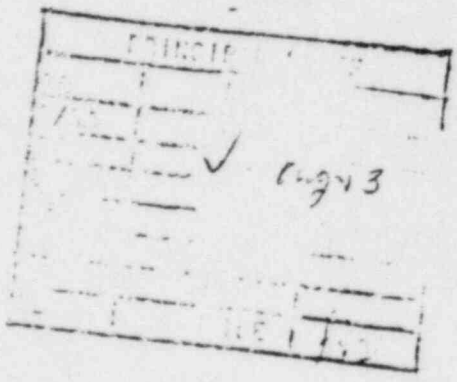
US Department of Energy

ARGONNE NATIONAL LABORATORY

9700 South Cass Avenue, Argonne, Illinois 60439

Telephone 312/972-2718

December 22, 1982
NAP-83-49



Mr. Robert Warnick, Director
Special Cases
U. S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

Dear Mr. Warnick:

Subject: Draft Inspection Report on Midland Plant - FIN No. A-2551

Two (2) copies of a draft Inspection Report are enclosed. The report covers the findings of the ANL personnel who participated in the Midland Nuclear Plant routine inspections on November 29-December 3 and December 8-10, 1982.

If you have any questions, please contact C. H. Scheibelhut, 972-8702.

Sincerely yours,

Ira Charak, Manager
NRC Assistance Project

IC/cab
Enclosure

cc: W. D. Shafer (2)

DEC 23 1982

U. S. NUCLEAR REGULATORY COMMISSION
REGION III

Report No:	50-329, -330/82-
Docket No:	50-329, 50-330
License No:	CPPR-81, -82
Licensee:	Consumers Power Company 212 West Michigan Avenue Jackson, Michigan 49201
Facility Name:	Midland Nuclear Plant
Inspection At:	Midland Nuclear Plant Site, Midland, MI
Inspection Conducted:	November 29-30, December 1-3, and December 8-10, 1982
Inspectors:	C. H. Scheibelhut J. A. Simon A. Sather R. N. Gustafson
Approved By:	

Inspection Summary

Inspection on November 29-30, December 1-3, and December 8-10, 1982
(Report No. 50-329, -330/82-)

Areas Inspected: Routine regional personnel inspection of Class 1E panels in the auxiliary building, pipe hanger/snubber/restraints in the containment, welding of reactor pressure boundary piping, and concrete penetrations in the auxiliary building. This inspection involved 256 inspector-hours onsite by four NRC regional inspectors.

Results: Of the four areas inspected, one item of noncompliance was identified (Section 1, Paragraph 3).

Section 1

Prepared by: C. H. Scheibelhut
A. Sather

Reviewed by:

1. Personnel Contacted

Consumers Power Company (CPCO)

*B. H. Peck
*J. T. Walton

Babcock and Wilcox Construction Company (B&WCC)

*V. N. Asgaonkar
*T. T. Davis
*S. Taulbee

Bechtel

*William Shearn

*Denotes those attending the exit interview.

2. Inspection of Completed ASME Section III Class I Pipe Hangers/Restraints/Snubbers and Review of Associated QC Records

Three hangers/restraints/snubbers that were completed and accepted by QC were randomly selected in Unit 2. They are identified as follows: 2CCA-1-2-H1, 2CCA-1-2-H2, and 2CCA-1-2-H3. A field inspection was made to determine if they were fabricated and installed in accordance with Drawings FSK-M-2CCA-1-2-H1 Revision 1, FSK-M-2CCA-1-2-H2 Revision 0, and FSK-M-2CCA-1-2-H3 Revision 0, respectively. No nonconformances were found.

The following QC records pertinent to the above hangers were examined to determine conformance with the Quality Assurance Criteria of Appendix B of 10 CFR 50 and the Consumers Power Company Quality Assurance Program Manual for the Midland Nuclear Plant CPC-1-A Revision 12.

- Field Construction Procedure Number 234B
- Weld Control Records BWCC Form Number 32261-2
- Filler Metal Issue Sheet BWCC Form Number 31965
- Certificate of Performance Welder Qualification Test
- Record of Filler Wire Qualification Test
- Receiving Inspection Reports for Hanger Materials (includes hangers and snubbers)
- Welding Instruction Sheet WIN-101-1
- Material Certifications and Test Reports
- NDE Inspection Reports

- Certificates of NDE Personnel Qualifications
- QC Inspection Check Lists
- Torque Record Sheets
- Technical Specification for Field Procurement of ASME Section III, Subsection NF Materials and Component Standard Supports for Nuclear Component Pipe Supports for Consumers Power Company Midland Plant Units 1 and 2. Document No. 7220-M-217(0) Revision 1.

No nonconformances were found.

A discussion of audit procedures was held. It was determined that the Babcock and Wilcox Construction Company, that is doing the work of installing the Class 1 piping and supports, is audited yearly in all of the field activities by personnel from the Copely, Ohio headquarters. Consumers Power personnel from the Jackson, Michigan office audit the B&WCC administrative functions on a yearly basis. MPQAD site personnel perform ongoing audits and surveillance of B&WCC activities.

No nonconformances were detected.

3. Observation of Work and Work Activities Associated With Reactor Coolant Pressure Boundary Pipe Welding

The B&WCC fabrication shop was visited to observe the welding of reactor coolant pressure boundary piping spool pieces. TIG welding of two stainless steel spool pieces was in progress. Welds 16 and 18 shown on Drawing FSK-M-2CCA-67-1, Revision 6 and weld 4 shown on Drawing FSK-M-2CCA-108-1, IDCN #7585 were witnessed. The welds were made in accordance with Field Construction Procedure 211-Unit 2 for welds 16 and 18 (butt welds) and FCP 729-Unit 2 for weld 4 (socket weld). The following details were observed during the course of the welding:

- Weld identification/location
- Joint preparation and alignment
- Specified weld procedure used in root pass
- Interpass temperature control
- Use of specified purge gas
- Periodic checks made to assure welding variables were within specified limits
- Instruments used to check welding variables were within recalibration dates
- Physical appearance of the welds
- Weld surface suitable for NDE
- NDE inspection of the completed welds
- No unused (uncontrolled) filler metal was present
- Receptacles were provided and used for weld rod stubs
- Sufficient QC personnel were present to make the required in-progress inspections and checks.

No nonconformances were observed.

The following procedures and records were examined for conformance to ASME Section III Class 1 code requirements:

- 9-QPP-108 Rev. 4, Receiving Inspection
- 9-WG-106 Rev. 5, Visual Examination of Welds
- WIN-219-1 Rev. 7, Welding Instruction Sheet
- 9-PT-101 Rev. 2, NDE Instructions
- Pipe and Fitting Material Certifications
- Filler Metal Certification
- QC Personnel Qualifications
- Welder Qualifications.

No nonconformances were found.

FCP-729 calls for welding a valve into the spool piece. This valve, 1-CCA-GT, was present in the fabrication shop when the inspectors arrived. However, B&WCC QC determined that the valve was nonconforming because the manufacturer's data package was not on site. The valve was subsequently removed and returned to Bechtel storage.

10 CFR 50, Appendix B, Criterion VII states, in part, "Documentary evidence that material and equipment conform to the procurement requirements shall be available at the nuclear power plant... site prior to installation or use of such material or equipment." Criterion XV states, in part, "Measures shall be established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation. These measures shall include, as appropriate, procedures for identification, documentation, segregation, disposition, and notification to affected organizations."

Consumers Power Company, Quality Assurance Program Policy No. 7, Revision 12, Paragraph 3.4, Receiving Inspection, states, in part, "Documented evidence that the items meet requirements such as receiving inspection reports, physical and chemical test reports, and certification of conformance must be available at the plant site prior to installation or use of the items... In cases where documentary evidence is not available, the associated equipment or materials is considered nonconforming." Policy No. 15, Revision 12, Paragraph 1.0, states, in part, "Nonconforming items (structures, systems, components, parts, materials) are identified by marking, tagging, segregating, or by documentation. Nonconforming items are controlled to prevent their inadvertent installation or use."

Contrary to the above, the licensee issued an item (the valve) for installation that was nonconforming because documented evidence of acceptability was not at the plant site. The failure to control nonconforming items and prevent their issuance to the field for installation was considered an item of noncompliance with 10 CFR 50, Appendix B, Criteria VII and XV, as described above.

4. Inspection of ASME Section III Class 1 Hanger Work in Progress

Preparations were observed for installation of pipe hanger 2CCA-106-1-H1(Q) associated with reactor coolant and pressure control Unit #2. Installation requirements for this hanger were delineated in Drawing FSK-MM-2CCA-106-1-H1(Q), Revision 0. During this inspection the following were observed:

a. Holes were drilled at the proper elevation and location to mount this hanger. A drilling permit No. 000525 was issued October 14, 1982.

b. Numbered hanger installation parts at the job site were checked against the FCP that was available at the job site.

No nonconformances were found.

5. Exit Interview

The inspectors met with the licensee representatives (denoted in Paragraph 1 of this report section) on December 10, 1982, and summarized the scope and findings of the inspection activities. The licensee acknowledged the inspectors' findings.

Section 2

Prepared by: J. A. Simon

Reviewed by:

1. Persons Contacted

Consumer Power Company (CPCO)

*B. H. Peck
T. A. Spelman
R. M. Wheeler

*Denotes atttended the exit interview.

2. Observation of Work in Progress

The inspector did not observe any work in progress on safety-related structures due to the owner-directed stop-work order on such items.

3. Review of Q.C. Records on Incomplete and Complete Structures

a. The inspector reviewed QC inspection records for concrete pour #C(593.75)A, containment #1, floor elevation 593'0", sumpwalls at 90°. The records were complete and in accordance with the requirements of the Bechtel Administrative Guideline C-500, Revision 0, for rebar and concrete placement.

b. The inspector reviewed a series of Field Change Requests (FCRs) issued to facilitate the installation of "special" (watertight) doors in the auxiliary building. These FCRs were issued when penetrations could not be cored through existing concrete walls due to the presence of rebar. The final solution to the problem was the issuance of a repair order (drill permit) to remove the concrete by chipping to permit relocation of rebar to allow the insertion of the needed anchors and subsequent repair of the doorway.

The modifications to the doorways had proceeded through the removal of the concrete and relocation and repair of the rebar. Quality Control Inspection Records (QCIRs) were reviewed for doors #97, 113, and 114 of level 634'6" (QCIR C600-837 and C600-838, log 177167 and 177168, resp.). No items of noncompliance or deviation were observed.

c. The inspector observed a series of cored and chipped penetrations through the reinforced poured concrete and concrete block structure of the Auxiliary Building. The installation requirements for the placement of these penetrations were delineated in specification 7220-C-231(Q).

