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

REGION III

Report Nos. 50-373/81-17; 50-374/81-11

Docket Nos. 50-373; 50-374 License Nos. CPPR-99; CPPR-100

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, IL 60690

Facility Name: LaSalle County Station, Units 1 and 2

Inspection At: Reactor Controls, Inc. (RCI), San Jose, CA
Quadrex Corporation (Quadrex), Campbell, CA
General Electric Company (GE), San Jose, CA

Inspection Conducted: May 4, 1981 at RCI
May 5, 1981 at Quadrex
May 6, 1981, at GE

Inspector: I. T. Yin 6/11/81

Approved by: D. H. Danielson, Chief 6/11/81
Materials and Processes
Section

Inspection Summary

Inspection on May 4-6, 1981 (Reports No. 50-373/81-17; 50-374/81-11)
Areas Inspected: Followup on previously identified inspection findings. The inspection involved a total of 24 inspector-hours at licensee contractor offices.
Results: Of the areas inspected, one apparent violation was identified. (Inadequate document control at GE, San Jose, CA - Paragraph 3.b.)

DETAILS

Persons Contacted

Inspection at RCI on May 4, 1981

Commonwealth Edison Company (CECo)

*B. R. Shelton, Project Engineering Manager
*E. Wendorf, Field Engineer

Sargent and Lundy Engineers (S&L)

*J. M. Nosko, Mechanical Engineer

RCI

*G. Secchi, Engineering and Construction Manager
*W. Frohn, Project Engineer
*R. K. Crum, QA Manager
*J. Courtney, LaSalle Site Manager

*Denotes those attending the management exit interview on May 4, 1981.

Inspection at Quadrex on May 5, 1981

CECo

*B. R. Shelton, Project Engineering Manager

S&L

*B. R. Parduhn, Mechanical Engineer

Quadrex

*G. McGovern, Project QA Engineer
*S. Mahajan, Engineering Manag
*A. Morshedi, Project Manager
*C. D. Roady, QA Manager
D. Baseman, QA Engineer
*J. R. Reedy, Manager QA Projects
*R. Naymark, Vice President- Piping and Supports
J. Goldin, Staff Consultant, Corporate QA
G. Esswein, Manager, P&C Analysis
H. Lie, Manager, Pipe Support Engineering

*Denotes those attending the management exit interview on May 5, 1981.

Inspection at GE on May 6, 1981

CECo

*B. R. Shelton, Project Engineering Manager

S&L

*B. R. Parduhn, Mechanical Engineer

GE

*J. R. Pobre, Design Engineer
*H. R. Peffer, Project Manager
*J. C. Major, Manager, Piping Equipment Design
*P. Binesh, Piping Design Engineer
*J. Thompson, Piping Analysis
*R. J. Valencia, Audit Coordinator

*Denotes those attending the management exit interview on May 6, 1981.

Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (373/80-12-06; 374/80-08-06): Two issues were raised by the inspector, i.e., (1) 8 inch scram header seismic restraints were welded to non-seismic category overhead walkway-galleries, and (2) RCI design and QA measures were not apparent. For the first issue, the inspector reviewed CECo NCR No. 338 (dated August 16, 1979 and disposition approved on March 4, 1980) issued to monitor U-1 Gallery seismic reinforcement work, and NCR 391 (dated February 4, 1980, and disposition approved on July 11, 1980) issued to monitor U-2 Gallery structural re-work, and had no adverse comment. For the second issue, a complete update of the QA program and work procedures had been established and implemented by RCI. The CECo audits of RCI are also considered to be effective.

(Closed) Noncompliance Items (373/80-20-01; 374/80-13-01; 373/80-20-02; 374/80-13-02): Lack of design control at RCI. Followup inspection performed at RCI was documented in Region III Reports 50-373/80-48; 50-374/80-30; 50-373/81-02; and 50-374/81-02. The inspector reviewed the overall RCI revised program, including RDSA-1, "Procedure for Review of Design or Stress Analysis Reports Submitted by Vendors or Subcontractors," Revision 0, dated December 4, 1980, and QAI-3-1, "Instruction for Interfaces Between Engineering and Stress Analysis," Revision 1, dated February 20, 1981, and had no adverse comment.

(Closed) Noncompliance Items (373/80-20-06; 374/80-13-06; 373/80-48-05; 374/80-30/05): Lack of CECo audit of RCI. A large number of QA audits and surveillances were carried out by CECo subsequent to the problems being identified. The inspector reviewed some of the audit reports and considered the licensee measures to be adequate. Relative to the effective resolution of CECo audit items by RCI, the inspector reviewed LaSalle QA

Superintendent QAL No. 3285, Revision 1, dated April 2, 1981, and considered the corrective actions to be sufficient. In conjunction with details described in Paragraph 1 of this report, these items are considered closed.

