

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

REGION III

Report No. 50-358/80-25

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, OH  
Licensee Corporate Office, Cincinnati, OH

Inspection Conducted: December 2-3, 1980 at the Site  
December 16, 1980 at the Corporate Office

Inspector: *D. H. Danielson*  
*fr* I. T. Yin

2/19/81

Accompanying Personnel: R. C. Knop  
F. T. Daniels (December 16, 1980 only)

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

2/19/81

Inspection Summary

Inspection on December 2-3 and 16, 1980 (Report No. 50-358/80-25)

Areas Inspected: Safety related suspension system design and construction program established by RCI; licensee control of nonconformances. The inspection involved a total of 20 inspector-hours onsite by one NRC inspector.

Results: Of the areas inspected, nine apparent violations were identified.

(Failure to establish all applicable design basis in the CRD suspension system specification - Paragraph 1.a; Failure to identify and describe the RCI organizational interfaces and personnel authorities and responsibilities - Paragraph 1.b; Failure to establish adequate procedures, instructions, and drawings for design and installation of the CRD suspension system - Paragraph 1.d; Failure to establish ASME Code qualification documentation for Unistrut P-1000 - Paragraph 1.e; Failure to conduct comprehensive audits of RCI activities - Paragraph 2; Failure to establish effective corrective action for recurring suspension system design and installation problems - Paragraph 3; Failure to follow procedures for the voiding of nonconformance reports - Paragraph 4.a; Failure to adequately control nonconforming conditions - Paragraph 4.b.)

## DETAILS

### Persons Contacted

#### Cincinnati Gas and Electric Company (CG&E)

\*E. A. Porgmann, Senior Vice President  
\*B. K. Culver, Manager of Construction  
\*W. W. Schwiers, Manager of QA  
J. F. Weissenberg, QA Engineer  
R. P. Ehas, Senior QA Engineer  
J. B. Vorderbrueggen, Construction Engineer

#### Henry J. Kaiser Company (HJK)

R. Marshall, Construction Manager  
P. S. Gittings, Site QC Manager  
R. E. Baker, Inspection Supervisor  
D. Painte, Lead Hanger Inspector

#### USNRC-RIII

\*R. C. Knop, Section Chief  
\*F. T. Daniels, Senior Resident Inspector  
\*I. T. Yin, Reactor Inspector

\*Denotes those attending the management exit interview on December 16, 1980 at the conclusion of the inspection.

### Functional or Program Areas Inspected

#### 1. RCI Program for Design and Installation of CRD System Supports

RCI work has been completed and RCI personnel departed the site by July 1979. The inspector reviewed the existing RCI documents including:

- . RCI QA Manual, Revision 4, dated November 21, 1977.
- . S&L Specification H-2832, "Specification for Installation of Reactor Pressure Vessel Internals and Control Rod Drive Hydraulic System", dated December 20, 1973.
- . RCI Constraint Installation Procedure, RIP-1, dated April 15, 1976.
- . Miscellaneous installation and inspection records.

As a result of a review of the above RCI documents and discussions with the CG&E QA personnel, the inspector determined the licensee's control

over the RCI design and installation of the CRD suspension systems did not meet the CG&E FSAR commitments. This was based on:

- a. The S&L Specification H-2832 did not provide (1) necessary design and acceptance criteria for seismic and other transient event conditions, such as number of vibration modes, effects of hydrodynamic loads, primary and secondary code stress acceptance levels, (2) design methods to be used for combining loads, and (3) the design interface for auxiliary steel and main structures. This is considered an item of noncompliance. (358/80-25-01)
- b. The RCI QA Manual did not identify and describe organizational interfaces and personnel authorities and responsibilities. Based on a review of CG&E audits of RCI from 1975 and 1979 there was a lack of a contractor QA program evaluation by the licensee. This is considered an item of noncompliance. (358/80-25-02)
- c. There were incomplete procedures, instructions, and drawings for installing the CRD suspension system. The inspector noted that the available procedures and drawings were very sketchy and did not include, among others, instructions for (1) installation of concrete anchor bolts, (2) torquing of fasteners, and (3) installation and configuration tolerances. This is considered an item of noncompliance. (358/80-25-03)
- d. In reviewing RCI drawings, such as ZM-2009-18, only 50% of the concrete expansion anchor bolts had been checked for proper torquing. The licensee committed to perform 100% inspection on all safety related suspension systems, including concrete expansion bolts (See Region III Report No. 50-358/80-05). The requirement for 100% inspection of the hanger work is included in H. J. Kaiser QACMI M-15, "Concrete Expansion Anchor Post - Installation Procedure" and QACMI M-12 hanger inspection requirements. The records did not verify, among others, torquing of fasteners and installation configuration tolerances. The inadequate QC inspection of safety related suspension systems was a noncompliance identified during an August 1978 inspection by the RIII inspector, however, the licensee's corrective action was not extended to the CRD system. This is considered an item of noncompliance. (358/80-25-04)
- e. There was no authorized ADME Code welding procedure specification and procedure qualification records for the materials involved in the fabrication of supports and restraints using Unistrut P-1000, an ASME Code Case 1644-8 material. This is considered an item of noncompliance. (358/80-25-05)

