

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

REGION III

Report No. 50-358/80-05

Docket No. 50-358

License No. CPPR-88

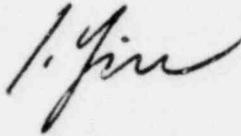
Licensee: Cincinnati Gas and Electric Company
139 East 4th Street
Cincinnati, OH 45201

Facility Name: Wm. H. Zimmer Power Station

Inspection At: Zimmer Site, Moscow, Ohio, February 21-22, 1980
Sargent & Lundy Engineers, Chicago, ILL, March 5-6, 1980
USNRC, Region III, Glen Ellyn, ILL, March 7, 1980

Inspection Conducted: February 21-22 and March 5-7, 1980

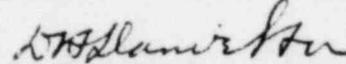
Inspector: I. T. Yin



3/28/80

Accompanying Personnel: R. C. Knop

(March 7, 1980 only) T. E. Vandel

Approved By: 
D. H. Danielson, Chief
Engineering Support Section 2

3/28/80

Inspection Summary

Inspection on February 21-22, 1980 and March 5-7, 1980 (Report No. 50-358/80-05)

Areas Inspected: Inspection of small bore piping design control, control of design specifications and instructions, identification and resolution of field identified nonconformances, site piping design personnel qualification: review of previously identified unresolved items. The inspection involved a total of 28 inspector-hours on site, in the A-E's office and in RIII office by one NRC inspector.

Results: Of the five areas inspected, no apparent items of noncompliance were identified in two areas. Three apparent items of noncompliance were identified in three areas (infraction - inadequate design control for safety-related small bore piping suspension systems - paragraph 4.b; infraction - inadequate design specification and instruction document control - paragraphs 2.a and 5; infraction - inadequate control of field identified nonconformances - paragraph 4.a.)

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DETAILS

Persons Contacted

Site Inspection on February 21-22, 1980

Principal Licensee (CG&E) Personnel

W. W. Schwiers, QA Manager
J. F. Weissenberg, QA and S Engineer
J. B. Vordenbrueggen, Field Engineer

Henry J. Kaiser Company (HJK)

K. R. Baumgarten, QA Manager
M. Feltner, Chief Piping Engineer
D. Ritchie, Senior Design Engineer

Inspection on March 5-6, 1980 at S&L Office

CG&E

W. W. Schwiers, QA Manager
J. F. Weissenberg, QA and S Engineer

Some of the S&L Representatives

R. Pruski, Project Manager
R. F. Scheibel, Project Director
O. A. Hrynewych, Mechanical Project Engineer
J. E. McFarland, Head, QA Division
R. P. Paullukonis, Administrator, EMD
J. B. Adee, Jr., QA Coordinator

Inspection on March 7, 1980 at RIII Office

CG&E

*W. W. Schwiers, QA Manager
*J. F. Weissenberg, QA and S Engineer

USNRC - RIII

*I. T. Yin, Reactor Inspector
*T. E. Vandel, Project Inspector
R. C. Knop, Section Chief

*Denotes those attending the exit interview on March 7, 1980.

Licensee Action on Previously Identified Items

(Closed) Unresolved Item (358/79-10-01): Inadequate procedure for conducting pipe whip restraint design. During the inspection at the S&L office, the inspector reviewed the S&L Project Instruction PI-ZI-15.1, "Verification of Final Piping Whip Restraint Design", Revision 0, dated April 4, 1979, and had no adverse comments. Furthermore, two of the four main steam line pipe whip restraint calculations were reviewed to ensure procedure implementation. No apparent problem areas were identified.

(Open) Unresolved Item (358/78-27-03): Inadequate document control by the S&L design engineer. Followup inspections were performed and documented in RIII Reports No. 50-358/79-03, and No. 50-358/79-10. The inspector reviewed the S&L Organization Position Description Manual, and found that the education and experience requirements for the Engineering Analyst (EA) had been established. However, in reviewing the training requirements for the EA's per S&L EMD APB, "Documentation and Control Requirements for On-the-Job-Training", Revision 0, dated May 16, 1979, it was not apparent as to what revisions of EMD work procedure No. 11 these EA's were trained and qualified to. This item remains open.

Functional or Program Areas Inspected

A special inspection on small bore piping suspension systems design and installation was conducted at the site and at the A-E's office.