1) Paragraph 9.2.2 of the specification states, in part, that the minimum clear distance between two penetrations shall be two times the maximum dimension of the larger penetration dimension.

a) Contrary to the above, at level 568'0", in the corridor between columns H-5.6 and H-6.2, a series of (approximately) 3" diameter holes were cored in the concrete slab; holes with the identification Nos. 200 and 201 were spaced approximately 3" apart and approximately 6" away; holes Nos. 202 and 203 were similarily spaced.

b) Contrary to the above, at level 614'0", between columns C-7.9 and C-8.7, two slotted holes approximately 6" x 2" and 8" x 2" were cored through a wall approximately 3" apart.

c) Contrary to the above, at level 634'6", in the corridor adjacent to containment No. 1, column 5.3, two irregular holes approximately 18" x 18" each were chipped through the concrete slab approximately 18" apart.

2) Paragraph 9.2.2 of the specification states, in part, that the minimum clear distance between a penetration and an existing opening (any opening shown in the design drawings, including construction openings) shall be 1 1/2 times the horizontal width of the width of the two.... Contrary to the above, at level 674'6", column J-3 in the electrical equipment room, a 10" x 24" chipped penetration through the floor slab is located 8" away from an existing penetration of the same size.

Paragraph 9.2 of the specification states, in part, that deviations from these procedures shall have written approval from Project Engineering.

3) For concrete replacement, Paragraph 17.B of the specification states, in part, that concrete shall be removed a minimum of 1" behind completely exposed reinforcing bars. Contrary to the above, at elevation 619'0", column J-9.1, a 16" x 25" penetration repair does not have 1" clear around exposed reinforcing bar. This repair appeared to be partially formed to receive concrete.

These items are considered unresolved pending a review of the licensee's records.

d. A copy of the concrete pouring specification for structural underpinning piers was obtained for staff review.

4. 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. Unresolved items disclosed during this inspection are discussed in Paragraph 3.c of this section of the report.

5. Exit Interview

The inspector met with the licensee representatives (denoted in Paragraph 1 of this report section) on December 10, 1982, and summarized the scope and findings of the inspection activities. The licensee acknowledged the inspector's findings.

Section 3

Prepared by: R. N. Gustafson

Reviewed by:

1. Personnel Contacted

Consummers Power Company

*M. Schaeffer, QA Supervisor
*E. Jones, QA
D. Nott, QA
D. Cochran, QA
*M. Berghoff, Construction QA
G. Rowe, Construction Engineering
H. Saulia, Test Engineering

*Denotes attended the exit interview.

2. Observation of Work in Progress

No construction work was in progress in the area inspected.

3. Inspection of Partially Completed Electrical Equipment

From a review of the Class 1E 4160-volt load center panels for buses 1B05, 1A05, 2A05, and 2B05 it was decided to perform a more detailed inspection of the twelve panels in the 2A05 line-up and the cable trays and hangers above them.

The panels inspected were 2A05-1 through -12 (Bechtel Drawing C-A25(Q) and ITE Drawing 33-50382-E-31). The panels were inspected for physical separation between cables of the various Class 1E channels and non-1E classification in accordance with the requirements stated in 10 CFR, Part 50, Appendix A, Criterion 17 and in IEEE Standard 384 and Regulatory Guide 1.75. The panels were also inspected for attachment of the panels to the floor as well as for workmanship of wiring and attachment to terminals. No violations were found.

Dimensions and locations of the cable trays and their hangers were checked in accordance with Bechtel Drawings E-717(Q), Sheets 1, 2, and 5 and E-617(Q), Sheet 1. No violations were found. These trays are identified as follows: 2ABB01, 2AKE01, 2AJK, 2AJB, 2ATA, and 2AJN.

One NCR tag was found at the 2A05 bus. It was to require repair of a 1/2"-hole burned in the front door of panel 2A05-12 by a welding cable. Some tags were found on control wires within the panels that were part of the program to trace all cable routings. This program and its present state of progress were explained by a licensee representative.

4. Management Exit Interview

(See general report of the team.)

NRC FORM 366 (11-81) NRCM 0279

U.S. NUCLEAR REGULATORY COMMISSION

FACSIMILE TRANSMITTAL REQUEST

REQUESTER'S MAILING ADDRESS

STREET

CITY | STATE

DATE

RETURN ORIGINAL TO SENDER: [X] YES [ ] NO

MESSAGE TO

NAME AND ORGANIZATION	FACSIMILE PHONE NUMBER	VERIFICATION PHONE NUMBER
WAYNE SHAFER, U.S.NRC REGION III	8-384-2665	8384-2693

CITY	STATE	AUTOMATIC	NUMBER OF PAGES (INCLUDING TRANSMITTAL INSTRUCTIONS)
GLEN ELLYN	IL.	[ ] YES [ ] NO	4

MESSAGE FROM

NAME	TELEPHONE NO.	FACSIMILE PHONE NUMBER		VERIFICATION TELEPHONE NUMBER
		HIGH-SPEED (up to 6 MIN.)	LOW-SPEED (20 MIN.)	
RON HERNAN	492-8395			
BUILDING	**MAIL STOP**	**AUTOMATIC**	**AUTOMATIC**	
PHILLIPS	116	[X] YES [ ] NO	[ ] YES [ ] NO	

PRECEDENCE

[ ] OVERNIGHT [ ] FOUR HOURS [ ] TWO HOURS [X] ONE HOUR [ ] IMMEDIATE

SPECIAL INSTRUCTIONS

TIME/DATE (Stamp)

RECEIVED	TRANSMITTED
	1:45 11/24/82

To: W SHAFER

FROM: R. Hernan
492-8395

Docket Nos. 50-329/330

Consumers Power Company
ATTN: Mr. James W. Cook
Vice President
Midland, Project
1945 West Parnall Road
Jackson, MI 49201

SUBJECT: (1) QUALITY ASSURANCE PROGRAM IMPLEMENTATION FOR SOILS REMEDIAL WORK (LETTER, H. R. DENTON, J. G. KEPPLER, FROM J. W. COOK, SEPTEMBER 17, 1982, SERIAL NUBMER 18845)

(2) QUALITY ASSURANCE PROGRAM IMPLEMENTATION (LETTER, H. R. DENTON, J. G. KEPPLER, FROM J. W. COOK, SEPTEMBER 17, 1982, SERIAL NUMBER 18850)

Gentlemen:

This acknowledges the subject letters regarding quality assurance program implementation.

We have reviewed the implementation programs committed to in the subject letters from the standpoint of their effectiveness in improving the quality of construction at the Midland Plant. Our review focused on the acceptability of the QA controls to be applied to the soils remedial activity and how to best prevent recurrence of past problems in the quality area. From that standpoint, our review concluded that the proposed implementation programs may improve quality if properly executed but that some parts of the program should be strengthened to improve their effectiveness. Suggestions for improvement in the soils remedial work QA implementation program and other NRC comments are identified in the enclosure to this letter. Consumers Power Company should consider these items to further improve implementation of the soils-related QA program.

A general comment on the soils remedial QA implementation letter (Reference Letter No. 1 above) is that the NRC does not consider its overview activities of the soils remedial work to be part of Consumers Power Company's implementation program as stated in the letter. The NRC presence is independent of any implementation actions on the part of Consumers Power and should not be relied upon in lieu of close Consumers Power management attention. As part of our overview function relative to the soils QA program, we intend to specifically review the measures you establish to ensure effective communications between the QC inspectors and Consumers Power upper management. We also intend to monitor, on a sampling basis, the quality indoctrinations and training sessions given to personnel involved in this work, including craft personnel.

Prior to the start of major soils remedial work, we expect the following activities to have been accomplished:

a. All QC personnel shall be qualified and certified to Consumers Power Company standards.
b. All personnel involved in the remedial soils work shall have participated in the upgraded training activities described by item (4) and the QIP indoctrination described by item (5) in reference letter (1). (See Item 3 of the Enclosure)
c. A complete master list of all commitments made regarding remedial soils work shall be in place prior to starting work. We will accept a partial list that would identify all commitments made on specific work activities planned for the first 90 days of work with a followup master list for all remaining work to be issued within 90 days from the start of work.
d. The third party independent assessment team shall be in place and functioning prior to start of work on pier 12 and other major underpinning work.

The above four activities will be closely reviewed by my staff. When they have been completed to our satisfaction the remedial soils work may be implemented in accordance with the Work Authorization Procedure. Authorization for each work activity will be given when my staff is satisfied that the work in progress is being adequately managed and controlled.

In regards to the Independent Review Program described in reference letter (2), a meeting between Consumers Power Company, its consultants, and the NRC staff was held on October 25, 1982, in Bethesda, Maryland. Results of that meeting will be documented separately.

If you have any questions regarding these matters, please contact R. F. Warnick, (312) 932-2599 or myself.

James G. Keppler
Regional Administrator

Enclosure: As stated

cc: See next page

ENCLOSURE

NRC COMMENTS ON MIDLAND QUALITY ASSURANCE PROGRAM

FOR SOILS REMEDIAL WORK [REFERENCE LETTER NO. (1)]

1. References in the letter to ACRS subcommittee comments on the soils remedial program and to NRC staff and management overview of QA implementation are considered inappropriate since the letter was intended to describe Consumers Power Company's program.

2. In the section entitled "Implementation of Design Features and Commitments", the second paragraph of the letter focuses primarily on the existence and administration of the commitment list. While commitment accountability is considered important, management attention must focus upon the overall objectives that the commitments are intended to support. Use of the list as a management tool to ensure the overall objectives are met should be incorporated into the implementation program.

3. Under "Performance of Project Construction, Quality Assurance and Quality Control Activities", the letter states that a three-hour training session has been given to personnel associated with the soils remedial work but only "down to the craft foreman level." The NRC considers that this training must be also given to crafts personnel in order to ensure that they understand the QA program and why it is needed. It also appears that this training may have over emphasized federal regulations and "the NRC", possibly at the expense of emphasizing why a quality program and associated standards are necessary. It is not apparent from the letter to what extent Consumers Power senior management was involved in presenting this training. The NRC considers senior management involvement to be important.

4. In the same section as item #3 above, it is not clear which personnel are to be included in the QIP indoctrination orientation. The letter states that it will be presented to "all individuals." The CPCo procedure describing this program should be more specific.

5. The CEO briefings discussed under "Organization, Management Involvement and NRC Overview" should specifically include performance in the quality area, using appropriate indicators from the soils Quality Improvement Program (QIP).

RIII PRR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

FEB 3 1982

Midland

Docket No. 50-329
Docket No. 50-330

Consumers Power Company
ATTN: Mr. James W. Cook
Vice President
Midland Project
1945 West Parnall Road
Jackson, MI 49201

Gentlemen:

Thank you for your letter dated January 14, 1982, informing us of the steps you have taken to correct violations 4 and 5 and the dates of corrective action for several other items identified in our Inspection Reports No. 50-329/81-12 and 50-330/81-12, forwarded by our letter dated July 10, 1981. We have no further questions regarding the responses provided in this most recent letter and your earlier letters dated August 7, 1981 and October 30, 1981.

Your cooperation with us is appreciated.