(Closed) Noncompliance Item (373/80-48-04; 374/80-30-04): Lack of RCI QA/QC program including organizational interface, document control, and establishment of necessary work procedures. Complete overhaul of the RCI QA/QC program took place since the problems were identified. The results of the followup inspection conducted by the inspector in January 1981, were document in Region III Reports 50-373/81-02; 50-374/81-02. Nine out of the ten open items discussed in Paragraph 1 of the report were resolved during this inspection.

(Closed) Unresolved Item (373/80-48-01; 374/80-30-01): Transformation of S&L design requirements into NSC procedures. The inspector reviewed NSC SAR P-2.9, "Preparing and Issuing Addenda and Revisions to the Comprehensive Stress Analysis Report," Revision 0, dated December 2, 1980, and QUAD-7-79-025," Safety-Related Piping Stress Analysis Instruction," Revision 5, dated April 30, 1981, and considered NSC procedural requirements to be adequate.

(Closed) Unresolved Item (373/80-48-02; 374/80-30-02): Use of lubrite plates inbetween pipe supports and base plates for systems with design temperature of more than 150°F. The inspector reviewed Section 5 (Expansion Anchor Plates, Embedded Plates, Lubrite Plates) of the NSC QUAD-7-79-027, "Pipe Support Procedures and Guidelines," Revision 16, dated April 23, 1981, and had no adverse comment.

(Open) Unresolved Item (373/80-48-03; 374/80-30-03): The Quadrex internal audit program is still considered to be questionable. For details see Paragraph 2.1 of this report.

(Open) Unresolved Item (373/79-19-02; 374/79-13-02): The need for evaluation of the ITT-Grinnell hanger design. During this inspection a lack of GE document control was observed. The review of the ITT-G hanger effort will be continued during a future inspection.

Functional or Program Areas Inspected

1. Inspection RCI on May 4, 1981

   a. As a result of the Region III inspection and licensee audits at RCI in November 1980, CECo issued a stop work order to halt CRD suspension system design, installation, and inspection activities. As corrective actions were put in place, partial and final lifting of the work orders were permitted, as follows:

      (1) Resumption of document control functions, material purchase, and drafting activities began on March 10, 1981.

(2) Resumption of concrete expansion anchor bolt installation, HCU bracing member installation, and QA inspections began on April 9, 1981.

(3) Final lifting of the stop work orders was dated April 16, 1981.

Licensee measures were reviewed by the inspector at the site during a March and April 1981 inspection (Region III Reports 50-373/81-12; 50-374/81-07) and also during this inspection. The inspector has no further questions at this time.

b. In review of the licensee resolutions for the open items documented in Region III Reports 50-373/81-02; 50-374/81-02, Paragraph 1.a through j, the following positions were taken by the inspector:

(1) Paragraph 1.a, "Personnel authorities, duties, and qualification requirements."

The inspector reviewed the RCI "Employee Qualifications and Job Responsibilities" manual, Revision 0, dated February 5, 1981. This matter is considered resolved.

(2) Paragraph 1.b. and c, "Training program implementation prior to safety related work activities," and "Formal training program to maintain personnel proficiencies."

The inspector reviewed the RCI QAI-2-2, "Instruction for QA Training Program," Revision 3, dated February 23, 1981, and some of the recent (April 1981) LaSalle site RCI employee training and indoctrination records. This matter is considered resolved.

(3) Paragraph 1.d, "Design manuals to contain design bases and methods."

The inspector reviewed RCI QAI-3-13, "Instructions Engineering and Design Control," Revision 0, dated February 9, 1981, in conjunction with CECo Audit Report 1-81-23, dated April 15, 1981. This matter is considered resolved.

(4) Paragraph 1.e, "Acceptable tolerance for suspension system installation and QC inspection."

The inspector reviewed RCI Drawing No. LA-IIS, "Installation Information Sheet for CRDHS Component Supports," Revision 1, dated April 10, 1981. This matter is considered resolved.

(5) Paragraph 1.f, "Hanger Inspection detailed checklists." The inspector reviewed RCI QAI-8-2 for LaSalle 1 and 2, "Installation Procedure for Component Supports," Revision 2, dated March 23, 1981. This matter is considered resolved.

(6) Paragraph 1.g, "Walkdown procedure to document existing installed CRD system conditions."

In conjunction with LaSalle Project Construction Superintendent letter, LCS 2588, dated April 15, 1981, to RCI relative to the lifting of the stop work order, and in review of the RCI generic QAI-8-4, "Instruction for As-Built Inspection/Verification Walk Down," Revision 1, dated April 24, 1981, the inspector was in concurrence with CECo that RCI should develop and submit for the licensee approval a walkdown procedure which meets the requirements of IE Bulletin 79-14. This is an unresolved item (373/81-17-01; 374/81-11-01).

