

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-482/84-33

Docket No. 50-482

License No. CPPR-147

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

Facility Name: Wolf Creek Nuclear Power Plant, Unit 1

Inspection At: Wolf Creek Site, Burlington, Kansas

Inspection Conducted: September 10-14, 24-25, 1984

Inspector(s): *Roger D. Walker for*
W. J. Key

10-18-84
Date

Approved By: *Roger D. Walker for*
D. H. Danielson, Chief
Materials and Processes Section

10-18-84
Date

Inspection Summary

Inspection on September 10-14, 24-25, 1984 (Report No 50-482/84-33)

Areas Inspected: Routine announced safety inspection to review installed HVAC systems, including a partial walkdown of three systems; a review of Bechtel design specification, Daniels installation and quality procedures, and Irsay duct fabrication instructions; a review of welding and inspection personnel qualification and training records; and a review of selected installation and inspection documents. This inspection involved a total of 98 inspector-hours, including 18 off-shift hours by one NRC inspector.

Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

Kansas Gas and Electric Company (KG&E)

- *O. Maynard, Supervisor, Licensing
- *W. Lindsay, Supervisor, Quality Systems
- *P. Dyson, Supervisor, Field Engineering
- *W. J. Rudolph, Manager, Quality Assurance
- *C. J. Hoch, QA Technician
- *D. Feliz, Engineer, Construction
- *R. L. Stright, Engineer, Licensing
- C. Snyder, Supervisor, Quality 1st

Daniel International Corporation (DIC)

- *J. Berra, Vice President
- L. Payne, Project Manager, Engineering
- J. Hooks, Field Engineering, HVAC
- D. Garrnett, Assistant Training Supervisor

*Denotes those attending either the entrance or exit meetings.

2. Inspection of Heating Ventilation and Air Conditioning Systems

a. General

The Heating Ventilation and Air-Conditioning (HVAC) Systems were designed by the Bechtel Corporation, fabricated by the Robert Irsay Company, and installed and inspected by the Daniel International Corporation (DIC). Installation and testing activities have been completed, and the systems have been turned over to plant operations.

The objective of this inspection was to determine whether installation and inspection of hardware meet FSAR commitments, and NRC and design specification requirements.

The HVAC systems listed below or portions thereof are safety related and are required to function following a design basis accident (DBA) and maintain the plant in a safe shut down condition.

- Control Building
- Fuel Building
- Auxiliary Building
- Containment
- Diesel Generator
- Essential Service Water Pumpouse

b. Specifications and Procedures

The design specifications, fabrication instructions, installation and inspection procedures listed below were reviewed to verify conformance to FSAR commitments, specification requirements, and the acceptance criteria of referenced codes and standards.

- Bechtel Specification, 10466-M-618.1 (Q), "Technical Specification For Furnishing Shop Fabrication and Delivery of Ductwork (Q-listed) for SNUPPS"
- Bechtel Specification, 10466-M-618.2 (Q), "Technical Specification for Field Installation of Ductwork (Q-listed) for SNUPPS"
- Robert Irsay Duct Construction Procedure for Fabrication of Ductwork, Dampers, Panels, Doors and Miscellaneous Duct Assemblies
- WP-VIII-200, Revision 7, "Field Fabrication and Erection of HVAC Ductwork and Supports"
- WP-VIII-202, Revision 5, "Preparation and Processing of HVAC Travelers"
- WP-IV-112, "Miscellaneous Steel and Embedment Fabrication"
- CWP-507, "Welding of Stainless Steel"
- CWP-503, "Control of Welding Consumables"
- CWP-504, "Weld Repairs"
- CWP-502, "Qualification of Welders"
- CWP-501, "Welding Procedure Qualification"
- CWP-508, "Welding of Carbon Steel to Stainless Steel"
- CWP-517-1, "Certification of Visual Examination Personnel"
- AP-VI-01, "Indoctrination, Training and Certification of Quality Personnel"
- QCP-VII-200, "Inspection of Welding Processes"
- QCP-VIII-200, "Inspection and Documentation of Field Fabricated and Erection of Safety-Related Ductwork and Supports"

- QCP-VII-209, "Quality Engineers Review of Travelers"
- QCP-1-05, "Quality Processing of QA Records"

c. Design Drawing Review

The design and fabrication drawings listed below were selected and reviewed for processing, timely incorporation of FCRs, ECNs, and NCRs, and were used by the inspector during his system walkdown and evaluation of installed HVAC ductwork and supports.