Sincerely,

C. E. Norelius

C. E. Norelius, Director
Division of Engineering and
Technical Inspection

cc w/ltr dtd 1/14/82:
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Ronald Callen, Michigan
Public Service Commission
Myron M. Cherry
Barbara Stamiris
Mary Sinclair
Wendell Marshall

(cc
1820054

Consumers Power Company

James W Cook
Vice President - Projects, Engineering and Construction

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0453

January 14, 1982

Mr J G Keppler, Regional Director
Office of Inspection & Enforcement
US Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

MIDLAND PROJECT -
INSPECTION REPORT NOS 50-329/81-12 AND 50-330/81-12
FILE 0.4.2 SERIAL 15256

Reference: 1) NRC letter, C E Norelius to J W Cook, dated December 3, 1981

This letter, including the attachment, provides Consumers Power Company's response to Reference 1. Our response was requested to be within 25 days of receipt of Reference 1. The delay beyond that date, January 1, 1982, was to permit full coordination with the responsible Region III personnel and has been with their understanding and concurrence.

Consumers Power Company

By James W. Cook
James W Cook

Sworn and subscribed to before me on this 14th day of January, 1982.

Gary A. Simoneau
Notary Public, Midland County, Michigan
My commission expires Dec. 7, 1983

GARY A. SIMONEAU
Notary Public, Midland County, Mich.
My Commission Expires Dec. 7, 1983

CC: RJCook, NRC Resident Inspector
Midland Nuclear Plant

JAN 18 1982

8202090065

CONSUMERS POWER COMPANY'S RESPONSE TO
US NUCLEAR REGULATORY COMMISSION, REGION III
LETTER DATED DECEMBER 3, 1981
DOCKET NUMBERS 50-329 AND 50-330

1. Paragraph 1 of the Region III letter of December 3, 1981, requests clarification of two issues.

   a. Paragraph 1a of this letter states:

      > Field alteration of piping support and restraint installations subsequent to QC inspection and sign off has not been clearly addressed. Identification and correction of problems during final system walk-down prior to preoperational and/or startup tests should be the exception, not the rule. Your QA program should include measures to protect systems from damage and alterations after final acceptance by quality control

CONSUMERS POWER COMPANY'S RESPONSE

We regret that there was an editorial error which made it appear that we were not being fully responsive to your concern regarding field alteration of piping support and restraint installations subsequent to QC inspection and sign off. In the third paragraph on page two of the attachment to the October 30, 1981 letter, as a part of our response to Violation Item 4, we referenced "Item 6 in your Notice of Violation". We should have referenced Item 3. We apologize for the confusion this editorial error must have caused you.

Our response to Item 3, transmitted on August 7, 1981, stated:

> Bechtel Construction has developed Administrative Guidelines addressing rework. The Administrative Guidelines provide reference to particular field procedures and outline the means of administratively processing rework information such that proper notifications and coordination are attained. Bechtel Quality Control has also developed Administrative Instructions to indicate the process followed for processing rework items.
>
> It is noted that the above-referenced Administrative Guidelines and Instructions have been developed for Civil, Instrumentation, Mechanical and Electrical disciplines, and these actions in the Mechanical area are considered responsive to Unresolved Item 329/81-12-15 and 330/81-12-16 concerning procedural provisions to control design revisions on small bore piping and piping suspension systems. In the Mechanical area, the guidelines have been issued and revisions to the appropriate Mechanical procedures have been made and are expected to be issued for use by August 12, 1981.

The definition of rework as used in these guidelines and procedures includes both the removal of an accepted installation for the purpose of accomplishing a design change on it, and temporary removal of an accepted installation simply to accomodate construction congestion. These guidelines and procedures have now been released and are being implemented. This action should preclude unauthorized rework subsequent to QC inspection and sign off.

b. Paragraph 1b of the Region III letter states:

> Your response states, "Project Engineering has been requested to evaluate the conditions represented by Items e, g and h." What consideration has been given to the possibility that field installation was carried out without a clear understanding of the design requirements and related interpretations?

CONSUMERS POWER COMPANY'S RESPONSE

With respect to Item e, Bechtel Project Engineering was asked to consider whether or not the pipe hanger and restraint installation tolerances given in Specification 7220-M-326(Q) are in conformance with the design requirements. In response to this question, Bechtel Project Engineering stated that there is only a minimum installation clearance requirement and that there is no maximum installation clearance requirement, unless specified on the drawing. There is a fabrication interfacing dimensional constraint, which when met, results in an acceptable maximum installation clearance. This dimensional constraint is verified at the time of fabrication. When the minimum installation clearance and the fabrication dimensional requirements are met, design stresses will not be exceeded. Based on this Project Engineering response, we conclude that the tolerances are in conformance with the design requirements. Furthermore, we have verified that the Bechtel QC inspections and the MPQAD overinspections are being performed with the full understanding of the tolerances as set forth above. Finally, since it appears the circumstances concerning this item should have raised some question as to the proper interpretation of the pertinent design requirements, it has been reemphasized to all QA/QC personnel that, any time such a question or doubt arises, they are to promptly seek written direction from Project Engineering.

With respect to Items g and h, Bechtel Project Engineering was asked to consider whether or not the Technical Specification is an adequate and complete statement of the design requirements. In response to this question, Bechtel Project Engineering stated that the strength of grouted anchor bolts is controlled by the bond strength between the grout and the concrete interface. The strength of the concrete cone pull-out, calculated per ACE 349-81, Appendix B, is approximately three times the design strength of the grout-to-concrete interface. Therefore, small holes drilled within this concrete cone will not have a detrimental effect until the potential pull-out surface of that concrete cone is reduced by approximately two thirds. Based on this Project Engineering response, we conclude that the design requirements as currently stated in the Technical Specification are adequate. The occurence of abandoned holes in the proximity

of a single grouted-in anchor bolt in such numbers that they would reduce the pull-out area of the concrete cone around the bolt by two-thirds seems highly improbable. Never-the-less, to preclude even the remotest possibility of such an occurence, Project Engineering will revise the Technical Specification to incorporate their response to our question.

2. Paragraph 2 of the Region III letter states:

> Our letter dated September 16, 1981, requested that you provide a date when full compliance was or will be achieved for each of the eight items of noncompliance. While your additional response for Items 4, 5 and 8 satisfied our request, you failed to provide a date for the other items.

CONSUMERS POWER COMPANY'S RESPONSE

The dates for which we were in full compliance are as follows:

a. Item 1 - December 31, 1981

b. Item 2 - December 31, 1981

c. Item 3 - November 24, 1981

d. Item 6 - August 5, 1981

e. Item 7 - May 29, 1981

RIII
FRR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

DEC 3 1981

Midland

Docket No. 50-329
Docket No. 50-330

Consumers Power Company
ATTN: Mr. James W. Cook
Vice President
Midland Project
1945 West Parnall Road
Jackson, MI 49201

Gentlemen:

Thank you for your letter dated October 30, 1981, responding to our letter dated September 16, 1981, which addressed the need for you to provide additional information so we could complete our evaluation of the steps you have taken to correct the items of noncompliance which we brought to your attention in Inspection Report No. 50-329/81-12; 50-330/81-12 forwarded by our letter dated July 10, 1981.

We have reviewed your response and have the following comments:

1. Response to Items 4 and 5

Your response is generally acceptable; however, two issues warrant further clarification:

a. Field alteration of piping support and restraint installations subsequent to QC inspection and signoff has not been clearly addressed. Identification and correction of problems during final system walkdown prior to preoperational and/or startup tests should be the exception, not the rule. Your QA program should include measures to protect systems from damage and alterations after final acceptance by quality control.

b. Your response states, "Project Engineering has been requested to evaluate the conditions represented by items e., g., and h." What consideration has been given to the possibility that field installation was carried out without a clear understanding of the design requirements and related interpretations?

8112080243

2. Response to Item 8

We will examine these matters during a subsequent inspection.

Our letter dated September 16, 1981, requested that you provide a date when full compliance was or will be achieved for each of the eight items of non-compliance. While your additional response for items 4, 5, and 8 satisfied our request, you failed to provide a date for the other items.

We request that you provide a written response within 25 days of receipt of this letter to this office addressing the matters discussed above.

Your cooperation with us is appreciated.

Sincerely,

C. E. Norelius, Director
Division of Engineering and
Technical Inspection

cc w/ltr dtd 10/30/81:
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Ronald Callen, Michigan
Public Service Commission
Myron M. Cherry
Barbara Stamiris
Mary Sinclair
Wendell Marshall

2nd Response

Consumers Power Company

James W Cook
Vice President - Projects, Engineering and Construction

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0453

October 30, 1981

Mr J G Keppler, Regional Director
Office of Inspection & Enforcement
US Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

MIDLAND PROJECT -
INSPECTION REPORT NO 50-329/81-12 AND 50-330/81-12
FILE: 0.4.2 SERIAL: 14601

References:
1. NRC letter, J G Keppler to J W Cook, dated July 10, 1981
2. CPCo letter, Serial 13525, J W Cook to J G Keppler, dated August 7, 1981
3. NRC letter, C E Norelius to J W Cook, dated September 16, 1981

This letter, including all attachments, provides Consumers Power Company's response to Reference 3, which rejected portions of our response (Reference 2) to three items of noncompliance described in Appendix A of Reference 1. This letter is a new complete response for items 4, 5 and 8.

Consumers Power Company

By James W. Cook
James W Cook

Sworn and subscribed to before me on this 30th day of October, 1981.

Notary Public, Jackson County, Michigan
My commission expires September 8, 1984

WRB/lr

CC: RJCook, USNRC Resident Inspector
Midland Nuclear Plant (1)

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NOV 2 1981

CONSUMERS POWER COMPANY'S RESPONSE TO NOTICE OF VIOLATIONS DESCRIBED IN NRC INSPECTION REPORT DOCKET NO 50-329/81-12 AND 50-330/81-12

Item 4 from Appendix A (Item of Noncompliance 50-329/81-12 and 330/81-12-12 provides the following:

"10CFR50, Appendix B, Criterion V states, in part, 'Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings. . . and shall be accomplished in with these instructions, procedures, or drawings.'

The Consumers Power Company Quality Assurance Program Policy No. 5, Revision 9 states, in part, 'Instructions for controlling and performing activities affecting quality of equipment or operations during the design, construction . . . phases of nuclear power plants, such as . . . construction, installation . . . are documented in instructions . . . and other forms of documents, and the responsible CP departments shall 'also verify through audits that the required instructions . . . are implemented.' Contrary to the above, seven large bore pipe restraints, supports, and anchors were not installed in accordance with design drawing and specification requirements. (329/81-12-11; 330/81-12-12)

This is a Severity Level V violation (Supplement II)."

CONSUMERS POWER COMPANY'S RESPONSE

Violation Item 4

The pipe supports identified in the NRC report of the May 18-22, 1981 inspection which were used as supporting details for Item 4 in the Notice of Violation were all turned over to QC for inspection in 1980 (inspections completed between 5/80 and 12/80).

