer) and penetration to the lower layers was not always done.

ASTM C-231, "Air Content of Freshly Mixed Concrete by the Pressure Method," requires that during the determination of air content, the concrete sample be placed in the measuring bowl in equal layers, consolidated by 25 strokes of the tamping rod, evenly distributed over the cross-section and penetrating through the layer and into the layer below approximately 1 inch. In addition, for each layer, the measuring bowl is to be tapped smartly 10 to 15 times in order to

close voids made by the tamping rod and to release any large bubbles of trapped air. During the preparation of one concrete sample, the IE inspector observed that the bottom layers were not penetrated and that each layer was not tapped the required number of times.

ASTM C-143, "Standard Test Method of Slump of Portland Cement Concrete," requires that the concrete sample be consolidated by rodding of three equal layers in the slump cone and that the second and top layer be rodded by penetrating through its depth, into the layer below. During the testing of concrete for a slump test, the IE inspector observed that the rodding did not penetrate through the layers into the layer below.

The IE inspector discussed the above observations with the licensee representatives and the Daniel QC Manager. Immediate steps to retrain QC personnel in this matter were taken by the Constructor QC Manager. Other observations subsequent to the tests noted above did not reveal any problems. The IE inspector concluded that this was an isolated case; that corrective action had been taken; and that the test results for air content and slump were consistent with previous test results. However, in order to assure that the corrective action by the constructor was effective, the licensee representative was informed that this item would be considered unresolved, and would be examined in subsequent NRC inspections.

6. Fuel Handling Building Concrete Placement

a. Observation of Concrete Placement

The IE inspector observed a portion of the concrete placement for the Fuel Handling Building base mat (OC 611-S09). He examined the condition of forms, embedded items, and a vertical construction joint. The horizontal surface of the lower mud mat lift was checked for cleanliness and reinforcing steel was spot-checked for spacing, clearance, and the conformance of Cadweld splices to design requirements. The IE inspector witnessed the concrete truck delivery and pump placement operation and the method of consolidation of the pumped concrete. He interviewed responsible area civil engineers and QC inspectors concerning pre-placement inspection, in-process testing, and designated placement and hold point authority. He reviewed the quality documentation available at the placement site, as well as Cadweld inspection and test records and rebar design erection drawings. On the day following the placement, the IE inspector verified that the concrete was being cured in a manner and with such material as was required by the governing specification and code requirements.

The above items were evaluated against criteria established in the following documents:

ALI Codes 301-72 and 318-71

Bechtel Specifications C-103, Revision 1b; C-112, Revision 14; and C-115, Revision 9

Daniel Work Procedure QP-IV-106, Revision 4

Daniel QC Procedure QCP-IV-106, Revision 5

No items of noncompliance or deviations were identified.

b. Review of Records

The IE inspector examined the following documents relative to concrete placement OC 611-S09:

Daniel Concrete Placement Card, April 10, 1979

Daniel Pre-Placement Checklist

Daniel Request for Clarification of Information, RCI 1-0145-C, April 9, 1979

Daniel Cadweld records for splices G 18/11 H3, G 18/11 H39, and G18/11 H51 and the Cadweld Operator Qualification Test for Operator "G," January 19, 1978

The IE inspector's review of the above listed Pre-Placement Checklist, along with interviews with responsible QC personnel and further discussion with the licensee, indicated the existence of some confusion regarding the final review and signoff of the checklist by the delegated QC supervisor. A determination was made that the final signature of the checklist provided evidence of proper review and should be accomplished prior to the concrete placement. This decision was disseminated to all Civil QC personnel by a Daniel inter-office communication effective April 16, 1979. Since this decision and its resulting implementation represent no deviation from the requirements of the governing Work Procedure (WCP-IV-106), but rather an interpretation directed toward better control of quality concrete, the IE inspector has no further questions on this matter.

