

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/84-09(DRS)

Docket No. 50-341

License No. CPPR-87

Licensee: Detroit Edison Company  
200 Second Avenue  
Detroit, MI 48224

Facility Name: Enrico Fermi Nuclear Power Plant, Unit 2

Inspection At: Enrico Fermi 2 Site, Monroe, MI

Inspection Conducted: April 9-13, 17-20, 25-27, May 1-4, 15-17, 29-31, and  
July 2, 1984

Inspectors: P. D. Kaufman *P.D. Kaufman* 7/25/84  
Date

For I. T. Yin *P.D. Kaufman* 7/27/84  
Date

For R. L. Cilimberg *P.D. Kaufman* 7/27/84  
Date

*J. Muffett*  
J. Muffett 7/27/84  
Date

For D. E. Keating *P.D. Kaufman* 7/27/84  
Date

Approved By: *D.H. Danielson*  
D. H. Danielson, Chief 7/27/84  
Materials and Processes Section Date

Inspection Summary

Inspection on April 9-13, 17-20, 25-27, May 1-4, 15-17, 29-31, and July 2, 1984  
(Report No. 50-341/84-09(DRS))

Areas Inspected: As-built walkdown and review of quality and design documents of safety-related piping systems and structural steel and licensee action on previously identified items. The inspection involved a total of 203 inspector-hours onsite by five NRC inspectors. An inspection at the Stone & Webster office in Cherry Hill, NJ involved a total of 36 inspector-hours by two NRC inspectors.

Results: In the areas inspected, two items of noncompliance were identified.  
(Failure to control revisions to design documents - Section I, paragraph 4.a;  
failure to follow procedures - Section I, paragraph 4.b)

## DETAILS

### 1. Persons Contacted

#### Detroit Edison Company (DECo)

\*W. J. Fahrner, Manager, E. F. 2  
\*W. M. Street, Supervising Engineer/Civil  
\*S. Noetzel, Assistant Manager, E. F. 2  
\*M. Deora, Systems Engineer  
W. R. Wingfield, Nuclear QA/Corrective Action Group Leader  
\*L. P. Bregni, Licensing Engineer  
\*E. H. Newton, Supervisor, QA Staff  
\*L. Powers, Senior Technician  
\*J. Mullins, Welding Engineer  
\*P. Nadeau, Licensing QA Technician  
J. Wynn, Work Leader  
\*R. A. Vance, Assistant Project Manager/Engineer  
\*J. H. Casiglia, Piping Equipment Engineer  
\*E. O'Keener, Licensing Supervisor  
\*R. C. Moore, Work Leader/Engineering Mech.  
\*T. Young, Lead Design Field Engineer  
\*G. M. Trahey, Director Nuclear QA  
D. Schweikhart, Supervisor  
D. Nadol, Supports  
M. S. Williams, Senior Engineer/Mechanical Engineering  
J. F. Malaric, Supervisor/Hanger Engineering  
\*W. Holland, Vice President

#### Stone & Webster Engineering Corporation (S&W)

\*F. Ogden, Lead Engineer/EMD-SWMI  
\*J. Oliver, Principal Engineer/Supports-SWMI  
W. J. L. Kennedy, Manager CHOC  
H. Reese, Manager of Projects  
\*R. Strych, Project Manager  
A. Chan, Manager/EMD  
\*D. E. Winge, Project Engineer  
J. M. Lord, Manager Engineering Assurance  
\*M. I. Gilman, QA Department Supervisor  
W. H. Chamberlain, Assistant Engineering Manager  
\*R. P. Byrnes, Engineering Manager  
\*C. A. Fonseca, Assistant Manager/EMD  
\*W. M. Eifert, Chief Engineer/EA Boston  
\*D. A. Shaw, EA/Supervisor  
D. A. Butler, Marketing Department

#### Wisner & Becker Contracting Engineers (W&B)

M. Gong, QA Records

NRC Resident Inspectors

\*P. Byron, Senior Resident Inspector  
\*M. Parker, Resident Inspector

Sargent and Lundy

P. Hutchison, Lead Civil/Structural Field Engineer

Daniel International Corporation

M. Vanwashenova, QA Records  
J. Wright, Civil/Piping Engineer  
R. McGee, Consultant

The inspectors also contacted and interviewed other licensee and contractor employees.