An evaluation was conducted by MPQAD of the quality indicators related to hangers for the time period of June 1980 to May 1981. This study found that half of the indicators were issued between 9/17/80 and 11/19/80 which coincides with the QC inspection dates for the hangers identified by Mr Yin. This study concluded that construction did not assure that hangers and related items were complete and in accordance with the most recent drawing revision prior to turnover to QC.

As a result of actions taken primarily in the Quality Control area, the number of quality indicators dropped from a peak of 134 in August/September 1980 to an average of 19.25 per month from March 1981 thru June 1981, and that general level has been maintained. Overinspections conducted by MPQAD have confirmed that the Bechtel QC inspection of hangers has improved and is providing increased assurance that pipe hangers which have been QC inspected and accepted do meet drawing and specification requirements.

Actions taken as a preventive measure include the following. In June 1981, field engineers were issued a hanger checklist which was prepared for their use to assist in the checking of hangers prior to turnover to QC. This checklist includes a review to confirm use of the most recent drawing revision, and by checking all items noted on the checklist, the field engineer can help assure that the hangers are complete and in accordance with the drawing and specification requirements prior to turnover to QC for their inspection. In addition, the reading list for Mechanical Field Engineers has been expanded to enhance their skills.

Based on this evaluation and the resulting recommendations and action taken by Bechtel Field Engineering, and the information in our response to Item 5 of the Notice of Violation, we are scheduling an overinspection by MPQAD of a sample of those pipe hangers and supports installed prior to January 1981 to assess the acceptability of the installations and adequacy of the original inspection performed by Bechtel QC. This overinspection program will be completed by December 31, 1981. Subsequent evaluation of the overinspection results will be used to determine if there is any need for additional corrective action.

In addition to the above, in response to your concern about rework subsequent to QC inspection (Item f), this concern is similar to Item 6 in your Notice of Violation resulting from the May 18-22, 1981 inspection. We request that you review our response to Item 6, as our response to the concern stated in your letter dated September 16, 1981. In that letter, you stated that you will examine this matter during a subsequent inspection, therefore apparently accepting the actions we have taken. Therefore, we feel that no additional action is necessary on this item. An audit is planned to be conducted in November 1981 to address the effectiveness of the rework controls which includes the additional procedures generated since the May inspection.

All of the specific hanger deficiencies are being addressed. Item a through d and f have been resolved. Project Engineering has been requested to evaluate the conditions represented by items e, g and h. Disposition and corrective action results from the disposition is anticipated to be completed by January 5, 1981. Pending the result of the overinspection to be accomplished by MPQAD of the hangers installed prior to January 1981, the plant will be in compliance in regards to this matter at that time.

Item 5 from Appendix A (Item of Noncompliance 329/81-12-12 and 330/81-12-13) provides the following:

"10CFR50, Appendix B, Criterion X states in part: 'A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity.'

The Consumers Power Company Quality Assurance Program Policy No 10, Revision 8 states, in part, 'Inspections and surveillance are performed to assure that activities affecting quality comply with . . . design documents.'

Contrary to the above, licensee construction quality control inspectors inspected and accepted six of seven large bore pipe restraints, supports, and anchors that, in fact, had not been installed in accordance with design drawings and specifications as determined by the NRC inspector. (329/81-12-12; 330/81-12-13).

This is a Severity Level V violation (Supplement II)."

CONSUMERS POWER COMPANY'S RESPONSE

Violation Item 5

The pipe supports identified by the NRC in the report of their site inspection of May 18-22, 1981, which were used as supporting details for Item 5 in the Notice of Violation were all inspected in the time period of May 1980 to December 1980.

An evaluation conducted by MPQAD of quality indicators related to hangers for the time period June 1980 to May 1981 found that half of the indicators were issued between 9/17/80 and 11/19/80, which coincides with the QC inspection dates for the hangers identified by Mr Yin.

The evaluation also found that during that time period, the number of crafts personnel significantly increased. Construction had not assured that hangers were complete and met the requirements of the most recent drawing revision prior to turnover to QC. The result was that QC received a large number of hangers to inspect and these hangers had a relatively large number of deficiencies.

In October and November of 1980, planned personnel changes included a new Lead Mechanical QCE, and pipe support group supervisor. These changes brought additional experience to the QC organization. Additionally, increased effort was directed to the inspection of pipe supports.

Subsequent to these actions, the number of quality indicators dropped from a peak of 134 in August/September 1980 to an average of 19.25 per month from March 1981 through June 1981, and that general level has been maintained. Overinspections conducted by MPQAD have confirmed that the Bechtel QC inspection of hangers has improved and is providing increased assurance that pipe hangers which have been QC inspected and accepted do meet drawing and specification requirements.

A question regarding the intent of Specification M-326 with regards to the location for the measurement for clearance determination (is a clearance that varies from 1/16" to 3/8" acceptable if the drawing requires a 1/16" clearance) has been referred to Bechtel Project Engineering.

All of the specific hanger deficiencies are being addressed. Item a through d and f have been resolved. Project Engineering has been requested to evaluate the conditions represented by items e, g and h. Disposition and corrective action results from the disposition is anticipated to be completed by January 5, 1981. Pending the result of the overinspection to be accomplished by MPQAD of the hangers installed prior to January 1981, the plant will be in compliance in regards to this matter at that time. It is felt that our present inspection program is in compliance with applicable requirements in regards to hanger inspections.

Item 8 from Appendix A (Item of Noncompliance 50-329/81-12-16 and 50-330/81-12-17) provides the following:

"10CFR50, Appendix B, Criterion XVIII states in part, 'A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program.'

The Consumers Power Company Quality Assurance Program Policy No 5, Revision 9 states in part, 'The various Consumers Power Departments and Suppliers who perform a safety-related activity prepare required instructions, procedures and other instructional-type documents prior to initiation of safety-related activities. Reviews of Consumers Power Company departmental procedures for adequacy are conducted during the design and construction phase . . . by the Quality Assurance Audit and Administration Section within Environmental Services, Quality Assurance and Testing. They also verify through audits that the required instructions and procedures are prepared and implemented.'

Contrary to the above, licensee and contractor audits of small bore piping design activities at the site did not include detailed review of system stress analysis and follow-up on previously identified hanger calculation problems was not being performed. (329/81-12-16; 330/81-12-17).

This is a Severity Level V violation (Supplement II)."

CONSUMERS POWER COMPANY'S RESPONSE

Violation Item 8

Additional review indicates the failure of the cited Bechtel and CPCo audits to identify the fact that CPDC's were not being provided prior to system fabrication and installation resulted from a weakness in the planning for those specific audits. Although the CPDC's are an essential element of the design system, this attribute was not selected as one to be audited; rather, all three of the cited audits concentrated on completed calculations.

The cited audits were conducted in late 1980. In early 1981, recognizing such potential weaknesses in audit planning and other aspects of auditing, Bechtel and CPCo instituted a joint training and certification program for QA auditors. This program places greater emphasis on preparation for audits, (ie, audit plan, audit scope and preparation of checklists to implement the audit plan and scope).

We currently have 39 persons listed as auditors or auditors-in-training of which 29 have completed the new joint QA Auditor training. A refresher course for previously certified auditors is planned for 1982.

The training outlined above should provide additional assurance that MPQAD audit checklists include all of the essential elements of the procedure being audited, therefore improving the quality of the audits and providing more assurance that potential problem areas will be identified.

It is our opinion that the audit program is in compliance with applicable requirements.

WRB/lr

RIII PRR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

SEP 16 1981

Midland

Docket No. 50-329
Docket No. 50-330

Consumers Power Company
ATTN: Mr. James W. Cook
Vice President
Midland Project
1945 West Parnall Road
Jackson, MI 49201

Gentlemen:

Thank you for your letter dated August 7, 1981, informing us of the steps you have taken to correct the items of noncompliance which we brought to your attention in Inspection Report No. 50-329/81-12; 50-330/81-12 forwarded by our letter dated July 10, 1981.

Your letter has been reviewed, and particular attention was given to the information presented. We do not consider the actions delineated in your letter to be fully responsive as described below.

1. Response to Items 1, 2, and 3

We will examine these matters during a subsequent inspection.

2. Response to Items 4 and 5

These two noncompliance items involve installers who failed to follow work procedures and design instructions and also QC inspectors who failed to provide adequate installation verification. We contend that installation and inspection are two distinctly different functional areas. In addition, in our review of this matter we cannot support your statement that approximately half of the specific findings could be substantiated after further analysis.

. Item e (Rigid Frame Restraint 18-1HCB-2-H13). We do not concur with your statement that this item is not in fact nonconforming to its design requirements nor was there an inspection error. Our basis is: (1) the procedure did not call for the use of a level and angle finder for this specific application, (2) due to the small surfaces involved, use of the angle finder may not be considered applicable, (3) calculations proved that the reading from the angle finder was not conservative, and (4) as

it stands, portions of the gap clearance are in noncompliance with the restraint design. Furthermore, your response did not address our inspector's question as to whether or not the 2° criteria is permissible since the design drawings called for a full load bearing surface between the pipe lugs and box frame restraint shims.

- Item f (Sliding Stanchion Assembly 2HBC-124-H7). Your statement, "It is believed that the hanger movement occurred after the QC inspection that accepted the installation" raises concerns that you are not aware that alteration of installation, subsequent to QC inspection without proper control could indicate a breakdown in your site QC inspection program.

- Item g (Rigid Frame Assembly 12-2HBC-124-H5R) and Item h (Anchor 2 1/2" - 1CCB-2-H7). During our inspection discussions with your staff, we did not understand that the anchor bolts installed were grouted-in type; however, we feel the issues identified are still valid. This is based on the engineering consideration that the load capacity for both types of anchor bolts is principally dependent on the condition of the affected shear cone area of the concrete. Small holes drilled within this concrete cone body will not only weaken the concrete, but they will also initiate cracking along the disturbed regions. If design and test data for grouted-in type anchor bolts installed in this manner is available, we will review it during a subsequent inspection.

- Item i (Sway FSK-M-2HBC-137-3-H3(Q)). We could not concur with your statement that since this item had not as yet been released for QC inspection, it is considered "under construction" and as such, no inconsistency is noted. As we stated in our inspection report, we recognized that the hanger installation had not been QC inspected. We consider the problem warrants attention, even if your QC inspection could identify and correct the problem at a later date. We believe that the installer should implement design requirements independently of QC inspection.

In addition to the comments presented above your response did not address (1) the program inspection performed to insure that similar deficiencies do not exist in other systems, (2) when the specific problems and extended inspection program will be initiated and completed, and (3) the corrective action taken to prevent future recurrence.

3. Response to Item 6

We performed a followup inspection in this area prior to receipt of your response to this item. We will continue this inspection effort during future inspections.

We acknowledge the error in docket number placed on our IAL dated May 22, 1981. We will make the necessary record corrections.

4. Response to Item 7

We performed a followup inspection in this area prior to receipt of your response to this item. We have no further questions at this time.

5. Response to Item 8

The significant issue in this finding was that your QA audits and surveillances of site small bore piping and pipe suspension systems failed to identify that CPDCs were not being provided prior to system fabrication and installation. We recognize that CPCo and Bechtel both performed audits in the past as you stated in your response; however, your audits did not identify the fundamental problem areas listed in our IAL dated May 22, 1981.