The IE inspector also noted that certain Cadweld splices of #18 to #11 rebars had been rejected during the QC inspection of same and had been subsequently replaced by acceptable Cadwelds. While this replacement process appears to have been accomplished in accordance with procedural requirements, the resultant effect was the shortening of the #18 bars by approximately three inches. Depending upon the original length of these rebar pieces, this shortening could have exceeded fabrication tolerance limits. While the structural adequacy of even the worst-case condition, as was discussed with Bechtel site liaison engineers, is not in question, the IE inspector expressed concern that future rework of a similar nature be given an engineering review prior to the commencement of such rework. An Interim Change to Procedure (ICP 92) WP-IV-102, Revision 3 was subsequently issued on April 12, 1979, to delegate specific responsibility for deciding how replacement splices for transition Cadwelds shall be accomplished. The IE inspector reviewed ICP 92 and discussed its implementation with the licensee. He had no further questions on this matter.

No items of noncompliance or deviations were identified.

c. Material Receiving Reports

The IE inspector reviewed a sample of Material Receiving Report (MRR) packages for reinforcing steel to determine if QC inspections had been accomplished, traceability of material to heat numbers had been provided, and accountability of material quantity relative to the accompanying in-process test reports had been established. Included in the review were North Star Steel Co. Certified Test Reports; Paper Calmenson and Co. Packing Lists; and Daniel QC Inspection Reports with appropriate Inspection Checklists. The following MRR numbers represent those packages reviewed:

3753, 3789, 4050, 4126, 5214, 5216 5460, 5516, and 8799

The completeness of the rebar package documents was evaluated with regard to criteria established in ANSI N45.2.5 and Bechtel Specification C-111, Revision 9.

No items of noncompliance were identified; however, one item requires further inspector follow up, as discussed below.

The IE inspector noted the use of an uncontrolled document labeled "Quality Control Instructions" with regard to completion of the receiving QC inspection report. Interviews with QC personnel revealed that this document was intended only to clarify certain reporting practices, while remaining consistent with the specific requirements of Daniel Construction Procedure QCP-I-01. However, in some cases, these instructions augmented the approved procedure in such a way as to have bearing upon the content of the final quality documentation. The IE inspector questioned the uncontrolled nature of such instructions which have impact upon quality in any way. The licensee immediately issued a KG&E Surveillance Report (S-71) on April 11, 1979, to track the disposition of those particular instructions which affect quality and to determine what format is to be used for publishing any other clarifying instructions. Action was also initiated to determine if similar uncontrolled "instructions" were being used in any other areas.

The status of KG&E Surveillance Report S-71 and any required follow-up action is considered unresolved and will be reviewed by the NRC on some future inspection.

7. Polar Crane Support Installation

The IE inspector examined the in-place condition of the polar crane supports within containment. He checked the overall configuration and workmanship and spot checked weld sizes, material dimensions, and fit-up precision. While the crane girders had been set into place on the supports, their final positioning and alignment were not complete and certain portions of the support subassembly alignment and field welding work remained incomplete. Since Chicago Bridge and Iron (CB&I - containment liner and attachment subcontractor) personnel and records were not currently onsite, the IE inspector could verify the acceptability of the installed material only through interviews with QC personnel and review of unofficial material certification copies. With the use of these and a working copy of a CB&I drawing, which identified the polar crane attachments to the containment liner by welder ID, material piece numbers, and ultrasonic test report numbers, the IE inspector did establish that traceability of material to heat numbers and material designation, certification, and testing were being provided and documented. Formal audit of the official records will be accomplished in some future inspection.

The IE inspector also reviewed the Daniel QC Contract/Subcontract Checklist (No. 74-3754), February 21, 1978, and Surveillance Reports dated April 6, June 22, and September 5, 1978, to substantiate that the CB&I welding processes, include welder qualification, weld rod control, and use of approved welding procedures. It was confirmed that the above items were being inspected by Daniel QC personnel.

The above items were evaluated against criteria established in the SNUPPS PSAR (Chapters 3 and 9), AWS D 1.1, AISC Manual of Steel Construction (7th Edition), and Bechtel Specifications C-151 (Revision 11) and C-151A (Revision 10).