\*Denotes those attending the final onsite exit interview on May 30, 1984.

2. Licensee Action on Previous Inspection Findings

See Section V.

3. Licensee Action on 10 CFR 50.55(e) Items

See Section IV and V.

4. Function or Program Areas Examined

See Sections I, II, III, IV and V for the functional and program areas inspected.

5. Exit Interview

The inspectors met with licensee and contractor representatives (denoted in Paragraph 1) at the conclusion of each onsite portion of the inspection and discussed the scope and concerns of this inspection. The licensee acknowledged the inspection findings without significant comment. Additional information was discussed with a licensee representative at the S&W Cherry Hill office on July 2, 1984.

## SECTION I

Prepared By: P. D. Kaufman  
Reviewed By: D. H. Danielson, Chief  
Materials and Processes Section

### 1. As-Built Verification - Plan Review

The inspector reviewed the licensee's as-built program of QA-I Class 1, 2 and 3 systems for safety-related piping 2½ inches in diameter and greater. The inspector verified that the design specifications and drawings used as input information for the seismic analysis reflects the actual as-built configurations. QA-I piping system attributes reviewed essential to the seismic analysis included: pipe run geometry, support and restraint design, locations, function and clearance, and valve and valve operator locations, orientation, and weights. Assessment of the above attributes was to assure the plant's safety-related piping systems were constructed, and seismically analyzed in accordance with the final design documents.

### 2. Review of Procedures

The licensee's procedures governing generation and completion of as-built design documents were reviewed to assure design changes and/or marked-up drawings were properly documented and controlled. The review encompassed the following procedures:

#### Detroit Edison Procedures

- . "Class 1, 2, and 3 Piping "As-Built" Group Procedure," FEWP-2, Revision B.
- . "Small Bore Piping and Pipe Support," FEWP-5, Revision D.
- . "Large Bore Hanger Engineering Organization Work Procedure for Field Engineering Group," FEWP-9, Revision E with interim change 2.
- . "Stone & Webster Field Engineering Group," FEWP-10 (S&W PI-19), Revision B.
- . "As-Built Change Notices," PPM-Section 3, 3.23, Revision 3.
- . "Pipe Support Design; Reconciliation of QA Category I Piping Systems and Rattle Space DDR Disposition," PI-19, Revision 4.
- . "Design Change Requests," PPM-Section 3, 3.21, Revision 6.
- . "Design Change Notices," PPM-Section 3, 3.20, Revision 6.
- . "Design Specification for Nuclear Class 2 and 3 Small Piping and Instrument and Control Piping and Tubing," 3071-525, Revision D.
- . "As-Built Reconciliation of Piping Stress Reports-EG-44," PDM-1.1, Revision 1.

#### Stone & Webster Engineering Corporation Procedures

- . "Fillet Weld Design Criteria for Pipe Supports," CHOC-EMTS-10-1, Revision 1.
- . "Design Criteria for Detroit Edison Company Category I, II, and III Pipe Supports," CHOC-EMDM-81-27, dated December 15, 1981.



Wisner & Becker Procedures

- . "QA Level I and Stress Pipe Supports (Except GE-NED)," WB-C-114, Revision 27.
- . "Installation of Snubbers," WB-C-121, Revision 13.
- . "Structural SMAW," WPS-7002, Revision 20, Interim change serial number: 537.

This review was to determine if the procedures were consistent with regulatory requirements and licensee commitments; ANSI N45.2.11 - "Quality Assurance Requirements for the Design of Nuclear Power Plants;" Regulatory Guide 1.29, "Seismic Design Classification;" IE Bulletin 74-14, "Seismic Analysis for As-Built Safety-Related Piping Systems."

No items of noncompliance or deviations were identified.