(1) Bechtel Design Drawings

(a) Piping and Instrumentation Diagram (P&ID) Drawings

- M-02GK04, (Q), Revision 11
- M-02GK03, (Q), Revision 15
- M-02GK02, (Q), Revision 11
- M-02GK01, (Q), Revision 13

(b) HVAC Hanger Location Drawings

- M-043311, (Q), Revision 11
- M-043521, Revision 5
- M-043931, (Q), Revision 21
- M-043932, (Q), Revision 12
- M-043411, (Q), Revision 10
- M-043611, (Q), Revision 4
- M-040101, (Q), Revision 7

(c) HVAC Duct Location Drawings

- M-1H3411, (Q), Revision 0
- M-1J3311, (Q), Revision 1
- M-1H3611, (Q), Revision 1
- M-0H1111, (Q), Revision 6
- M-0H1121, (Q), Revision 6
- M-0H1141, (Q), Revision 8
- M-1H1451, (Q), Revision 0
- M-KH0101, (Q), Revision 4

(d) Fire Damper Detail Drawing

- M-0H1904, (Q), Revision 12

(e) Civil Structural HVAC Support Drawings

- C-0503, Revision 9
- C-0502, Revision 11

- C-0505, Revision 8
- C-0507, Revision 7
- C-0508, Revision 5
- C-0510, Revision 4
- C-0513, Revision 6
- C-0514, Revision 8
- C-0518, Revision 8
- C-0520, Revision 6
- C-0524, Revision 0
- C-0530, Revision 4

(2) Robert Irsay Fabrication Drawings

(a) Duct and Duct Location Drawings

- RI-K40101, (Q), Revision 2
- RI-OH1111, (Q), Revision 8
- RI-OH1131, (Q), Revision 5
- RI-OH1451, (Q), Revision 6
- RI-OH1121, (Q), Revision 13
- RI-OH1251, (Q), Revision 7
- RI-OH1141, (Q), Revision 7

(b) HVAC Support Detail Drawings

- R3288
- R3246
- R3114
- R3389
- R1303
- R1356
- R1508
- R1332
- R1486
- R1504
- R1353

d. HVAC System Walkdown

During the walkdown of portions of the HVAC systems listed below the inspector examined installed ductwork, supports, and equipment for workmanship, damage, and to verify conformance to design specifications, drawings, and referenced codes and standards.

(1) Control Building

- Control building air-conditioning Units A&B
- Air filtration system
- Access control room exhaust
- IE electrical equipment supply and exhaust

- Battery and switchgear room (1 each)
- Control room pressurization system
- Lower cable spreading room

(2) Auxiliary Building

- Auxiliary supply and exhaust
- Steam tunnel supply and exhaust
- Safety injection pump room
- Component cooling water pump room
- Charging pump room

(3) Essential Service Water Pumphouse

- Supply and exhaust ducts and supports

e. Personnel Certification/Qualification Review

Since all installation, inspection, and testing of the systems are complete, many of the welders and QC inspector personnel are no longer employed. From installation and inspection travelers, the inspector selected the welders and inspectors listed below and reviewed their certification.

(1) Welder Qualifications

<u>Name</u>	<u>Stamp No.</u>	<u>Process</u>
H. L. Wettsten	D-160	SMAW/GTAW
D. E. Walton	D-442	SMAW/GTAW
V. A. Baldridge	D-577	SMAW/GTAW
L. L. Wiezorek	D-627	SMAW/GMAW/FCAW
R. L. Phillips	D-646	SMAW/GTAW/GMAW/FCAW
J. N. Briers	D-684	SMAW/GMAW/FCAW
D. A. McElroy	D-690	SMAW/GMAW/FCAW

(2) QC Inspector Certifications

<u>Name</u>	<u>Method</u>	<u>Level</u>
J. Lawson	VT	II
J. Browning	VT-UT(Thickness)	II
D. Walker	VT-UT(Thickness)	II
D. Hankinson	VT-UT(Thickness)	II
C. Goins	VT-RT	II
R. Cook	VT-PT-UT-MT-RT	II
T. Getzlaff	VT-UT(Thickness)	II
P. Rasmussen	VT-UT(Thickness)	II
G. J. Jones	VT-MT-PT	II
J. Siska	VT	II

G. R. Rollins	VT	II
H. V. Napier	VT-UT(Thickness)	II

f. Documentation Review

During the systems walkdown, the inspector selected HVAC hangers, ductwork, and equipment listed below and reviewed installation and inspection documentation.

<u>Drawing/Traveler No.</u>	<u>Hanger/Duct Number</u>	<u>Class</u>	<u>System</u>
SM04-3411	R3389	Q	GK
SM04-3611	R3246	Q	GK
SM04-3411	R3190	Q	GK
SM04-3511	R3222	Q	GK
SM04-3411	R3114	Q	GK
SM04-1521	R1382	Q	GK
SM04-1521	R1351	11/1	GK
SM04-1521	R1353	11/1	GK
SM04-1521	R1356	Q	GK
SM04-1521	R1311	Q	GK
SM04-1521	R1310	Q	GK
SM04-1521	R1303	Q	GK
SM04-1541	R1508	Q	GK
SM04-1541	R1504	11/1	GK
SM04-1541	R1486	Q	GL
SM04-1541	R1510	Q	GD
WMOH-3611	Duct/Fire Dampers		DK