(7) Paragraph 1.h, "Verification of effectiveness of document control systems."

The inspector reviewed CECo Audit Report No. 1-81-23, dated April 15, 1981, and LaSalle QA Surveillance Report No. 81-248, reported on April 21, 1981, and closed on April 22, 1981, and considered that CECo measures relative to the subject matter are adequate. This matter is considered resolved.

(8) Paragraph 1.i, "WPS and PQS for P-1000 Unistrut material."

This item was resolved during a site inspection. See Region III Report Nos. 50-373/81-12; 50-374/81-07, Paragraph 6.

(9) Paragraph 1.j, "VT procedure to include specific QA inspection checklists and acceptance criteria."

The inspector reviewed RCI VE-10, "Visual Examination Procedure Structural Steel Welds - Component Supports," Revision 2, dated March 12, 1981. This matter is considered resolved.

2. Inspection at Quadrex on May 5, 1981

a. Quadrex QA Audit Program

In conjunction with Region III Inspection Reports No. 50-373/80-48; 50-374/80-30, Paragraph 1.d, "Review of Audit Records," the inspector reviewed the following Quadrex internal audit reports.

- No. 80-03, conducted in March 1980 at the Campbell design engineering office.

- No. 80-06, conducted in August 1980 at the LaSalle site.

- No. 80-07, conducted in October 1980 at the home office, and ATI, Clifton, N. J. office.

- No. 81-03, conducted in February 1981 at the Campbell design engineering office.

The inspector also reviewed a number of project quality surveillance reports, including:

- GAS-ALL-0004
- QAS-03/06-003
- AS-81-7
- AS-80-027

These audit and surveillance reports were checked to determine whether or not the following established work procedures have been audited for effective implementation:

- QAP-1001, "Internal Audits, Planning and Performance," Revision 1, dated August 1, 1980.

- QAP-1003, "Audit Report and Followup," Revision 1, dated August 1, 1980.

- QUAD 7-79-028 relative to document control.

- QUAD 7-80-001 relative to drawing review.

- QUAD 7-80-074 relative to design changes

- QUAD 7-79-025 relative to stress analysis

- QUAD 7-79-027 relative to pipe support design

- QUAD 7-80-040 relative to drafting

As a result of the review, the inspector stated that areas audited and surveyed were lacking in detail. Furthermore, planning of audits and surveillances was not performed in a systematic manner to ensure total coverage of all essential ongoing program areas. Unresolved items 373/80-48-03; 374/80-30-03 remain open.

b. Review of Engineering Documentation

The inspector selected the following two stress calculation packages for review for adequacy and completeness of verification and documentation:

. HP-06, "High Pressure Core Spray System," dated July 18, 1980
. WR-04, "Closed Water Cooling System," dated October 6, 1980

Review also included the following two system suspension components:

. Guide M09-HP-09-1007G
. Snubber M09-HP09-1030S

The evaluation criteria were based on Quadrex procedure QUAD 7-79-025, "Safety-Related Piping Stress Analysis Instructions," Revision 5, dated May 1, 1981. Evaluation areas included Section 4.6 relative to completeness of subsystem work packages, and Section 5.3 relative to documentation requirements prior to initiation of the computer program file update work.

No items of noncompliance or deviations were identified.

c. Followup on Allegations

On May 20-21, 1980, IE Headquarters assisted RV in an investigation into allegations lodged against Quadrex. These allegations concerned Quadrex's work on its contract with Sargent and Lundy. Three of the allegations and the inspectors findings are addressed below.

(1) Allegation: "Quadrex is doing an extensive updating of the existing fire protection system on the LaSalle Project. This is a three year program. NRC should check Quadrex' involvement in this area."

Quadrex involvement in the subject areas is restricted to non-safety related fire protection piping suspension system design. The work is governed by QUAD-2-79-006, "Technical Specification for Non-Safety Related Work, Purchase Order No. CD-302," Revision 5, dated March 18, 1980.

The total scope of work will include approximately 25 fire protection subsystems that will be documented in reports QUAD-1-79-745, "ANSI B31.1 Subsystem 2FP-99 Report."

The essential LaSalle plant fire protection system design and arrangements including (1) sprinkling systems, (2) separation of equipment, (3) use of supressives, such as carbon dioxide, Halon, water, and etc., and (4) dry or wet pipe system routings are all handled by S&L.

(2) Allegation: "Audits of Quadrex were announced by CECo and S&L."

In discussion with the QA Director during a telephone conference, it was stated that although there was no specific policy written in the CECo corporate procedures, the auditors are instructed not to provide the contractors to be audited with the audit checklist, and not to allow the persons to be audited to read the prepared audit checklist items.