3. Safety-Related Piping System Walk Down

- a. The inspector selected As-Built Memorandum (ABM) packages from the four QA-I systems listed below for as-built reconciliation:
  - . E11-00 Residual Heat Removal
  - . E21-00 Core Spray
  - . E41-00 H. P. Coolant Injection
  - . E51-00 Reactor Core Isolation Cooling

As-Built verification of QA-I systems consisted of the following design disclosure documents in the ABM packages:

- . (-2s)--Hanger location Isometrics
- . (-1s)--Piping Isometrics
- . Individual Hanger Sketches

The contents of the ABM packages were reviewed for adequacy against the As-Built Summary Sheet Forms and for completeness of design documents, including title, identification number, and revision required to perform a stress analysis evaluation of the walkdown data and as-analyzed conditions.

- b. The inspector performed field walkdowns of large bore piping and associated components randomly selected from the above QA-I systems. Comparison of actual system configurations with the detailed as-built construction drawings was to determine whether the final design documents were consistent with the as-built information contained in the ABM packages indicated below:

<u>ABM No.</u>	<u>Stress Report No.</u>	<u>System</u>
0061 Revision D	(MS) 22A-7628 Revision 1	Reactor Core Isolation Cooling
0063 Revision B	FW-05 Revision 1	High Pressure Coolant Injection
0053 Revision B	CS-01 Revision 2	Core Spray

<u>ABM No.</u>	<u>Stress Report No.</u>	<u>System</u>
0084 Revision E	X-227A Summary dated 12-3-82	Core Spray
0162 Revision A	RHR-01/06 Revision 2/2	Residual Heat Removal

- c. In conjunction with the above ABM packages, the licensee assembled the following drawings, including latest Design Change Requests (DCRs), for system as-built verification walkdown by the NRC inspector and members of the licensee's staff:

Package No.

ABM-0061      6M721-2192-1 Revision L  
6M721-2192-2 Revision G  
B21-2192-G01  
B21-2192-G02  
B21-2192-G04  
B21-2192-G05  
B21-2192-G06  
B21-2192-G07  
B21-2192-G11  
B21-2192-G13  
B21-2192-G14  
B21-2192-G15  
B21-2192-G16

ABM-0063      6M721-3167-1 Revision J  
6M721-3167-2 Revision J  
E41-3167-G01  
E41-3167-G02  
E41-3167-G03  
E41-3167-G04  
E41-3167-G05  
E41-3167-G06  
E41-3167-G07  
E41-3167-G08  
E41-3167-G09  
E41-3167-G10  
E41-3167-G11  
E41-3167-G12  
E41-3167-G13  
E41-3167-G14  
E41-3167-G15  
E41-3167-G16  
E41-3167-G17  
E41-3167-G18

ABM-0053      6M721-3053-1 Revision S  
6M721-3053-2 Revision G  
E21-3053-G01  
E21-3053-G02

E21-3053-G03  
E21-3053-G04  
E21-3053-G08  
E21-3053-G10

ABM-0084

6M721-3147-1 Revision R  
6M721-3147-2 Revision K  
E21-3147-G01  
E21-3147-G04  
E21-3147-G05  
E21-3147-G06  
E21-3147-G08  
E21-3147-G09  
E21-3147-G10  
E21-3147-G11  
E21-3147-G12  
E21-3147-G13  
E21-3147-G14  
E21-3147-G15  
E21-3147-G27  
E21-3147-G28  
E21-3147-G29  
E21-3147-G30  
E21-3147-G31  
E21-3147-G32  
E21-3147-G33  
E21-3147-G34  
E21-3147-G35  
E21-3147-G36  
E21-3147-G37  
E21-3147-G38  
E21-3147-G39  
E21-3147-G40

ABM-0162

6M721-3177-1 Revision J  
6M721-3177-2 Revision N  
E11-3177-G03  
E11-3177-G05  
E11-3177-G09  
E11-3177-G10  
E11-3177-G17  
E11-3177-G18  
E11-3177-G19  
E11-3177-G20  
E11-3177-G21  
E11-3177-G23  
E11-3177-G25  
E11-3177-G26  
E11-3177-G27  
E11-3177-G30  
E11-3177-G31  
E11-3177-G32  
E11-3177-G34



E11-3177-G35  
E11-3177-G36  
E11-3177-G37

No items of noncompliance or deviations were identified.

