

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

REGION III

Reports No. 50-295/80-19; 50-304/80-19

Docket Nos. 50-295; 50-304

Licenses No. DPR-39; DPR-48

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

Facility Name: Zion Station, Units 1 and 2

Inspection At: Stone and Webster Engineering Corp., NY
(August 27-28, 1980)
Zion Site, Zion, IL
September 17, 1980
Sargent and Lundy Engineers, Chicago, IL
(September 16-18, 1980)

Inspection Conducted: August 27-28, and September 16-18, 1980

Inspectors: *D. H. Danielson*
I. T. Yin

10/1/80

J. R. Costello, Principal Inspector, IE:RIV
(September 16-18, 1980 at S&L)

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

10/1/80

Inspection Summary

Inspection on August 27-28, and September 16-18, 1980 (Reports No. 50-295/80-19 and 50-304/80-19)

Areas Inspected: Licensee actions relative to IE Bulletin 79-14, including general discussion on NRC requirements, work procedure review, and observation of work. This inspection involved 36 inspector-hours onsite by one NRC inspector.

Results: No items of noncompliance or deviations were identified.

DETAILS

Persons Contacted

Inspection at Stone and Webster Engineering Corporation - New York
Operations Center - Power (SWEC) on August 27-28, 1980

Commonwealth Edison Company (CECo)

C. K. Richardson, Principal Engineer

SWEC

W. R. Curtis, Lead Engineer, Engineering Assurance Division (EA)
C. L. Silvestrelli, EA Supervisor
D. S. Patel, Project Engineer, Engineering Mechanics Division (EMD)
K. Y. Chu, Manager, EMD
M. Hartman, Section Head Operations Services
W. F. Eifert, Assistant Chief Engineer, EA
S. B. Jacobs, Chief Licensing Engineer
M. A. Rosen, Manager, SWEC - NY
P. Garfinkel, Assistant Manager, SWEC - NY
R. E. Foley, Assistant Chief Engineer, EMD
P. Dunlop, Assistant Engineering Manager

Inspection at Sargent and Lundy Engineers (S&L) on September 16-18, 1980

CECo

*T. Tramm, Project Engineer
*G. Marcus, Director of QA
J. Reiss, SNED Engineer
K. Arber, Technical Staff Engineer, Zion

S&L

*R. H. Jason, Project Manager
*A. P. Gillis, Senior QA Coordinator
S. Azzazy, Project Engineer
G. T. Kitz, Assistant Head, Engineering Mechanics Division (EMD)
E. B. Branch, Head, EMD
R. M. Tamera, Project Leader, MD and D

SWEC

*P. Dunlop, Assistant Engineering Manager
*K. Y. Chu, Manager, EMD

Inspection at Zion Site on September 17, 1980

CECo

J. Reiss, SNED Engineer
K. Arber, Technical Staff Engineer, Zion

*Denotes those attending the management exit interview on September 18, 1980

Functional or Program Areas Inspected

1. Work Performed at SWEC on August 27-28, 1980

a. Procedure Review

The inspector reviewed the following IEB 79-14 implementing procedures:

- (1) SWEC Procedure ZPP-1, "Procedure for Zion Station Units 1 and 2 Pipe Stress and Supports Evaluation", Revision 3, dated August 27, 1980. The inspector stated that the safety relief valve blowdown loadings in combination with seismic loads had not been taken into consideration. This is an unresolved item (295/80-19-01; 304/80-19-01).
- (2) SWEC Procedure ZPP-2, "QA Plan for Consulting Services to CECo on Zion Units 1 and 2", Revision 0, dated July 2, 1980. No adverse comment.
- (3) SWEC Procedure ZPP-3, "Procedure for Zion 1 and 2 Document Control", Revision 0, dated August 1, 1980. No adverse comment.
- (4) SWEC Procedure ZPP-4, "Procedure for Zion 1 and 2 Operability Verification Pipe Stress and Support Evaluation", Revision 0, dated August 1, 1980. No adverse comment.
- (5) CECo Procedure, "Procedures for Implementing CECo Special Zion Nuclear Station Inspection Procedure for IE Bulletin 79.14", Revision 1, dated August 17, 1979. The following areas require further review:
 - (a) The procedure had not been updated to include the SWEC Supplementary Procedure J013430 revisions. The latest SWEC revision was issued on February 15, 1980. This is an unresolved item (295/80-19-02; 304/80-19-02).