## 2. Licensee Audits of RCI Activities

The following CG&E audit reports were presented to the inspector for his review. These were the only audits conducted and none of these involved RCI CRD safety related suspension system design and field installation.

CG&E Field Audit Report (FAR) No. 55 of RCI on September 17, 1975. Audit areas included welding control.

CG&E FAR No. 66 of RCI on June 3, 1976. Audit areas included nonconformance control.

CG&E FAR No. 107 of RCI on April 12, 1977. Audit areas included general QA program implementation of welding and NDE.

CG&E FAR No. 200 of RCI on October 10, 1978. Audit areas included contractor compliance of ANSI N45.2.6 requirements.

CG&E FAR No. 222 of RCI on February 20, 1979. Audit areas included welding procedure qualifications.

CG&E Audit Report No. 77/20 of RCI, Waterford, Connecticut on May 24, 1977. Audit areas included CRD pipe fabrication.

The licensee's system of audits of RCI in the area of CRD hanger systems was not considered adequate for the following reasons:

- a. There were no licensee audits of RCI CRD design activities at the RCI corporate office.
- b. There were no licensee audits of RCI suspension system installation activities at the site.
- c. There was an apparent lack of specific CG&E program requirements to perform program audits at the RCI office after contract award.

Subsequent to the inspection, the CG&E QA Manager issued a Stop Work Order (SWO), No. 80-14, dated December 9, 1980 which stated "Effective immediately, activities by Reactor Controls Inc. associated with the Wm. H. Zimmer Nuclear Power Station shall be discontinued", and "This stop work order will be rescinded following acceptance of RCI QA Program and Procedures, and successful completion of an audit to evaluate QA Program implementation". The reason given for issuing the SWO was "The current status of RCI QA Program implementation is judged to be indeterminate".

An Immediate Action Letter was sent to the licensee on December 24, 1980, confirming the stop work and requiring NRC review prior to the lifting of the stop work.



The failure of the licensee to conduct comprehensive audits to determine the effectiveness of the RCI QA program is considered an item of noncompliance. (358/80-25-06)

3. Licensee Corrective Action

The licensee corrective action for identified suspension system installation problems had not been effective. This determination was based on:

- a. Licensee hanger and concrete expansion type anchor bolt installation program deficiencies were first identified in August 1978. Findings were documented in RIII Inspection Report No. 50-358/78-18. To the date of inspection, after more than 90% of the safety related suspension system components had been installed (more than 50% required simple modification or extensive rework), the QC program for the installation and inspection of the suspension system has not proven to be effective. Items b and c below are findings that support the above conclusions.
- b. Repeated large bore suspension system construction and design deficiencies were documented in the following RIII Inspection Reports:
  - (1) 50-358/78-27: Inspection performed in November 1978.
  - (2) 50-358/78-32: Inspection performed in December 1978.
  - (3) 50-358/79-22: Inspection performed in July 1979.
  - (4) 50-358/79-37: Inspection performed in December 1979 and January 1980.
- c. RIII inspection of safety related small bore process piping and instrumentation piping suspension system design and installation at the Zimmer site was conducted during February and March 1980. This inspection identified problems similar to those previously identified in large bore piping systems (See RIII Report No. 50-358/80-05). This clearly shows that the licensee did not take initiative to improve and control the suspension system design and installation program to cover all areas of safety related work.
- d. The apparent lack of licensee review of implementing procedures to ensure that revision of one procedure does not conflict with another and does not invalidate the commitments to NRC or the requirements of other departments was discussed during a management meeting at the CG&E corporate office on August 15, 1980. At the conclusion of the meeting the licensee indicated that they were aware of the problem, yet the NRC site inspection conducted on October 1-2, 1980 (RIII Report No. 50-358/80-22) identified procedural conflicts and deficiencies in Field Construction Procedures (FCP) 2-115, FCP 2-134, and