Your responses stated in the fourth and fifth paragraphs are unclear as they appear to only be paraphrasing our findings and they provided no corrective actions that would improve your technical QA audit program and the qualification of your QA audit personnel.

Your letter failed to include a date when full compliance was or will be achieved for each of the eight items of noncompliance.

We request that you provide a written response within 25 days to this office addressing the matters discussed above.

Your cooperation with us is appreciated.

Sincerely,

C. E. Norelius

C. E. Norelius, Director
Division of Engineering and
Technical Inspection

cc w/ltr dtd 8/7/81:
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Ronald Callen, Michigan
Public Service Commission
Myron M. Cherry

JUL 10 1981

Docket No. 50-329 81-12
Docket No. 50-330

Consumers Power Company
ATTN: Mr. James W. Cook
Vice President
Midland Project
1945 West Parnall Road
Jackson, MI 49201

Gentlemen:

This refers to the special team inspection conducted by Mr. C. C. Williams and other members of this office on May 18-22, 1981, of activities at the Midland Nuclear Plant, Units 1 and 2, authorized by NRC Construction Permits No. CPPR-81 and No. CPPR-82 and to the discussion of our findings with you and others of your staff at the conclusion of the inspection.

This was an indepth inspection to examine the implementation status and effectiveness of the current QA Program, to determine whether previously identified quality assurance problems were sufficiently precluded from occurrance in other areas, and to ascertain whether management involvement in the QA Program was sufficient and effective. The enclosed copy of our inspection report identifies areas examined during the inspection. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations, and interviews with personnel.

During this inspection, certain of your activities appeared to be in noncompliance with NRC requirements, as specified in enclosed Appendix A. A written response, submitted under oath or affirmation, is required.

Although eight items of noncompliance were identified during this inspection, it is our judgement that the scope and depth of this NRC inspection was such that the identified noncompliances do not contravene our conclusion that Consumers Power Company has established an effective organization for the management of construction and implementation of quality assurance at the site. The noncompliances associated with the piping support area of the inspection were considered the most adverse findings, and precipitated the issuance of an Immediate Action Letter (IAL) dated May 22, 1981. (Attached as Exhibit A to this report.)

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Based on a July 9, 1981 telephone conversation with you and Messrs. R. Knop and C. Williams of my staff, in response to our request, you agreed to the immediate release of this letter and the enclosures, to the NRC's Public Document Room. In accordance with 10 CFR 2.790 your response to this letter will also be placed in the Public Document Room.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

James G. Keppler
Director

Enclosures:
1. Appendix A, Notice of Violation
2. IE Inspection Reports No. 50-329/81-12 and No. 50-330/81-12

cc w/encls:
DMB/Document Control Desk (RIDS)
Resident Inspector, RIII
Ronald Callen, Michigan Public Service Commission
Myron M. Cherry

RIII	RIII-HQ	RIII	RIII	RIII	RIII	RIII	RIII
Yin/so	Gallagher	Cook	Schweibinz 7-10-81	Spessard	Norelius	Davis	Keppler
Landsman 7/9/81		Jones	Knop	Williams			

Appendix A

NOTICE OF VIOLATION

Consumers Power Company

Docket No. 50-329
Docket No. 50-330

As a result of the inspection conducted on May 18-22, 1981, and in accordance with the Interim Enforcement Policy, 45 FR 66754 (October 7, 1980), the following violations were identified:

1. 10 CFR 50, Appendix B, Criterion XVI states, in part, that "Measures shall be established to assure that conditions adverse to quality such as failures, malfunctions, deficiencies, deviations, defective materials and equipment, and nonconformances are promptly identified and corrected...the identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management."

   Consumers Power Company Program Policy No. 16, Revision 9, Paragraph 1.0 states, in part, "corrective action is that action taken to correct and preclude recurrence of significant conditions adverse to the quality of items."

   Consumers Power Company Quality Assurance Procedure M-2, dated March 2, 1981 requires the Midland Project Quality Assurance trend analysis be implemented. Specifically, for each performance area identify trends requiring corrective action, determine the sources of these trends and obtain appropriate corrective action commitments. Corrective action commitments are the responsibility of the "Appropriate Individuals."

   Contrary to the above, a review of Monthly Trend Analysis Reports and related documentation covering the period July 17, 1980 - March 31, 1981 revealed that appropriate site managers have not routinely established comprehensive corrective actions in response to the identification of adverse quality trends. Moreover, evaluations of adverse trends have not routinely identified the root causes of nonconformances. For example, 22 instances of construction personnel bypassing QC hold points were included in monthly trend analysis, but an adequate analysis to identify the root cause of these occurrences was not performed. (329/81-12-04; 330/81-12-04)

   This is a Severity Level IV violation (Supplement II).

2. 10 CFR 50, Appendix B, Criterion X states, in part, "A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity."

   Consumers Power Company Quality Assurance Program Policy No. 10, Revision 8, Paragraph 1.0 states, in part, "Inspection and surveillance are performed to assure that activities affecting quality comply with documented instructions, design documents and applicable codes and standards."

   Contrary to the above, the electrical contractor's Quality Control (QC) inspections of cable termination activities on May 12, 1981, failed to verify conformance to Paragraph 3.11 of Project Quality Control Instruction E-5.0 which states, in part, "Verify that the ...minimum installed cable bend radius is not violated." A violation of the minimum bend criteria for Cable No. 2AB2322B, that was observed by the NRC inspector, and it had not been identified by the QC inspections. (330/81-12-07)

   This is a Severity Level VI violation (Supplement II).

3. 10 CFR 50, Appendix B, Criterion XVI states, in part, "Measures shall be established to assure that conditions adverse to quality...are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition."

   Consumers Power Company Quality Assurance Program Policy No. 16, Revision 9, Paragraph 1.0 states, in part, "Corrective action is that action taken to correct and preclude recurrence of significant conditions adverse to the quality of items or operations."

   Contrary to the above, as of May 22, 1981, corrective action had not been taken in response to Bechtel Quality Assurance Finding SA-97, dated April 3, 1980 and Consumers Power Company Audit Finding Report No. M-01-02-1-06, dated January 27, 1981, which identified the lack of approved procedures for the rework of items which had been accepted by Quality Control. (329/81-12-09; 330/81-12-10)

   This is a Severity Level V violation (Supplement II).

4. 10 CFR 50, Appendix B, Criterion V states, in part, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings...and shall be accomplished in accordance with these instructions, procedures, or drawings."

The Consumers Power Company Quality Assurance Program Policy No. 5, Revision 9 states, in part, "Instructions for controlling and performing activities affecting quality of equipment or operations during the design, construction...phases of nuclear power plants, such as...construction, installation...are documented in instructions...and other forms of documents," and the responsible CP departments shall "also verify through audits that the required instructions...are implemented."

Contrary to the above, seven large bore pipe restraints, supports, and anchors were not installed in accordance with design drawing and specification requirements. (329/81-12-11; 330/81-12-12)

This is a Severity Level V violation (Supplement II).

5. 10 CFR 50, Appendix B, Criterion X states, in part, "A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity."

The Consumers Power Company Quality Assurance Program Policy No. 10, Revision 8 states, in part, "Inspection and surveillance are performed to assure that activities affecting quality comply with...design documents."

Contrary to the above, licensee construction quality control inspectors inspected and accepted six of seven large bore pipe restraints, supports, and anchors that, in fact, had not been installed in accordance with design drawings and specifications as determined by the NRC inspector. (329/81-12-12; 330-81-12-13)

This is a Severity Level V violation (Supplement II).

6. 10 CFR 50, Appendix B, Criterion III states, in part, "the design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews... Design control measures shall be applied to items such as...stress analysis..."

The Consumers Power Company Quality Assurance Program Policy No. 3, Revision 9 states, in part, "The design organization identifies the applicable regulatory requirements, design bases, codes and standards; develop the design and specify the design interfaces; perform design verification and prepare design documents."

Contrary to the above, several of the small bore pipe and piping suspension system designs performed at the site had not been prepared, reviewed and approved in accordance with established design control procedures. (329/81-12-13; 330/81-12-14)

This is a Severity Level IV violation (Supplement II).

7. 10 CFR 50, Appendix B, Criterion VI states, in part, "Measures shall be established to control the issuance of documents...including the changes thereto, which prescribe all activities affecting quality. These measures shall assure that documents, including changes, are reviewed...and approved...by authorized personnel and are distributed to and used at the location where the prescribed activity is performed."

   The Consumers Power Company Quality Assurance Program Policy No. 6, Revision 8 states, in part, "Measures are included to assure that documents, including changes, are reviewed for adequacy and approved for release by the supervisory personnel of the organization preparing the document, and are distributed according to controlled distribution to the user functions."

   Contrary to the above, an outdated specification was maintained at the small bore piping design group work location and revised calculations were not marked "Superseded" in accordance with the procedural requirements. (329/81-12-14; 330/81-12-15)

   This is a Severity Level V violation (Supplement II).

8. 10 CFR 50, Appendix B, Criterion XVIII states, in part, "A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program."

   The Consumers Power Company Quality Assurance Program Policy No. 5, Revision 9 states, in part, "The various Consumers Power Departments and Suppliers who perform a safety-related activity prepare required instructions, procedures and other instructional-type documents prior to initiation of safety-related activities. Reviews of Consumers Power Company departmental procedures for adequacy are conducted during the design and construction phase,...by the Quality Assurance Audit and Administration Section within Environmental Services, Quality Assurance and Testing. They also verify through audits that the required instructions and procedures are prepared and implemented."

   Contrary to the above, licensee and contractor audits of small bore piping design activities at the site did not include detailed review of system stress analysis and followup on previously identified hanger calculation problems was not being performed. (329/81-12-16; 330/81-12-17)

   This is a Severity Level V violation (Supplement II).

Pursuant to the provisions of 10 CFR 2.201, you are required to submit to this office within thirty days of the date of this Notice a written statement or explanation in reply, including for each item of noncompliance: (1) corrective action taken and the results achieved; (2) corrective action to be

taken to avoid further noncompliance; and (3) the date when full compliance will be achieved. Under the authority of Section 182 of the Atomic Energy Act of 1954, as amended, this response shall be submitted under oath or affirmation. Consideration may be given to extending your response time for good cause shown.