- (b) In conjunction with IE:RIV report No. 99900507/79-03, dated October 12, 1979, paragraph 3.g(2), relative to the lack of shear lugs on pipe clamps to prevent slippage during an axial loading condition, the S&L engineers determined that torquing the pipe clamp bolts was required. A letter dated October 30, 1979, was forwarded to CECO. This recommendation was not included in the site inspection procedure. The licensee stated that the effect of clamp slippage is presently being evaluated by SWEC. This is an unresolved item (295/80-19-03; 304/80-19-03).
- (c) In conjunction with IE:RIII report Nos. 50-295/79-17; and 50-304/79-16, dated August 24, 1979, measurement or record review to verify correct pipe size, schedule, and material had not been included as a part of the procedural requirements. This is an unresolved item (295/80-19-04; 304/80-19-04).

b. Program Provisions Evaluation

In the course of procedure review and personnel interviews, the following provisions appeared to require additional measures in the established overall program:

- (1) The IEB 79-14 task group authority and responsibility was not clearly established and delineated in writing. The organization chart was established in SWEC Procedures. This is an unresolved item (295/80-19-05; 304/80-19-05).
- (2) The IEB 79-14 task group personnel qualification for verification functions was not established and documented in writing. This is an unresolved item (295/80-19-06; 304/80-19-06).
- (3) Specific training program for the IEB 79-14 evaluation personnel had not been established. Some of the general training conducted in the past excluded the working level staff. This is an unresolved item (295/80-19-07; 304/80-19-07).
- (4) In reviewing the records, it was evident that SWEC verified all employee resumes; however, in the case of one of the hanger design engineers that was terminated because of a faulty resume involving previous work experience, this individuals work had not been rescinded or reverified by a qualified person. This is an unresolved item (295/80-19-08; 304/80-19-08).

- (5) Although a system to verify every one of the IEB 79-14 calculation packages by the Engineering Assurance personnel was in place, there appeared to be a lack of comprehensive QA program implementation audit by the SWEC QA Department. This is an unresolved item (295/80-19-09; 304/80-19-09).

c. Review of Document Control

A number of problem areas were identified. These matters will be reviewed further during a future inspection. Deficiencies observed included:

Inter-office memordandums that had not been issued, reviewed, and approved in accordance with QA requirements were being used as work instructions and procedures.

New work procedures had not been distributed and voided procedures were in use at work locations.

Project Books, such as M3.3, had not been updated to include all the latest procedures and documents. This is an unresolved item (295/80-19-10; 304/80-19-10).

d. Technical Review

Unit 2 Main Steam lines 2MS-1 thru 4 inside the containment were selected for review. For 2MS-2 and 4, where constant spring supports had been installed, the inspector had no adverse comments. For 2MS-1 and 3, where a rigid dummy leg support was installed on the first elbow away from the missile barrier wall penetration, the inspector noted the following:

- (1) It is not a common design practice, particularly on a critical system like M.S., to design for a rigid support where the thermal computer run has shown an upward growth of 0.33 inch.
- (2) Had the worse thermal transient conditions been taken into analytical consideration?
- (3) With the uplift due to system thermal growth and counter action of the pipe dead weight itself, the exact nature of the support characteristics, including possible large amount of weight and seismic loading redistributions were unknown.
- (4) Pipe guide conditions at the missile barrier wall penetration were not inspected by the field staff. The detail drawing was marked "inaccessible" without explanation.