1. Responsibility

- a. At present, the design of small bore process lines and instrumentation lines of 2" NPS and below is performed by S&L. The installation and inspection of the suspension systems is the responsibility of HJK. The support detail preparation and installation of the small bore hangers and restraints are based on the following documents:

S&L Specification H-2256, "Erection of Phase II (Above Ground) Piping Systems and Mechanical Equipment," Supplement 18, dated April 2, 1979.

HJK Field Construction Procedure (FCP) 2-22, "Drawing Preparation - Small Bore Field Run Piping", Revision 1, dated February 11, 1980.

HJK FCP 2-24, "2" and Under Piping and Hanger Drawings", Revision 3, dated November 15, 1979.

HJK FCP 2-115, "Pipe Support Installation - Small Bore Piping", Revision 1, dated December 7, 1977.

HJK FCP 2-134, "Installation of NX (Instrumentation) Type Pipe Supports:", Revision 1, dated March 16, 1979.

- b. For the design of future safety-related small bore piping suspension systems 2" and below and low temperature and pressure systems up to 6" NPS, the work has been contracted to Nuclear Power Services, Inc. (NPS). The design basis is contained in a S&L document, EMD-020455, "Simplified Dynamic Analysis for Wm. H. Zimmer Nuclear Plant Station, Unit 1", Revision 2, dated November 2, 1979. This document is referenced in the S&L Bid Specification No. 101, "Specification for Piping Supports Design and Related Activities", issued on October 18, 1979. As stated by the S&L Project Manager, the final design review and approval of NPS work will be the responsibility of the S&L design engineers.
- c. In addition, NPS was contracted by S&L to resolve problems for pipe hanger and restraint installations that deviated from or that will be in different from the design requirements. The evaluation basis is contained in a S&L document, EMD020394, "Support-Restraint Field Design Change Reconciliation Criteria", Revision 0, dated November 12, 1979. This document is referenced in the S&L Bid Specification No. 102, "Specification for Preliminary Field Verification of Supports Feasibility and Preliminary Design Consulting Services", Addendum 1, dated October 24, 1979.

2. Review of Specifications and Procedures

In reference to Paragraph 1 above, the inspector reviewed the following applicable specifications and procedures, and commented:

a. S&L Specification H-2256

No adverse comments on the technical content. During his review of some of the Design Document Changes (DDCs) attached to the front of the specification (which dated back to 1974) the inspector noted that they had not been incorporated in the document. The apparent lack of a control cover page listing all applicable and valid DDCs, is an item of noncompliance identified in Appendix A. An additional S&L lack of document control item was identified during the inspection at the S&L office (see Paragraph 5). (358/80-05-01).

b. HJK FCP 2-22, 2-24, 2-115, and 2-134

No adverse comments.

c. S&L Specifications 101 and 102

- (1) There appeared to be a lack of established personnel qualification requirements for the NPS design staff,

including, basic education and work experience requirements, certification by the employer prior to work assignment, and indoctrination and continuous training during work performance. This is an unresolved item. (358/80-05-02).

- (2) Since most NPS designers were recent hires, whether or not their educational background and work experience had been verified by NPS or S&L was not apparent during the inspection. This is an unresolved item. (358/80-05-03).
- (3) Specification 101 does not provide guidance for the NPS design staff on specific hanger, pipe attachment, anchor bolt, and structural assembly design. An S&L representative stated that guidance will be provided to NPS prior to initiation of work at the site. This is an unresolved item. (358/80-05-04).
- (4) The Reconciliation Criteria contained in Specification 102 will be reviewed by the inspector during a future inspection.

3. Procedure Implementation

In reference to Paragraph 1a, the present work by HJK was reviewed by the inspector. The HJK work scope is described in S&L Specification H-2256, Section 303, "Piping Furnished and Erected by Contractor". The HJK implementing procedures are FCP 2-22, 2-24, 2-115, and 2-134. The inspector reviewed the hanger details contained in HJK field drawings:

M-148-WR-40, Revision 16, dated August 11, 1977
M-148-WR-41, Revision 9, dated May 10, 1977
M-148-WR-42, Revision 10, dated May 10, 1977

The inspector noted that the work had been done in accordance with S&L drawing M447-17 requirements. The supports were detailed in accordance with S&L M-471 series drawing requirements.

No items of noncompliance or deviation were identified based on the above review; however, problems were identified during observation of work and a subsequent review of the DDCs (see paragraph 4).