JUL 10 1981

Dated

James G. Keppler
Director

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

REGION III

Reports No. 50-329/81-12; 50-330/81-12

Docket Nos. 50-329; 50-330 Licenses No. CPPR-81; CPPR-82

Licensee: Consumers Power Company
1945 West Parnall Road
Jackson, MI 49201

Facility Name: Midland Nuclear Plant, Units 1 and 2

Inspection At: Midland Site, Midland, MI

Inspection Conducted: May 18-22, 1981

Inspectors:

C. C. Williams, Team Leader — C.C. Williams — 7-10-81

R. J. Cook — R C Knop for — 7-10-81

E. J. Gallagher (IE Headquarters) — R.L. Spessard for — 7/10/81

R. N. Gardner — C.C. Williams for: — 7-10-81

C. E. Jones — R C Knop for — 7-10-81

R. B. Landsman — R B Landsman — 7-10-81

R. S. Love — C.C. Williams for: — 7-10-81

E. R. Schweibinz — E. R. Schweibinz — 7-10-81

I. T. Yin — R.L. Spessard for — 7/10/81

Other Accompanying Personnel: J. G. Keppler (May 21-22, 1981)

R. C. Knop (May 21-22, 1981)

C. C. Williams

Approved By: C. C. Williams, Chief
Plant Systems Section

7-10-81

Inspection Summary

Inspection on May 18-22, 1981 (Reports No. 50-329/81-12; 50-330/81-12)
Areas Inspected: Recent changes in the Quality Assurance Program and Organization, announced March 13, 1981, and verify that these changes are in place and adequate. Verify adequate and effective management involvement in the implementation of the site QA Program relative to its status, problem solving and resources support. Review and assess QA implementation at the site concerning civil-soils, electrical, instrumentation, piping and piping support systems activities. This inspection effort involved a total of 480 inspector-hours by nine NRC inspectors.
Results: Of the 18 areas inspected, no apparent items of noncompliance or deviations were identified in 10 areas; eight apparent items of noncompliance were identified in eight areas. (Failure to take adequate corrective action in that the licensee did not adequately implement the trend analysis procedure - Section 3, Paragraphs 2 and 3; failure to identify during inspection, that a nonconforming condition with regard to minimum installed cable bend radius, existed (Unit 2 only) - Section 4, Paragraph 1; failure to take proper corrective action with regard to the lack of approved procedures for the rework of items that had been accepted by QC - Section 4, Paragraph 3; failure to install large bore pipe restraints, supports, and anchors in accordance with design drawings and specifications - Section 5, Paragraph 2; failure of QC inspectors to reject large bore pipe restraints, supports and anchors that were not installed in accordance with design drawings and specifications - Section 5, Paragraph 2; failure to prepare, review and approve small bore pipe and piping suspension system designs performed on site in accordance with design control procedures - Section 5, Paragraph 3.a; failure to adequately control documents used in site small bore piping design activities - Section 5, Paragraph 3.b.; failure of audits to include a detailed review of system stress analysis and to followup on previously identified hanger calculation problems - Section 5, Paragraph 4.)

DETAILS

Persons Contacted

Consumers Power Company

*D. B. Miller, Site Manager
*J. W. Cook, Vice President, RE&C
*G. S. Keeley, Project Manager
*J. Wood, Section Head, QAS
*D. R. Keating, Section Head, IE&TV
*H. P. Leonard, Section Head, QAE
*K. E. Marbaugh, Operations Quality Assurance Superintendent
*R. E. McCue, Technical Supertindent
*N. Ramanujam, Senior Geotechnical Engineer
*T. C. Cooke, Project Superintendent
*D. E. Horn, Civil Group Supervisor, QAE
*G. B. Slade, Assistant Site Manager
*D. W. Turnbull, MPQA, Site Superintendnet
*L. R. Howell, MPQA
*M. J. Schaeffer, MPQAD, Electrical Engineer, Supervisor
*W. R. Bird, MPQAD, Manager
*E. Jones, Electrical Group Supervisor, IE&TV, MPQAD
S. Love, Sub Contracts Engineer
R. Whitaker, QA Engineering Supervisor
R. Sevo, MPQA
J. Decker, NDE/Welding Supervisor, MPQAD

Bechtel Power Corporation

*J. A. Rutgers, Project Manager
*A. J. Boos, Assistant Project Manager
*W. D. Greenwell, AAPD Manager of Quality Assurance
*M. A. Dietrich, PQAE
*L. H. Curtis, Project Engineer
*L. A. Driesbach, Assistant to the Project Manager
*D. L. Daniels, Chief Construction Quality Control Engineer
*E. Smith, PFQCE
*L. Davis, Site Manager
L. Snyder, Resident Quality Engineer
E. Urbanawiz, QC Engineer
F. Almeida, Small Bore Resident Piping Design Engineer
R. Myers, Large Bore Resident Piping Design Engineer
F. G. Young, Small Pipe and Hanger Group Supervisor
W. J. Creel, Senior QC Engineer
P. Corcoran, Resident Assistant Project Engineer
A. McClure, Quality Assurance Engineer
J. Hockwater, Civil Resident Engineer
T. K. Subramanian, QA Program Engineer
C. Webb, Tech Aid Corporation Assigned to Bechtel Project Resident Engineer

Babcock and Wilcox Construction Company

T. Davis, Acting Supervisor
W. Linn, Field Engineer

U.S. Nuclear Regulatory Commission (RIII)

*J. G. Keppler, Director Region III
*R. C. Knop, Chief, Projects Branch 1
*C. C. Williams, Chief, Plant Systems Section
*R. J. Cook, Resident Inspector
*E. J. Gallagher, Reactor Inspector
*R. N. Gardner, Reactor Inspector
*C. E. Jones, Reactor Inspector
*R. B. Landsman, Reactor Inspector
*R. S. Love, Reactor Inspector
*E. R. Schweibinz, Reactor Inspector
*I. T. Yin, Reactor Inspector

IL & B (CPCo)

*R. Zamarin, Attorney
*A. Farnell, Attorney

*Denotes those present at the exit meeting on May 22, 1981.

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

1. Licensee Action on Previous Inspection Findings

   a. (Closed) Noncompliance Item (50-329/78-03-03; 50-330/78-03-03): Erroneous Quality Control inspections of welds in the lower cable spreading room. The licensee stated that a reinspection of affected welds was performed with the results documented on NCR 1287, NCR 1306 and MCAR-1 (Report No. 23). During a subsequent NRC inspection, welds in the lower cable spreading room were selectively reinspected and found to be acceptable. The inspectors verified that the aforementioned NCR's and MCAR are closed. This item is closed.

   b. (Closed) Noncompliance Items (50-329/78-20-01 through 78-20-10; 50-330/78-20-01 through 78-20-10): Findings made during soil settlement investigation. These items have been closed based on CPCo response to the 50.54(f) questions 1 and 23. Items associated with these findings have been reviewed and documented in NRC Report No. 50-329/80-32; 50-330/80-33. These items are closed.

   c. (Closed) Unresolved Item (50-329/79-12-02; 50-330/79-12-02): Qualifications of Field Engineers with regard to the authorization of design change work activities. Specification G34(Q), "General Specification for Change Notices" was revised to clarify

the criteria for writing change notices. Inter-Office Memo (IOM) O-2707 was issued to document and reiterate the recommended training in the proper use of Specification G34(Q). Resident Engineers have been assigned to the Field Engineering Office to provide closer supervision on proposed design changes. This item is closed.

d. (Closed) Unresolved Item (50-329/79-25-01; 50-330/79-25-01): Cable separation violations in Motor Control Centers (MCC) 0B65 and 0B66. Nonconformance Report No. 2765 was closed on May 12, 1980 and Bechtel Quality Action Request No. SD-293 was closed on May 14, 1980. These two documents pertained to the cable separation violations in the two MCC's. The inspector observed that the cable separation in the aforementioned MCC's conformed to the requirements of Bechtel drawing E47(Q). This item is closed.

e. (Closed) Noncompliance Item (50-329/80-01-01; 50-330/80-01-01): Failure to have test procedures for soils work activities. The inspector reviewed QCP-10, Revision 1, dated March 16, 1981 and determined the following:

(1) With respect to the first issue, Section 4.1 states that the vibrator control shall be at maximum control dial setting. However, the procedure should state to determine at what setting gives maximum density for each soil type to be used. The licensee agreed to revise this section accordingly.

(2) With respect to the second issue, the inspector reviewed laboratory gradation data performed on material tested before and after compaction and determined that the change in gradation is insignificant.

(3) With respect to the third issue, the inspector reviewed SCN 7220-C-211(Q) - 11002 dated May 12, 1981 which added the density testing depths to the specification.

This item is closed.

f. (Closed) Unresolved Item (50-329/80-01-02; 50-330/80-01-02): Failure to have soils laboratory forms under complete document control. The inspector reviewed QCP-10, Section 5.0 which was added to address documentation and distribution of soils laboratory forms. The inspector also reviewed new Procedure QCP-14, Revision 0, dated February 12, 1981 which addresses the QC procedure for use of these forms. This item is closed.

g. (Closed) Unresolved Item (50-329/80-01-03; 50-330-80-01-03): Failure to have explicit instructions for the onsite geotechnical engineer's review of test results. The inspector reviewed new Procedure EDPI 2.14.7, Revision 0, dated May 14, 1981. Exhibit D to the procedure indicates how the onsite geotechnical engineer is to perform his review and document his review. This item is closed.

h. (Closed) Unresolved Item (50-329/80-01-04; 50-330/80-01-04): Failure to have explicit instructions for the onsite geotechnical engineer's evaluation of density tests. The inspector reviewed EDPI 2.14.7, Exhibit D which delineates how to perform the evaluation. This item is closed.

i. (Closed) Deviation (50-329/80-01-05; 50-330/80-01-05): Failure to have a qualified onsite geotechnical engineer onsite. The licensee now has an onsite geotechnical engineer which meets the project requirements. This item is closed.

j. (Open) Unresolved Item (50-329/80-30-01; 50-330/80-30-01): Protection of Battery Rack Hardware from acidic environment. The licensee has initiated Quality Action Request (QAR) F-058 requesting Bechtel Engineering to identify what preventative measures will be established to preclude battery rack hardware from corroding in the acid environment. Pending review of Bechtel Engineering reply to the QAR, this item will remain open.

k. (Open) Unresolved Item (50-329/80-30-03; 50-330/80-30-03): Incomplete test data for Class 1E Battery Chargers. Revision 7 to Bechtel Specification E-11 for Battery Chargers deleted the requirements for performing no-load-loss and full-load-loss tests and revised the requirement for an "insulation test to ground and between AC and DC" to require an "ohmmeter test to ground from AC input, DC output and alarms." Data received by the licensee for the ohmmeter tests was recorded as OK in lieu of a quantitative value. Pending review of the quantitative criteria for the OK or the actual ohmmeter data recorded, this item will remain open.

l. (Closed) Noncompliance Item (50-329/80-32-01; 50-330/80-33/-01): Failure to have interface procedures. The inspector reviewed EDPI 4.25.1, Revision 9, which was revised to state that all changes will be interfaced. This item is closed.

m. (Closed) Noncompliance Item (50-329/80-32-03; 50-330/80-33-03): Failure to properly implement an SCN. The inspector reviewed SCN 11001 to Specification C-208 dated April 7, 1981 which adequately addresses the inspector's concern. This item is closed.

n. (Open) Unresolved Item (50-329/80-32-04; 50-330/80-33-04): Specification C-208 comments. The inspector reviewed SCN 11001 and EDPI 2.14.7 which adequately address item part numbers 3.c(3), 3.c(5), and 3.c(6). Item numbers 3.c(2) and 3.c(4) remain open pending the inspector's further review.

o. (Open) Unresolved Item (50-329/80-32-05; 50-330/80-33-05). Specification C-211 comments. The inspector reviewed SCN 11002 to Specification C-211 dated April 6, 1981 and drawing C130 which adequately address item part numbers 3.d(2) and 3.d(3). Item numbers 3.d(1) and 3.d(4) remain open pending the inspector's further review.