In addition, announced external audits are considered acceptable and in accordance with NRC regulations.

(3) Allegation: "Audits of Quadrex by CECo and S&L were not done in depth. Paper work was examined as to form, but the calculations were not checked for accuracy."

The inspector reviewed the CECo audit reports, dated:

- September 23-25, 1980, Audit of Quadrex, findings included: (1) nine items of noncompliance, (2) two items of observation, and (3) three comment items.

- March 25-27, 1980, Audit of Quadrex, findings included: (1) eight items of noncompliance, (2) three items of observation, and (3) three comment items.

The inspector also reviewed the S&L Reports on External Audits:

- E-1, performed on September 30 - October 2, 1980 at the site and Quadrex, and facilities at S&L, findings included two items of noncomformance.

- E-2, performed on November 13-14, November 17, 1980 at Quadrex, and facilities at S&L, findings included four items of nonconformance.

- E-3, performed on January 28-29, February 5-6, and February 17, 1980 at the site, Quadrex, and facilities at S&L, findings included three items of nonconformance.

In review of the audit details and the large number of findings identified, the inspector concluded that the audits performed by CECo at S&L were adequate. However, the lack of Quadrex internal audits discussed in Paragraph 2.a of this report will be further reviewed during a future inspection.

No items of noncompliance or deviations were identified.

3. Inspection at GE on May 6, 1981

a. In review of piping suspension system design adequacy, the inspector selected SB 5 and SC 5 on the 26 inch diameter Main Steam pipe lines for review. A design loading of 75,072 pounds was listed in GE Design Report 22A7430, "Main Steam Piping and Equipment Load," Revision 0, dated March 4, 1981. The selected 100,000 pound capacity PSCo mechanical snubber is considered to be very conservative.

No items of noncompliance or deviations were identified.

b. The inspector also selected Main Steam spring hanger HB1 for review. Mark No. 1-HB1 shown on ITT-Grinnell detail drawing, Revision 7, dated February 6, 1981 shows: (1) hot load of 12,730 pounds, (2) cold load of 15,132 pounds, and (3) thermal movement of 1.357 inchs upward. These design values were different on the set of GE drawings presented during the inspection. The drawings were:

GE Drawing No. 767E106, "Steam Pipe Suspension"

- Sheet 1, Revision 8, dated November 3, 1980
- Sheet 2, Revision 6, dated October 26, 1977
- Sheet 3, Revision 8, dated November 3, 1980

The GE drawing shows: (1) hot load of 13,500 at a thermal movement of 1.496 inchs upward.

The apparent discrepancies were investigated by the GE design engineering staff. Their findings were:

(1) ECN NH11317, dated 11/25/80 revised loadings and thermal movements of spring hangers HB 1, HB 2, HB 3, HC 1, HC 2, and HC 3. These changes have already been incorporated into Revision 9 of GE Drawing 767E106, dated January 8, 1981.

(2) Per the above ECN, two FDI's No. 120/57435, Revision 0, dated February 19, 1981 for LaSalle Units 1 and 2 were issued to reset the affected hangers in accordance with the vendor instructions.

(3) GE Design Report 22A7430, "Main Steam Piping and Equipment Load," Revision 0, dated March 5, 1981 incorporated the latest HB 1 hanger design data. The data was based on GE stress calculation, Revision 9, dated January 8, 1981. However, the report still referenced Revision 8 of the GE drawing 767E106, which had been superseded by Revision 9 as discussed above.

In observation of the GE document control system, it was apparent that members of the GE staff individually maintained a design file, and some of the superseded drawings were not required to be removed or marked for reference information use. In discussion with the GE piping design supervision, the inspector was told that the document control problems had been discussed internally before; however due to its generic nature, any measures to be taken will require concurrence of the company management. The inspector stated that the lack of adequated document control is an item of noncompliance. (373/81-17-02; 374/81-11-02)

c. Regarding the licensee implementation of the IE Bulletin 79-14 relative to GE Main Steam and Recirculation Loop piping systems, the GE design engineering staff will verify that the existing Piping Design Subsection Procedure Manual, Section Y1003K01A02, "Verification of Stress Report Conformance to Piping Suspension Hardware," dated April 22, 1980, met all evaluation requirements established in IE Bulletin 79-14. This is considered to be an unresolved item. (373/81-17-03; 374/81-11-03).

The site pipe systems walkdown will be conducted by MCCO. The MCCO procedure was reviewed by the inspector during previous site inspections and was considered to be acceptable.

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 Paragraphs 1.b.(6), and 3.c.

Exit Interview

The inspector met with licensee representatives at the conclusion of the inspection. The inspector summarized the scope and findings of the inspection. The licensee acknowledged the findings reported herein.