4. Observation of Small Bore Pipe Restraint Installations

The inspector observed a number of seismic restraints installed on the 1/2" Standby Liquid Control System, and the 1/2" Reactor Building Close Cooling Water Instrumentation System, and identified the following problems:

a. Inadequate Control of Nonconformances

- (1) Large gaps were observed between the pipes and the restraints, such as on INX-1287-HG, INX-1288-HG, and others. This is in nonconformance with S&L Drawing M-471, Sheet 39, Revision K, which states, "When hanger is designated as a guide on hanger schedule, the instrument line is clamped into place by tightening bolts to assure snug fit".
- (2) In review of the HJK initiated DDC M-10583, dated October 24, 1979, and other DDCs, two generic problems were identified, i.e. (a) the common use of DDCs to document nonconformances instead of using NRs and (b) no specific problem areas were identified and described in the DDCs.

This is an item of noncompliance identified in Appendix A. (358/80-05-05).

b. Inadequate Design Control

- (1) In review of HJK initiated DDC M-10744, dated December 7, 1979, a design table was provided for the small bore pipe guides and anchors. This table was without prior concurrence and approval by S&L design engineers. In observation of work, the following installations were identified:

<u>No. of Pipes</u>	<u>Anchor</u>	<u>Structure</u>
1	1/2" INX 2659HA	W4x13 7'0"
2	1/2" INX 1293HA	W4x13 8'0"
2	1/2" INX 1296HA	W4x13 6'9"
2	1/2" INX 1289HA	W4x13 6'9"
2	1/2" INX 1295HA	W4x13 6'9"

These installations were not in compliance with Chart C of S&L Drawing M471, Sheet 46, Revision C, requirements, which states, for the pipe anchor design:

"For one 1/2" line up to 4'0" long, W4x13 structure should be used."

"For two 1/2" lines up to 4'0" long, W8x17 structure should be used."

- (2) A number of small bore pipe restraints and anchors were observed installed on various common structures, like trees with many branches, such as the six 1/2" pipes on

INX 1294HG, INX 3715HG and INX 1288HG. (A DDC M-10583 was written without explanation, see Paragraph 4.a. (2) above). The design basis for the multiple structural assembly was not provided by S&L.

This is an item of noncompliance identified in Appendix A. (358/80-05-06).

5. Inspection at S&L Office

Besides followup inspection on previously identified unresolved matters, and discussions and reviews of NPS personnel qualifications relative to S&L Specification work requirements as documented in this report, S&L document control was also reviewed by the inspector.

In reviewing S&L's Engineering Mechanics Division (EMD) Technical Procedure No. 11, "Preparation, Review and Approval of Safety-Related Components in Systems", Revision 3, dated July 3, 1978, it was found that the "Standard EMD Checklist for Piping System Stress Analysis" was Revision 4, without date. In discussion with the S&L QA, it was stated by the Head, QA Division that the present procedure permits Chart and Table revisions within a procedure without issuing a new procedure revision and obtaining the review and approval of the designated authorities. This is an item of noncompliance identified in Appendix A in conjunction with problems identified in S&L Specification H-2256 (see Paragraph 2.a). The S&L Head, QA Division, stated that the corporate QA procedure will be revised and audits will be performed in the subject areas. (358/80-05-01).

6. Licensee Presentation at RIII Office

As a result of the site inspection conducted on December 27-28, 1979, and the management meeting held on January 17, 1980, at the site as documented in RIII Report 50-358/79-37, extensive upgrading of the licensee QC inspection on hangers and restraints was initiated by the licensee. The licensee informed the RIII office within two weeks that 100% re-inspection of all installed hangers and restraints will be conducted by the HJK QA inspectors. A subsequent licensee presentation on their revised program was made at RIII office on March 7, 1980. During the meeting, the inspector stated additional improvements in the following areas should be included in the new program:

- a. Clarification on organizational structure and work interface.
- b. Better description of personnel responsibilities.
- c. Additional QA and Technical audits of program performance.

- d. Formal trending analysis to be conducted by QA and technical departments on DDCs, NRS, and all other problem indicators.
- e. Licensee monitoring efforts on S&L Specification 101 and 102 work to be implemented by NPS.
- f. Conditional hanger and restraint work release subsequent to the lifting of the stop work order.
- g. 100% inspection on all safety-related concrete expansion bolts.

Followup on the above requirements will be conducted by the inspector. This is considered an unresolved item. (358/80-05-07).

Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of non-compliance, or deviations. Four unresolved items disclosed during this inspection are discussed in Paragraphs 2.c.(1), 2.c.(2), 2.c.(3), and 6.

Exit Interview

The inspector met with the licensee representatives (denoted under Persons Contacted) at the conclusion of the inspection on March 7, 1980. The inspector summarized the purpose and findings of the inspection. The licensee acknowledged the findings reported herein.