2. 10 CFR 50.55(e) Reportable Items

a. (Closed) 10 CFR 50.55(e) Reportable Item (329/78-13-EE; 330/78-13-EE): Undersized Wire Installed in the Control Room Makeup Filter Drain Heater Units, Nos. 0VM-78A, 0VM78B, 0VM94A, and 0VM94B. The final report on this deficiency was received by the RIII office (Howe78-79) on March 9, 1979. This letter stated, in part, that the undersized wiring would be replaced by Bechtel under the supervision of Mine Safety Appliances (MSA), the heater unit vendor. The report also stated that the progress and closure of this operation (wire replacement) would be tracked through Nonconformance Report (NCR) No. 1733.

The undersized wire was replaced and the installation inspected by Bechtel Quality Control. NCR No. 1733 was closed on February 11, 1980.

During an over-inspection by CPCo, Quality Assurance (QA) on October 20, 1980, it was noted that type RHH wire had been used to replace the undersizes wire rather than type TA or SIS wire which is specified in Specification 7220-M-150(Q), Revision 4. NCR M-01-4-0-067 was initiated to document these observations. On December 5, 1980, MSA initiated Supplier Deviation Disposition Request (SDDR) No. 7. Bechtel SDDR No. 1967, requested type RHH wire be approved as equal to type TA or SIS wire. Bechtel Engineering approved the above referenced SDDR on January 11, 1981. This item is considered closed.

b. (Open) 10 CFR 50.55(e) Reportable Item (329/78-12-EE; 330/78-12-EE): Inadequate Crimping in Vendor Supplied Electrical Penetrations. The final report on the inadequate crimping of cable/wire terminal lugs in the inboard terminal boxes of Amphenol Sams/Bunker Ramo supplied penetrations was received by the Region III office (Howe-153-79, dated May 25, 1979). CPCo prepared NCR No. M-01-4-8-107 and Bechtel prepared Management Corrective Action Report (MCAR) No. 26 for tracking this deficiency. The type of discrepancies noted on the MCAR were: wire not fully penetrating the lug barrel; crimps not tightly made; barrel of lug collapsed preventing full wire compression and connections loose on the terminal block.

An attachment to the final report states, in part, "During the April 30, 1979 through May 3, 1979 inspection, all unsatisfactory terminations were reworked and passed further inspections and pull tests." In addition, all terminations were checked for: (1) Proper type of lug; (2) Proper lug indentation; (3) Tightness to terminal blocks. Bechtel Field Inspection Report (14 pages) documents the rework and acceptance of the inspections and pull tests described above. CPCo Project Inspection Plan and Report No. 001, dated April 16, 1981, documents MPGAD's overinspection and acceptance of the terminations in the inboard terminal boxes of the 26 Class 1E Electrical Penetrations. NCR No. M-01-4-8-107 was closed on June 8, 1979 and MCAR No. 26 was closed on June 26, 1979.

The Region III inspectors observed the terminations in two (2) of the 26 Class 1E electrical penetrations. As of May 22, 1981, the following conditions existed in penetration Nos. 2Z112 and 2Z116:

Penetration 2Z112

(a) Termination A-15 - wire does not fully penetrate lug barrel.

(b) Terminals G-8, G-9 and G-10 - connections were loose on the terminal block.

Penetration 2Z116

(a) Terminal A-14 - connection was loose on the terminal block.

Licensee indicates that immediate corrective actions would be taken; and explained that the discrepancies noted by the inspectors are limited degreduaction of previously acceptable conditions and oversights on their part. The NRC inspectors concured in this assessment and informed the licensee that this reportable item will remain open until all discrepancies have been corrected and confirmed by a Region III inspector.

Functional or Program Areas Inspected

Details of the functional or program areas inspected are documented in Sections I through V as follows:

Section I

Prepared By: E. R. Schweibinz
Reviewed By: C. C. Williams

1. Scope of Persons Interviewed and Areas Reviewed

The following Consumers Power and Bechtel personnel were interviewed.

Consumers Power Company (CPCo)

Vice President, Midland Project
Site Manager
Construction Superintendent
Environmental Services and Quality Assurance Manager
Site Quality Assurance Manager
Site Quality Assurance Superintendent

Bechtel

Project Manager
Site Manager
Project Quality Assurance Manager
Project Field Quality Control Engineer
Lead Pipe/Mechanical Quality Control Engineer
Several QC Inspectors

The majority of the above personnel were interviewed separately by a two man team from Region III. This team consisted of a reactor inspector and a section chief. In addition, the team met with several of the individuals collectively. These interviews were made to assess the capability, attitudes, and functional adequacy of the personnel and to verify adequate and effective management involvement in the implementation of the site quality assurance program relative to its status, problem solving methodology, and the adequacy of resource support.

No items of noncompliance were identified.

2. Problem Areas Identified

a. Site construction and quality management personnel are not sufficiently sensitive to symptoms of inadequacy identified by their program and other sources as evidenced by the following summary of findings in other sections of this report:

(1) The licensee is not routinely making comprehensive evaluations of root causes of problems.

(2) When problems are identified in an area, the licensee continued working in that area and did not always expedite effective corrective actions.

b. The Region III inspectors identified a need to be more specific in the administration and organizational relationships of the

Bechtel site construction management and quality control organizations, in regard to the coordination, interface and working relationships between the two organizations. The purpose of this needed clarification is to ensure that the organizational freedom required by the Atomic Safety and Licensing Appeal Board ruling (ALAB 152) is fully addressed in the Bechtel procedures. The improvements of procedures to accomplish this clarification will be reviewed in a future inspection. This item is unresolved. (329/81-12-01; 330/81-12-01)

c. Personnel recruitment and assignment philosophy is such that in some cases the licensee focuses excessively on academic achievement to the detriment of its need for a significant amount of experience in its "field grade" or first line personnel. Other sections of this report have identified cases where the primary inspections and other quality related activities are being conducted by academically qualified but insufficiently experienced personnel.

It is NRC's Region III assessment that the bulk of the Region III inspectors' findings during this and serveral recent NRC inspections were partially caused by the inadequacies identified in Paragraphs 2.a and c. above and management's failure to properly use its problem trending mechanism.

No items of noncompliance were identified.

3. Positive Comments

The personnel interviewed in the Consumers Power and Bechtel organizations were qualified, capable, and assertive individuals with positive attitudes. The licensee's management controls were judged to be effective. There is every indication that Consumers Power personnel are in control of the site, providing generally adequate direction and administration of Bechtel and other construction organizations. Examination of routine operations clearly demonstrated that Consumers Power and Bechtel organizations have formed an effectively integrated and coordinated construction and quality management team.

No items of noncompliance were identified.

SECTION II

Prepared By: R. J. Cook

C. E. Jones

Reviewed By: D. C. Boyd, Chief
Reactor Projects Section 1A

1. Objectives of the Inspection

The inspectors objective was to verify that current Quality Assurance Program description and implementation met requirements of 10 CFR Part 50, Appendix B, and other licensee commitments. The critical elements of the objective were accomplished as follows:

a. Verify that changes in QA Programs and Organization effective August 1980 and (reported to the NRC on March 13, 1981) are in place and adequate.

b. Assess/evaluate the magnitude of previously reported breakdowns in Quality Assurance.

c. Verify adequate and effective management involvement in the implementation of the site QA Program.

2. General Areas Inspected

In general the inspectors reviewed selected examples of the following documents compiled by Consumers Power Company, Bechtel, and Babcock and Wilcox:

a. Audit Finding Reports

b. Nonconformance Reports (NCR's) and Nonconformance Report Logs

c. Quality Action Requests (QAR)

d. Corrective Action Requests (CAR)

In addition the inspectors reviewed documents selected at random to examine for corrective action, review and approval by authorized Quality Assurance and Engineering management, referal to Engineering Design and the timeliness of clearing the problem.

No items of noncompliance were identified.

3. Review of NSSS Nonconformance Reports (NCRs)

During the team inspection period, the Resident Inspector examined nonconformance reports issued by the NSSS contractor, B&W, and transmitted to the NRC by virtue of the requirements of ALAB 106. Approximately 15

of these B&W NCRs were examined in detail which also included review of backup information and catagorizations by the licensee.

a. NCR's Associated with the Reactor Coolant Pumps

During the review of the B&W NCR's, it was noted that a rather large number of NCR's had been generated pertaining to conditions observed in the reactor coolant pumps and associated appurtenances. In slightly over a one year period, B&W generated 30 NCR's, and Consumers Power Company and Bechtel Power Corporation generated an additional eight NCR's against the reactor coolant pumps. Eight of the 30 NCR's were selected for a more thorough review in an effort to establish whether adequate corrective action had been taken to ensure the integrity of the reactor coolant pumps.

(1) One of the B&W NCR's (Nonconformance Report No. 1630) addressed missing threads in a portion of the stud hole drilled and tapped into the reactor coolant pump casing for pump designated 2R51C. The disposition of this NCR was to proof test the hole with incomplete threads. The procedure used to perform this test required a 9325 psi pressure on the associated hydraulic tensioner. The pressure used for the studs with complete threads is 8850 psi. Therefore, approximately five percent over the normal installation preload was applied. The stud which was "proof tested" was not recovered from the hole and a subsequent inspection of the hole thread conditions performed. (Reference NRC Inspection Reports No. 50-329/79-26, 50-330/79-26)

(2) Another of the B&W NCR's (Nonconformance Report No. 1664) addressed the fact that six of the holes in the motor mount for reactor coolant pump designated 2B51A have defects and voids in the threaded area. These holes are used in the attachment of the reactor coolant pump motor to the pump stand. This attachment has been addressed in 10 CFR 50.55(e) report to the NRC dated February 10, 1978. A portion of this 10 CFR 50.55(e) evaluation indicated that additional clamping force was required to increase the resultant friction between the motor flange and motor support flange. This was to be accomplished by use of preloaded studs in place of the originally designed cap screws. The disposition to the NCR addressing the nonconforming threads in the motor mount is to "Accept as is..." (Reference NRC Inspection Report No. 50-329/79-27; 50-330/79-27)

The examples referenced above do not appear to have received comprehensive engineering dispositions in that verification of the as-built conditions after "Proof Testing" was not accomplished. During the team inspection, the licensee stated that they were re-reviewing the actions taken on some selected NCR's for engineering adequacy and the two examples mentioned are included in this review.