4. Reconciliation of As-Built Pipe Support Calculations

During review of the as-built pipe support design calculations and applicable procedures by the Region III inspector, the following observations were made:

a. Deficiencies in Document Control

- (1) S&W procedure CHOC-EMTS-10-1, Revision 1, "Fillet Weld Design Criteria for Pipe Supports," was revised by an interoffice memorandum dated October 19, 1981. The memo modified minimum fillet weld sizes, as a function of the base metal thickness, for all non-ASME designs, by referencing the Eighth Edition to the AISC Manual. This conflicts with S&W's pipe support calculation reference cover sheets, which references and requires the Seventh Edition to the AISC Manual be used for pipe support calculations.
- (2) The maximum support deflection of 1/16 inch at point of loading in the restrained direction, as required by S&W procedure CHOC-EMDM-81-27, paragraph 4.3.2, was being relaxed per a Tel-Con-Note dated December 2, 1983, from DECo to S&W. The tel-con was referenced in S&W calculation Z-E11-162, Revision 5 of pipe support E11-3177-G25. The inspector after reviewing the tel-con, concluded that the tel-con was not applicable to the above support, which is contained on Stress Report No. RHR-01/06. The tel-con, as stated, was intended for Stress Report No. FW-03, a QA Level II Non-Seismic line.
- (3) During interviews with licensee and contractor (S&W) personnel the NRC inspector was provided with copies of the DECo telephone memorandum and S&W interoffice memorandum that revised design criteria as addressed in subparagraph (1) and (2) above. The licensee was queried as to the availability of procedure change notices or any other formal documentation to revise the design criteria. The inspector was informed that the only available documentation was the subject telephone memorandum and interoffice memorandum discussed above.

The licensee was informed that failure to assure that revisions to procedures are properly reviewed and approved is an item of noncompliance in accordance with Criterion VI of 10 CFR 50, Appendix B. (341/84-09-01)

Subsequent to the inspectors findings, the licensee informed all Fermi 2 contractors by letter, dated May 15, 1984, on the proper methods of revising procedures. This letter states in part, "Since procedures are documents used to control the work effort, a memorandum is not an acceptable way to revise a procedure."

b. Failure to Follow Procedures

- (1) W&B Procedure WB-C-114, states, in part, that "attachment points of structural members to base plates may vary 1/8 inch in any direction without a Design Change Request (DCR) or 1½ inches in any direction with a subsequent DCR being written," Contrary to the above, S&W pipe support E11-3177-G23 (DCR No. P-6289, Revision G) and calculation Z-E11-161, Revision 9, did not reflect the 4 1/8 inch attachment point offset of structural member item (H) to base plate item (P).
- (2) DECo Procedure FEWP-9 requires that a Work Assignment Sheet/ Material Notice (WAS/MN) be prepared by the Field Engineering Group (FEG) for any rework or repairs to any pipe supports. DCR No. P-3773, Revision E to support E41-3167-G17 was issued on September 2, 1983 adding a flare-bevel-groove weld between two, 6 x 6 x ½ tube steel structural members, items (D) and (E). A WAS/MN was not initiated until the NRC inspector identified the problem to the licensee on April 19, 1984.
- (3) S&W Procedure CHOC-EMDM-81-27, Section 4.3.2 stipulates that supports be designed to a maximum deflection criteria of 1/16 inch at point of loading in the restrained direction. However, there are S&W pipe supports designed to a stiffness criteria.
- (4) The NRC inspector denoted several fillet welds in pipe support calculations not meeting the minimum size fillet weld required by the 7th Edition to the AISC Manual. Subsequently, seven S&W pipe support field design personnel were interviewed by the NRC inspector on May 2, 1984. The inspector was informed by all interviewed personnel, that both the 7th and 8th Editions to the AISC Manual were being utilized. The S&W pipe support calculation reference cover sheets specify the Seventh Edition.

The licensee is submitting an FSAR Change Notice No. 84-328 dated May 16, 1984 to delineate, that in the course of the design process, the use of later editions of the codes and/or any supplements issued thereto, has been allowed.

- (5) S&W Procedure CHOC-EMDM-81-27, Section 4.9.4 requires an intensification factor of 1.3 be utilized in all fillet weld calculations for QA Category I supports. Of the calculations reviewed by the inspector, there was no evidence of the stress intensification factor being applied to QA I fillet welds.