Quality Assurance and Construction Manual Instruction (QACMI) M-12. In fact, as of October 1980, the HJK QACMI M-12, "Inspection Instructions for Pipe Hangers and Installation Supports", Revision 1, dated February 21, 1979, had been revised nine times and the latest revision was number 10, dated September 16, 1980. Subsequently, the inspector was told that QACMI was revised again to Revision 11. The problem was not corrected as of the inspection on December 16, 1980, where the latest HJK nonconformance control procedure was found to be in conflict with the latest CG&E QA procedure.

As a direct result of the RIII inspector's findings, stop work orders were issued by the licensee in the areas of: (1) concrete anchor bolt installation, (2) mechanical snubber installation, (3) hydraulic snubber installation, (4) small bore hanger installation, and (5) CRD suspension system activities. In addition, a licensee 50.55(e) report was submitted to RIII in area of large bore pipe hanger design deficiencies.

In view of the continued occurrence of safety related suspension design and installation problems, and recurrence of some of the same problems, the licensee's established corrective action measures are considered to be insufficient and ineffective. This is considered an item of noncompliance. (358/80-25-07)

#### 4. Licensee QC Inspection

There is an apparent lack of QC management control over the implementation of approved procedures. During this visit the inspector reviewed approximately twenty QC inspector initiated Nonconformance Reports (NRs) in the area of hanger inspection during the period of October and November 1980. Among these, many AWS welding deficiencies were identified based on the requirements established in HJK Special Process Procedure Manual SPPM 4.6, "Visual Examination", Revision 8, dated September 28, 1980. These NRs were written in accordance with HJK QACMI G-4, "Nonconformance Material Control", Revision 7, dated April 7, 1980. In reviewing the NRs, the inspector noted that the NRs listed below had been voided by the HJK QC Manager. The reason given was "based on re-inspection", and was not concurred with by all four levels of the QC inspection work force, i.e., (1) Quality Control Inspectors, (2) Lead Inspectors, (3) Inspection Supervisor, and (4) Quality Engineer, who all had signed and approved the contents and documentation of the NRs.

NR No. E-2796	NR No. E-2851
NR No. E-2852	NR No. E-2853
NR No. E-2854	NR No. E-2857
NR No. E-2861	NR No. E-2865

The NRs listed below are also incidences where NRs were voided by initiating a Design Document Control (DDC):

NR No. E-2871	NR No. E-2875
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The inspector determined the following:

- a. The voiding of the NRs by the HJK QA Manager was not in accordance with the HJK QCMI G-4, Revision 7, paragraph 3.6, which states that NRs can be voided only under conditions where the NRs were "initiated in error, duplicated, or the nonconforming condition has been corrected...by construction". This is considered an item of noncompliance. (358/80-25-08)
- b. The voiding of an NR by issuing a DDC is not in accordance with HJK procedural requirements, and is a repeat of a similar noncompliance identified in RIII Report No. 50-358/80-05 (inspection conducted in February and March 1980), paragraph 4.a(2), which stated..."Generic problems were identified, i.e., the common use of DDCs to document nonconformances instead of using NRs...". This is considered an item of noncompliance. (358/80-25-09)

Subsequent to the inspection, the CG&E QA Manager issued two Stop Work Orders (SWOs):

- . SWO No. 80-13, dated December 9, 1980 stating..."Effective immediately, the voiding of HJK Nonconformance Reports will stop". The reason given was: "HJK QA procedure governing the writing and processing of nonconformance reports does not have sufficient control to permit a careful review of an established nonconformance report that is subject to being voided".
- . SWO No. 80-12, dated December 9, 1980 stating..."Effective immediately, the preparation of DDCs on all pipe supports shall be stopped". The reason given was: "Contrary to procedure, DDCs are being used to request approval for as-built conditions which deviate from design drawings".

#### Exit Interview

The inspector met with the licensee representatives (denoted under Persons Contacted) at the conclusion of the inspection on December 16, 1980. The inspector summarized the purpose and findings of the inspection. The licensee acknowledged the findings reported herein.