The following drawings were utilized in the inspection process:

Bechtel Drawings C-OL2915(Q), Revision 4; C-OS2711(Q), Revision 2; and C-OS2963(Q), Revision 6

American Bridge (Order No. K6724) Drawings 408B, Revision 2 and 409, Revision 4

No items of noncompliance were identified; however, one item remains unresolved as discussed below.

The IE inspector noted that while details for the polar crane radial stops, shown on American Bridge Drawing 409, Revision 4, indicated 1"x1" coped holes at the point of weld intersection of the web-to-flange-to-gusset stiffeners, these holes had been totally or partially filled with weld filler material at four separate locations on one crane support assembly. He discussed with the licensee his concern for a possible unacceptable concentration of triaxial stresses in the member at those points and was subsequently informed, after consultation with Bechtel engineering personnel in Gaithersburg, that further analysis of the specific situation would be required to determine the acceptability of the present condition.

Pending completion of an engineering analysis, review by the NRC, and further inspection by the licensee to determine whether similar conditions exist at other radial stops or different subassemblies fabricated by American Bridge, this item is unresolved.

8. Seismic - Class IE Conduit supports - Ref: Table 3.2-1 Sheet 22 - SNUPPS PSAR - Design of Supports

Bechtel electrical liaison advised the IE inspector that Bechtel is designing all Class IE cable tray and conduit supports as seismic Category I. Non-Class IE supports in Q structures are being designed as seismic Category I. The drawings and procedures designate non-Class IE supports in Q structures that require seismic Category I as II/I which indicates that even though the support is non-Class IE, the failure of that support might effect IE equipment or cables; therefore, the design and procurement is treated as seismic Category I.

KG&E is now trying to resolve the QA requirements for II/I supports. Daniel Construction Procedure OCP-X-302 only speaks to Class IE hanger inspection. Daniel has initiated a letter to craft and QC personnel stating that all cable tray supports and conduit supports (Class IE, II/I and non-Class IE) are to be fabricated, installed and inspected as though they were Class IE. The II/I and non-IE documentation will be held in a suspense file awaiting final resolution of QA requirements.

There will be three classifications of cable tray and conduit supports in Q structures:

Class IE - safety related

II/I - nonsafety which could effect Class IE

Non-Class IE - nonsafety related

This item will remain as an open item until the QA requirements are resolved.

9. Cable Ties

The IE inspector inquired into the use of electrical cable ties at Wolf Creek.

Bechtel requires the use of cable ties on vertical runs of cable in cable tray. Bechtel defines the environmental requirements for the cable ties. Daniel will be using the normal, off-the-shelf, cable ties referred to as "tyraps" in the Auxiliary Building, Containment Building, and similar safety related structures. A special T&B "tyrap" will be used inside containment that can withstand radiation.

No metal or fire resistant "tyraps," cable ties or banding will be used.

10. 4160 Volt Circuit Breakers (GE)

The information regarding a construction deficiency report from another facility regarding General Electric 4160 volt circuit breakers (type 1200 and 2000 ampere with ML-13 Mechanism Magne - blast) was provided to KG&E personnel on site. Bechtel and Daniel were also advised of the potential problem. The IE inspector determined that Wolf Creek will be using this type of breaker. This item will remain open until maintenance procedures for circuit breakers are established and reviewed by the inspector.

11. Construction Deficiency Report - Weld Deficiency of Unistrut Material

All P1001 Unistrut Coil #7X-4444 has been removed from the Wolf Creek site as committed in KG&E's letter to RIV, dated February 7, 1979. This includes all installed material and warehouse stock. This was verified by the IE inspector by observation and review of records. The IE inspector had no more questions regarding this item.

12. 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. Unresolved items disclosed during the inspection are discussed in the following paragraphs:

- 4.b. - Reactor Vessel Head Storage
- 5 - Observation of Concrete Testing Procedures
- 6.b. - Uncontrolled Documents
- 7 - Polar Crane Supports

3. Exit Interview

The IE inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on April 12, 1979. The IE inspectors summarized the scope and findings of the inspection. The unresolved items were acknowledged by the licensee representatives.