- (6) The inspector informed the licensee of the following deficiencies and inadequacies within S&W pipe support design calculations which could impact the acceptability of the final design:
- (a) Required deflection calculation checks not being performed as evidenced by S&W calculation Z-E11-153.
  - (b) Weld configuration, orientation, and type, differ from the calculations to the as-built drawings as depicted in S&W calculation Z-E11-494 and drawing E11-3177-G37.
  - (c) Failure to size fillet welds per the Seventh Edition-AISC Manual, as specified and referenced on the S&W List of Calculation Reference cover sheets, as indicated by S&W calculations Z-E11-491, Z-E11-158, Z-E11-157, and Z-E11-447.

Subsequently, the licensee pulled 18 S&W large bore pipe support calculations on May 3, 1984 for review by the licensee's engineering staff. The licensee's calculational findings concurred with the NRC inspectors and identified additional engineering concerns.

A meeting was held with DECo construction and design engineers at the site on May 3, 1984, to discuss this problem. DECo informed the NRC inspector of the following corrective measures they planned to institute:

- . For future calculations, S&W will further train their design personnel in the areas where generic concerns are found.
- . A third party review will be performed on all future revisions and new calculations until the licensee obtains confidence in the calculations being performed by S&W.
- . 1 out of 20 pipe support calculations will be reviewed by a DECo engineer, until the licensee obtains confidence in the calculations being performed by S&W.
- . S&W (Boston Office) Engineering Assurance (EA) personnel will perform an audit on 60 randomly selected pipe support calculations in the S&W Cherry Hill office, starting May 7, 1984. DECo will send an engineer from their staff to oversee the EA audit.
- . DECo staff, stated a written report would be compiled from the audit results and forwarded to Region III when the program is completed.

The licensee was informed failure to follow procedures is an item of noncompliance in accordance with Criterion V of 10 CFR 50, Appendix B. (341/84-09-02)

## SECTION II

Prepared By: R. L. Cilimberg  
Reviewed By: D. H. Danielson, Chief  
Materials and Processes Section

### 1. Verification of As-Builts

#### a. General

Four safety-related systems were selected for a review of documentation covering location and identification of piping and welds and a walkdown to ensure that as-built installation is in accordance with documentation. The Reactor Core Isolation Cooling (RCIC), High Pressure Coolant Injection (HPCI), Residual Heat Removal (RHR), and Core Spray (CS) were the systems selected for this inspection.

#### b. Procedures

The inspector reviewed the following specifications and procedures covering installation of the above four systems.

- . Detroit Edison Company (DECo) Specification No. 312 Revision G, Metal Arc Welding of Plain Carbon Steel
- . DECo Specification No. 311, Arc Welding of Steel
- . Ralph M. Parsons Procedure No. EII-P-1-5, Metal Arc Welding of Carbon Steel Pipe
- . Wismer & Becker Procedure Nos.
  - WB-C-103, R12, General Pipe Fabrication
  - WB-C-110, R20, Repair of Base Metal and Completed Weld Metal
  - WB-C-117, Weld Joint Fit-up
  - WB-Q-101, Control of Welding Materials
  - WB-E-109, Traveler Package for Nuclear work
  - WB-C-119, Postweld Heat Treating
  - WB-Q-115, Receiving and Inspection
  - WB-E-112, Weld Numbering and Identification
  - WB-A-113, R3, Reporting of Defects and Nonconformance
  - WB-C-118, Preheat and Interpass Temperature
  - WB-Q-103, Visual Weld Examination
  - WB-A-108, Material Control
  - WB-E-127, R13, Mechanical and Piping Turnover
  - WPS 7008, R0, R2, R5, Repair GTAW & SMAW of P1 Material 2½" NPS and Larger
  - WPS-103, R9, R14, R15, R16, R20, R23, GTAW and/or SMAW of P1 Material 2½" NPS and Larger
  - WPS 8-102, R2, GTAW of P8 to P1 Material
  - WPS 106, Combination GTAW & SMAW for Primary Steam P1 Material



- WPS 109, R9, GTAW and/or SMAW of P1 Material Less Than 2½" NPS
- WPS 108, R7, Combination GTAW & SMAW with a Consumable Insert of P1 Material 2½" NPS and Larger
- WPS 161, R1, GTAW of P1 Material 2½" NPS and Larger (not for GE)

Note: Specifications and procedures were written to meet the requirements of the ASME code Section III, 1971 Edition with Addenda through Winter 1971 and ANSI B31.1, 1973 Edition for owner Class D.