The MS System and other evaluation packages will be reviewed further by the inspector during a future inspection. This is an unresolved item (295/80-19-11; 304/80-19-11).

2. Work Performed at S&L and at Zion Site on September 16-18 , 1980

a. Slotted Holes on Rigid Seismic Restraints

Subject matter was discussed in IE:RIV report No. 99900507/79-03, dated October 12, 1979, paragraph 3.g(1). During this inspection, the EMD engineers presented the inspector the following ASME papers for his review:

"Analysis of Piping Systems With Nonlinear Supports Subjected to Seismic Loading" by D. A. Barta of Westinghouse Hanford Company, Richland, Washington.

"Effects of Piping Restraints on Piping Integrity", edited by R. H. Mallett and R. M. Mello of Westinghouse Electric Corporation, R. A. Meyer of Black and Veatch Consulting Engineers, and E. J. Van Stijgeren of Earthquake Engineering Systems.

"Comparison of Linear and Nonlinear Seismic Analysis of Piping" by W. G. Brussalis Jr. of Westinghouse Electric Corporation.

The inspector stated that he will review these papers in the RIII office and evaluate the applicability of these articles. This is an unresolved item (295/80-19-12; 304/80-19-12).

b. Procedure Review

The inspector reviewed the following S&L evaluation procedures, and had no adverse comments:

S&L Project Instruction PI-ZI-06, "IEB 79-14 Procedure for Processing the As-Built Information from the Station Inspection, Revision 2, dated September 5, 1980.

S&L EMD File No. 019074, "Criteria for Determining Deviation From Seismic Analysis Inputs for Zion Station Units Nos. 1 and 2, CECO", Revision 00, dated August 14, 1979.

c. Technical Review

- (1) Only three subsystems had been final reviewed and analysed by S&L. These are 2SW-36, SW-31, and SW-16. In review of 2SW-36 by the inspector, he determined that the work was implemented in accordance with the approved procedures. Although the water weight in the valves had not been included

in the weight and seismic analyses, due to the low stress levels in the system, it appeared to have no effect on safe system operation.

- (2) For the subsystems that were evaluated by S&L for operability due to gross deviations identified during field inspections, the inspector selected the following suspension components where S&L determined that rework or reinstallation of missing items should be done at the site. S&L notified CECo relative to the work requirements between September, 1979 and January, 1980.

- . CCRS-1270A of subsystem CC-31-2
- . 2CC104-H167 of subsystem CC-30
- . 2CS024-H15 of subsystem 2CS-15
- . VCRS-1449, and 1VC278-H3 of VC-11-2
- . VCH-1186A of subsystem RC-9

The inspector reviewed the work package at the Zion Site on September 17, 1980, and determined that the repair or reinstallation was performed in a timely manner.

- (3) Hanger No. CCH-1508 of subsystem CC-8A required modification and was classified as an "item of gross deviation." A temporary fix by CECo was carried out on August 28, 1979, shortly after instruction from S&L. A S&L letter dated October 4, 1979, to CECo outlined the permanent fix design requirements. CECo responded in a letter dated January 9, 1980, with a proposed alternative fix. Subsequently, the design responsibility was forwarded from S&L to SWEC in a letter dated February 8, 1980. To the date of this inspection, no permanent fix had been initiated for the hanger. The issue of when permanent modification of hangers should be made after temporary fixes are in place should be addressed by the licensee. This is an unresolved item (295/80-19-13; 304/80-19-13).

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. Thirteen unresolved items disclosed during this inspection are discussed in paragraphs 1.a(1), 1.a(5)(a), 1.a, and 2.b(3).

Exit Interview

The inspector met with the licensee representatives (denoted under Persons Contacted) at the conclusion of each of the inspections. The inspector summarized the purpose and findings of the inspection. The licensee acknowledged the findings reported herein.