Air-Condition Unit "B" (Carrier)
Model OSEN-899100
Serial Number 3879D01651

Air-Filtration System
Serial Number FGK01A

Access Control Room Exhaust, Adsorber Unit System - FGK-03

Pressurization Unit, Serial Number 853-29
Drawing Number FSK-1743-2566-07

Switchgear Room Fan and Motor
Manufacturer Buffalo, Size-2200 CFM, Type 245BL
Motor (W), Serial Number 8101-01-001. 7.5 HP

Component Cooling Water Pump Room Fan Unit
Model 39E018
Serial Number 772195562

g. Reinspection and Repair Program

In August of 1981, the licensees QA department conducted an audit/ investigation (Report No. TE-57061-K51) stemming from allegations (Numbers 4-83-A-75, 4-83-A-79, and 4-84-A-10) made to the NRC regarding HVAC installation and inspection activities.

Audit Report No. TE-57061-K51 identified nine (9) items of noncompliance and substantiated three of five (5) allegations.

- Forgery of QC inspectors signatures
- Inappropriate QC sign-off (two separate allegations)
- Welder ID modifications
- Damaged duct and hangers with deficient repairs

A review of HVAC documentation by DIC under Program Enhancement Activity No. 17 identified the following deficiencies in documentation:

- Weld Control Records (WCR) documenting HVAC support installation, fit-up, and final visual inspection were signed off by a trainee or a qualified level I inspectors.
- WCRs documenting HVAC support installation contained conflicting welder "D" numbers between the WCR and the material requisition (W-100) forms.
- WCRs documenting HVAC support installation had either the incorrect weld technique revision or no revision at all.

A DIC sampling weld inspection of 29 HVAC supports identified as having documentation problems, identified 17 supports as having rejectable welds.

As a result of the Program Enhancement Activity and the support sample inspection, Corrective Action Report (CAR) No. 1-M-0012 was issued. CAR No. 1-M-0012 committed to a 100% review of safety-related HVAC documentation, and a reinspection of all remaining safety-related ductwork supports. This led to the development of a Mechanical Department Work Plan and a Quality Work Plan.

The Mechanical Department Work Plan categorized deficiencies identified during support documentation review as follows:

- Transposition errors
- Documentation errors
- Non-deficient items
- Field added traveler sheets

Corrective actions included correcting documentation in accordance with Paragraph 3.19 of Procedure WP-VII-209, Revision 11, and Paragraph 3.16 of Procedure WP-VIII-202, Revision 0; cutting out and rewelding supports; revising CAR No.1-M-0012 to omit non-deficient items; and noting field added sheets on the original sheets. All weld repair or rework is documented on revised travelers along with weld maps.

Personnel were retrained in the proper use of the W-100 and WCR forms prior to further rework or inspections.

Under the Quality Work Plan, final weld reinspections were accomplished as follows:

- Acceptable reinspections were documented by the Level II Quality Inspector in the appropriate space of the WCR along with the CAR Number.
- Unacceptable reinspection results were documented on surveillance reports and handled as follows:
 - (a) Surface defects were repaired in accordance with paragraph 5.1.1 of Procedure CWP-504.
 - (b) Subsurface defects were repaired in accordance with paragraph 5.1.2 of Procedure CWP-504.
 - (c) Undersized welds were repaired by the addition of weld metal, inspected, and documented in accordance with the original and supplemental WCR.

All safety-related HVAC ductwork supports (approximately 600) were reinspected and, where required, repaired/reworked to meet specification and code requirements. Personnel were retrained to the revised procedures and the proper use of WCR and W-100 forms.

Verification of actions to close CAR No. 1-M-0012 were dated and signed January 20, 1983.

h. Conclusions

Based upon the inspection conducted by the NRC it is concluded that:

- (1) There is reasonable assurance that the HVAC systems are constructed in accordance with the required specification, procedures and drawings.
- (2) The welders and QC inspection personnel involved in HVAC work were properly certified.

- (3) The actions taken by the licensee resulting from an audit/investigation stemming from allegation received in 1981 were adequate, resulting in a reinspection, rework and repair program that corrected the problems that existed with the installation and inspection of the HVAC system during the 1979-1980 time period.
- (4) The allegations addressed above were with the exception of forgery substantiated by the licensee. The corrective action program, however, was appropriate and these allegations are considered closed.

During the NRC inspector's systems walkdown no major problems were identified, however, a few minor concerns were noted and voiced by the inspector as follows:

- A few support welds had not received a coating of CZ11 as required by specifications.
- Two angle iron support braces had been installed without zinc coating.
- Essential Service Water lines V072 and V073 supplying water to air conditioning units A & B had insulation removed, were very rusty, and were leaking.

These items were corrected prior to completion of the inspection. The inspector suggested that the licensee perform further inspections of the HVAC systems to assure other deficiencies of this type do not exist.

3. Exit Meeting

The inspector met with licensee representatives (denoted in persons contacted) at the close of the inspections on September 14 and 28, 1984. The scope and findings of the inspection were discussed.