No items of noncompliance or deviations were identified.

2. Reactor Core Isolation Cooling System (RCIC)

The inspector reviewed documentation and determined by visual examination that installed piping conformed to applicable drawings, codes, standards and installation procedures for the following welds and associated piping in the RCIC system:

DECo Drawing 6M721-2192

- . Weld No. 4W0
- . Weld No. 0W5

DECo Drawing 6M721-3174

- . Weld No. 21WF4
- . Weld No. 3W21
- . Weld No. 0W8

DECo Drawing 6M721-3175

- . Weld No. 1WF1
- . Weld No. 1WS1

DECo Drawing 6M721-3176

- . Weld No. 3W0
- . Weld No. 5W0
- . Weld No. 7WF6
- . Weld No. 7W0
- . Weld No. 7WF4
- . Weld No. 7WF1
- . Weld No. 02W5
- . Weld No. 5W01
- . Weld No. 6W7

No items of noncompliance or deviations were identified.



3. High Pressure Coolant Injection System (HPCI)

The inspector reviewed documentation and determined by visual examination that installed piping conformed to applicable drawings, codes, standards, and installation procedures for the following welds and associated piping in the HPCI systems.

DECo Drawing 6M721-2297

- . Weld No. 3W0
- . Weld No. 4W0

DECo Drawing 6M721-2336

- . Weld No. 11W02

DECo Drawing 6M721-3162

- . Weld No. 1W2
- . Weld No. 9WF0
- . Weld No. 10WF4

DECo Drawing 6M721-3163

- . Weld No. 7WF1
- . Weld No. 0W10

DECo Drawing 6M721-3165

- . Weld No. 0W1

DECo Drawing 6M721-3167

- . Weld No. 8WF1
- . Weld No. 4W0

DECo Drawing 6M721-3172

- . Weld No. 6W7
- . Weld No. 3W4
- . Weld No. 1WF3

No items of noncompliance or deviations were identified.

4. Residual Heat Removal System (RHR)

The inspector reviewed documentation and determined by visual examination that installed piping conformed to applicable drawings, codes, standards and installation procedures for the following welds and associated piping in the RHR system.

DECo Drawing 6M721-2298

- . Weld No. 2W3
- . Weld No. 3W4
- . Weld No. 1W0

DECo Drawing 6M721-3146

- . Weld No. 1W2
- . Weld No. 2WF1

DECo Drawing 6M721-3151

- . Weld No. 10W0
- . Weld No. 10WF12
- . Weld No. 1W0

DECo Drawing 6M721-3152

- . Weld No. 5W0
- . Weld No. 14W0

DECo Drawing 6M721-3153

- . Weld No. 3W0
- . Weld No. 4W0
- . Weld No. 11W0

DECo Drawing 6M721-3154

- . Weld No. 11W0
- . Weld No. 11W12
- . Weld No. 13W0

DECo Drawing 6M721-3157

- . Weld No. 0W1

No items of noncompliance or deviations were identified.

5. Core Spray System (CS)

The inspector reviewed documentation and determined by visual examination that installed piping conformed to applicable drawings, codes, standards, and installation procedures for the following welds and associated piping in the CS system.

DECo Drawing 6M721-3052

- . Weld No. 0W3
- . Weld No. 2W0
- . Weld No. 0W1
- . Weld No. 1WF1

DECo Drawing 6M721-3053

- . Weld No. 0W3
- . Weld No. 2W0
- . Weld No. 2WF2
- . Weld No. 0W1
- . Weld No. 1WF1

DECo Drawing 6M721-3147

- . Weld No. 5WF1
- . Weld No. 5WF2
- . Weld No. 0W1

DECo Drawing 6M721-3148

- . Weld No. 1W6
- . Weld No. 1W7
- . Weld No. 6W0
- . Weld No. 7W0

No items of noncompliance or deviations were identified.

6. Documents Included As Part of Record Reviews

The following documentation was reviewed for the systems that were visually examined during the walkdown.

- . Form NPP-1 Reports for Piping Subassemblies
- . Form NPV-1 Reports for Valves
- . Materials Certification - Piping
- . Materials Certification - Filler Metal
- . Materials Certification - Valves
- . Weld Identification
- . Welder's Qualification History Records
- . NDE Reports
- . Welding Procedures/Specifications
- . Welding Procedures Qualification Tests

No items of noncompliance or deviations were identified.

### SECTION III

Prepared By: D. E. Keating  
Reviewed By: D. H. Danielson, Chief  
Materials and Processes Section

#### 1. Structural Walkdown

A Structural walkdown inspection was performed in the following areas:

- a. Drywell - Reactor Modifications - Framing Elevation 585'-3 7/8, Azimuth 328° to 353° - Phase 2 Modifications
- b. Drywell - Reactor Modifications - Elevation 572'-0", Azimuth 210° Phase 2 Modifications

In addition to the items and areas listed above concrete wedge type expansion anchors and the associated torquing records of Chiller foundation bolts and slant column foundation bolts were inspected. Also reviewed were the following specifications and procedures:

- . Project Specification No. 3071-226, Revision D, "Purchase and Installation of Concrete Anchors"
- . Civil Work Procedure, CWP-01, Revision 0, "Installation and Testing of Concrete Anchors"
- . Maintenance Instruction, MI-046, Revision 6, "Calibration and Adjustment of Torque Wrenches, Indicator Dial Type"
- . Chicago Bridge and Iron Procedure CBI-E-106, Revision 0, "Bolt Tensioning"

The torquing records associated with two (2) dial type wrenches, No. 4160 and No. 4284, used in the areas investigated by the inspector were also reviewed as were the calibration records of the standard used for dial type torque wrenches. This standard is a Snap-on transducer and ETS-DR, Serial No. 1005. The review of the individual wrench records revealed that the reference standard was calibrated on a regular basis and that one (1) of the two (2) dial wrenches, No. 4160, on March 30, 1984, failed a calibration test. The dial indicator stuck at 160 ft-lbs. The test value was 175 ft-lbs. NCR 140 was written against this wrench which was returned to the installation contractor who sent the wrench to the manufacture for repair on April 10, 1984.

The following additional documents were reviewed:

- . Sargent and Lundy fabrication sketches SF-528, SF-529, SF-530, SF-532, and SF-546

- . Chicago Bridge and Iron (CB&I), Cross Reference - Fabrication Sketch to Record Drawing
- . CB&I Installation Record Drawings; R78, R80, R79, R82, R130 and R131
- . CB&I Bolt Torquing Record
- . CB&I Record Drawing Table
- . CB&I Magnetic Particle Reports 131, 132, 148, 149, 169, 187, 206, 214, 221, 236, 250, and 263
- . CB&I Ultrasonic Reports 137, 138, 151, 152, 166, 186, 202, 214, 218, 232, 244, and 256
- . CB&I Nonconformance Control List
- . CB&I Repair Checklist
- . Deviation Disposition Requisition (C) 12750
- . CB&I Welder Qualification Records

Based upon the review of the above listed documents and procedures and physical walkdown of the areas referenced, no items of noncompliance or deviations were identified.



## SECTION IV

Prepared By: I. T. Yin  
Reviewed By: D. H. Danielson, Chief  
Materials and Processes Section

1. Followup Region III Confirmatory Action Letter (CAL), Dated December 10, 1982

The Region III staff was informed through a telephone call by the licensee on December 1, 1982, that a large percentage of the previously QC inspected and accepted safety-related piping supports were disclosed to be rejectable during Project QA routine surveillance observations and inspections. The Region III followup of the problem is documented in Region III Inspection Report No. 50-341/82-19, and as a result of the observation and review, a Region III CAL was issued to the licensee on December 10, 1982.

In accordance with CAL Items 1, 2, and 5, on January 20, 1983 the licensee presented to Region III their reinspection program for supports installed up to December 9, 1982. The discussions included: (1) background information, (2) reinspection features, and (3) actions initiated and completed. The program was considered to be adequate for performing the CAL requirements.

In accordance with CAL, Items 3 and 4, the inspector met with the licensee staff at the site on May 20, 1983 to review the reinspection status. The review included S&W Engineering Mechanics Division procedures, DECo Project QA Procedures, S&W, Michigan, Inc. Engineering Review Checklists, and work performance documentation. Based on the above review and evaluation, the inspector concurred with the licensee's intent to discontinue any further reinspections at the 26% completion stage, except for those areas that had been identified to contain generic problems. The DECo letter (EF2-66480), dated November 28, 1983 provided additional information on the reinspection effort. All generic problems had been resolved and the reinspection and engineering evaluation were terminated after 53% of all the supports had been inspected.

During this inspection, the inspector reviewed the S&W "Report on the Engineering Evaluation of Pipe Supports (Phase II)", dated April 26, 1984, and considered the licensee corrective actions and evaluations to be substantial and effective. The CAL item requirements are considered implemented.

2. Licensee Action on 50.55(e) Items

- a. (Closed) 50.55(e) Item (341/82-20-EE) - This is a documentation of a continuous review of the licensee's "Snubber Reduction Program (SRP)." In review of a DECo Internal Letter (EF2-68, 704A), dated May 10, 1984, the inspector was informed that a total of 29% of the

safety related snubbers deemed necessary at the beginning of the program have been dispositioned to be deleted or changed to rigid restraints. The following is the results of the SRP:

Total number of snubbers prior to SRP: 1268  
Total number of snubber after SRP: 891  
Number of snubbers changed to rigid restraints: 245  
Number of snubbers deleted from the system: 132

The inspector observed, in a S&L letter (SLM No. 1846), dated May 28, 1982, to DECo, that among the 245 rigid restraints that replaced snubbers, two were based on ALARA considerations. The inspector requested DECo to forward a formal report to closeout 50.55(e) No. 69.

This item is considered resolved.

- b. (Closed) 50.55(e) Item (341/79-07-EE) - Region III site inspection conducted on August 1-3, 1979 (Inspection Report No. 50-341/82-08) identified a problem dealing with excessive clearance on pipe hangers which required a drive fit. DECo engineering investigated this problem and indicated that the specifying of a drive fit on these supports could have resulted in a failure of the supports. A verbal 50.55(e) report was forwarded to Region III on October 2, 1979. The inspector reviewed the DECo "Report of Engineering's Evaluation of an Identified Design Deficiency in QA Level 1 Pipe Support STRUTS," EF2-50, 590, dated October 23, 1979, and DECo Purchase Orders, including No. IE-86093, to Power Piping Company to acquire new hardware for replacing the deficient ones, and had no adverse comments. This matter is considered closed.

## SECTION V

Prepared By: J. Muffett  
Reviewed By: D. H. Danielson, Chief  
Materials and Processes Section

### 1. Licensee Action on 50.55(e) Items

- a. (Closed) 50.55(e) Item (341/82-30-EE) - This item deals with contaminated fluid for hydraulic snubbers. Documentation of the licensee's program to deal with this program was reviewed and found to be acceptable.
- b. (Closed) 50.55(e) Item (341/82-35-EE) - This item deals with safety related equipment and various components supported off non-seismic block walls. Documentation associated with the licensee's program to prevent further occurrences and with the program to repair the existing cases was reviewed and found acceptable. Also a plant walkdown of some of these areas was conducted and found satisfactory.
- c. (Closed) 50.55(e) Item (341/83-17-EE) - This item deals with defective capstan springs in mechanical snubbers supplied by Pacific Scientific (PSA). The licensee documentation dealing with this problem has been reviewed and found acceptable.

### 2. Licensee Action on Previously Identified Items

- a. (Closed) Noncompliance (341/82-08-01) - This violation deals with deficiencies concerning small bore piping design. A review of the response to the noncompliance was performed and the procedures in place for this process were investigated. A plant "walkdown" was also conducted. The response was considered acceptable.
- b. (Closed) Unresolved Item (341/80-16-02) - This unresolved item deals with failure to have timely QC inspection of hangers. The response to this noncompliance has been reviewed along with the present procedures. Both the response and the present program are acceptable.