Based on the above considerations, this item is considered an unresolved matter pending further review by the NRC. (329/81-12-02; 330/81-12-02)

b. Core Support Assembly Guide Block Positioning and Welding

During the team inspection, the Resident Inspector inquired as to the status of NCR's which might have been generated as a result of welding the core support assembly (CSA) and the subsequent motion of these guide blocks. The Resident Inspector was aware that movement of nominally 0.030 to 0.040 inch had occurred between each pair of blocks during the welding operation. The motion was shared by each block of a given pair. Prior to welding, each block is fitted with an interference fit 1 5/8 inch diameter pin which engages the guide block and the core support assembly barrel.

The licensee stated that no NCR's had been initiated with regard to the motion of the guide blocks because the procedure referenced, PCA-58, Guide Block Positioning, required B&W to report any deviation to their Nuclear Service group when the expected gap exceeds the criteria. The site B&W representatives did report the final position of the guide blocks after welding. Consumers Power Company has issued a letter dated May 17, 1981, requesting information from B&W pertaining to the stresses induced when the guide blocks moved relative to the pin during the welding operation. This item is considered unresolved pending further evaluation of the engineering data associated with motion of the guide blocks. (329/81-12-03; 330/81-12-03)

No items of noncompliance were identified.

4. Review of Consumers Power Company Nonconformance Reports (NCR's)

During the team inspection period, the Resident Inspector examined in detail approximately 15 Nonconformance and/or Audit Findings Reports which were generated by the licensee (Consumers Power Company) and transmitted to the NRC by virtue of ALAB 106. From this sampling, the trend which was noted was that the disposition to these NCR's generated by Consumers Power Company appeared to be rigorou and the action justifiable.

No items of noncompliance were identified.

5. Review of Bechtel Corporation Nonconformance Reports (NCR's)

During the team inspection, the Resident Inspector reviewed approximately 75 Nonconformance reports initiated by Bechtel Power Corporation and transmitted to the NRC by virtue of ALAB 106. No discrepancies were noted in the disposition of these NCR's and there appeared to be a justification for these NCR's with a "use-as-is" disposition.

No items of noncompliance were identified.

6. Selection of Sampling Periods

Action on the items in Paragraph 2 (General Areas Inspected) were compared for a period of time prior to March 1980 against a period of time subsequent to August 1980. The purpose of the comparison was to determine the effect of the modified QA/QC Program on project activities and to verify the degree of implementation of the program.

The inspectors also reviewed NCR's issued against specific pieces of Class 1 equipment.

For the comparison, periods of time were selected at random and were chosen as those Nonconformance Reports (NCR's) issued by Bechtel January 2, 1979 through June 22, 1979, and closed during the month of January 1980. The second period chosen was October 1980 through January 31, 1981.

During the first period 42 Bechtel NCR's were closed during the month of January 1980. The initiating dates for those closed ranged from October 10, 1978 to August 8, 1979, or from fifteen to six months. The average time, initiation to closure, was eight months.

During 1979 a total of 1,101 NCR's were written by Bechtel with approximately 555 being issued between January 2, 1979 through June 22, 1979. Of those NCR's issued during this period 97 remained open on January 31, 1980. The rate of closure at the end of 1979 was about 46% of those being initiated within the time period examined.

A total of nine Nonconformance Reports (NCR's) initiated by Babcock and Wilcox were selected at random and reviewed by the inspector. Elapsed time from initiation to closure averaged one to seven months and averaged three and a half to four months but required additional review when completed.

The Quality Action Requests and Corrective Action Requests were complete and appeared to be prepared and processed in accordance with Procedures.

The second period, October 1, 1980 through January 31, 1981 was shorter than the first but indicated an overall improvement in record retention and documentation control.

A review of Audit Finding Reports indicated improved audits and strengthened followup of audit findings.

A total of 22 NCR's, nine from Babcock and Wilcox and 24 from Bechtel were reviewed. The nine NCR's initiated by B&W were approximately 50% complete. The remainder required Engineering Technical instructions from the Lynchburg Office. Other B&W NCR's are discussed in detail in other paragraphs of this section of the report.

The 24 NCR's initiated by Bechtel had been processed in two to three months with an average time of approximately two and a half months or

a reduction in processing time of approximately five and a half months. The NCR's were audited for disposition since the processing time had been reduced and many NCR's were dispositioned by the Field Engineer to "use-as-is". Those selected for review appeared to be properly dispositioned in accordance with approved project procedures. In general the NCR's prepared after August 10, 1980 indicated more care in their analysis, documentation, and a noticable improvement in the timeliness of the NCR processing.

No items of noncompliance were identified.

7. Conclusions

The inspectors reached the following conclusions during the review of plant documentation records and discussions with personnel from Consumers Power Company and major contractors onsite. The conclusions are as follows:

a. Questions were raised regarding the dispositioning of specific B&W NCR's observed during the review of those initated during the selected time periods. Verbal Response from B&W and Bechtel resolved these questions. Other questions discussed in Paragraphs 3.a and 3.b of this section remain to be answered.

b. Nonconformance Report resolution time was reduced from an average of eight months to two and a half months during the time of the past 12 to 18 months. Those processed presently are more complete than the earlier examples selected.

c. Technical evaluations appeared to be adequate. In general evaluations of NCR's dispositioned "use-as-is" were reviewed with special emphasis and observed to meet requirements.

d. NCR's processed recently are more comprehensively responsive to the project's governing procedures.

No items of noncompliance were identified.

SECTION III

Civil

Prepared By: E. J. Gallagher
(IE Headquarters)

R. B. Landsman

Reviewed By: C. C. Williams, Chief
Plant Systems Section

A review of a cross-section of the past, present and planned civil work activities was performed with respect to implementation of the Midland Project Quality Assurance Program. The specific areas reviewed are as follows:

- Quality Assurance staffing (civil area)
- Trend Analysis and Evaluations
- Nonconformance Report Reviews
- Design Control of Block Walls
- Overinspection plans and implementation
- Permanent Dewatering System
- Procurement of Materials
- Quality Assurance Audits
- Project Quality Control Instructions

1. Quality Assurance Staffing (Civil Area)

During this inspection a review of the quality assurance staff for the civil work activities was made to determine that adequate technical, quality assurance depth and personnel availability exist for the present work activities and for the planned remedial measures to be performed as a result of the soil settlement issue.

The on-site QA group is divided into two sections; (1) Quality Assurance Engineering (QAE), and (2) Inspection-Examination and Testing Verification (IE&TV). Each of these sections presently consist of a section supervisor and two civil engineers. The following determinations were made:

a. The present QA civil staff is adequate for the current civil work activities.

b. The QA civil staff does not have the experience or depth in quality assurance, to implement the Midland Project Quality Assurance program for the remedial measures required as a result of the soil settlement issue. Specifically the QA civil staff has very limited technical experience and are unqualified for the complex nature of the planned remedial actions to correct the soil settlement problems. The license acknowledged the above determination and indicated that prior to the initiation

of the complex remedial activities, additional qualified staff will be available to participate in these activities.

No items of noncompliance were identified.

2. Trend Analysis and Evaluation

A review of the Midland Quality Assurance trend analysis for the period of July 1980 through March 1981 was performed to verify that the requirements of Consumers Power Company Procedure M-2, Revision 1, dated March 2, 1981 have been implemented.

The Trend Analysis Procedure M-2 defines a trend as follows:

- A single or multiple occurrence of the magnitude defined in 10 CFR 50.55(e).

- A single or set of circumstances which warrant actions beyond the normal quality program to reverse a situation that is adverse to quality.

- When the current month's data exceed the four month trailing average of the data for the individual performance area.

The procedure required for any of the trends identified above that a summary of corrective actions taken or the rationale for no corrective action be included with the trend report. It further specifies that MPQA personnel shall obtain appropriate corrective action commitments from the appropriate individual.

a. The following specific findings were made as a result of the trend analysis review:

(1) Monthly Trend Analysis Report, July 17, 1980 to August 20, 1980 indicates a negative trend in the Mechanical area (Chart C) which shows an increase in deficiencies from approximately 12 to 75. The evaluation states, "It is therefore recommended that subject supervision be given a review of this report and instructions and indoctrination in the improvements of such deficiencies." Letter dated September 8, 1980 required corrective action by Bechtel Power Company Site Manager to preclude recurrence. No response from the Site Manager nor corrective action document could be located and it was concluded by the licensees representative and the inspector that it had not been written. Chart C2 showed an increase in deficiencies from two to 60. Therefore, no evaluation regarding the cause of drawing and specification tolerances being exceeded in the mechanical area was made.

(2) Monthly Trend Analysis Report, August 21, 1980 to September 17, 1980 continued to indicate a negative trend on Chart C2 (Mechanical drawings and specification tolerances exceeded). The evaluation simply stated, "The quantity is expected to

level off and then slowly decrease; however, it is expected that the quantity of indicators will remain at a higher level than previously observed. At the present time, no additional action is considered necessary." The number of deficiencies during this period increased from 75 to 125. Letter dated October 15, 1980 requested the site manager to evaluate this trend and take appropriate corrective actions. No response from the site manager or corrective action could be located during this inspection and it is assumed by the licensees representative and the inspector that it was not written.

(3) Monthly Trend Analysis Report, September 18, 1980 to October 15, 1980 for Chart B3 (electrical procedures not followed) showed a negative trend from three to 24 deficiencies during this period. Letter dated November 13, 1980 requested the site manager to review, in depth, electrical B3 Chart and take appropriate action. No response from the site manager regarding corrective actions taken could be located during this inspection and likewise, it was acknowledged by the site QA superintendent that this document was not written.

(4) Monthly Trend Analysis Report, October 16, 1980 to November 19, 1980 for Chart B3 (electrical procedures not followed) shows the monthly deficiencies above the four month trailing average. The evaluation states, "after a review of the above items it is concluded that further action is warranted. By copy of this report, the site manager is requested to take appropriate corrective action." No response to this request could be located during this inspection and the licensee representative concluded that the document apparently was not written.

(5) Monthly Trend Analysis Report, January 22, 1981 to February 27, 1981 indicates a significant adverse trend in the electrical Chart B3 (electrical procedures not followed). The number of deficiencies increased from two to 60. The evaluation states, "This indicates field engineering is not keeping close to the construction effort and/or not walking down all work prior to inspection by QC. QAR F-033 has been issued." The corrective action taken as a result of QAR F-033 indicates meetings were held on March 31, 1981 with field engineering and construction superintendents. It was noted that the increase in deficiencies was due to an increase in production.

(6) Monthly Trend Analysis Report, March 1, 1981 through March 31, 1981 showed a substantial decrease in Chart B3 (electrical procedures not followed). The number of deficiencies went from 60 to 15 during this period. The evaluation states, "The large reduction in number of deficiencies indicates that actions taken in response to QAR F-033 appear to have been

effective." Since QAR F-033 action was not taken until March 31, 1981, it would seem unlikely that this action caused the reduction in deficiencies between March 1, 1981 and March 31, 1981.

b. Based on the above review of trend analysis reports, the following has been concluded:

(1) Adverse trends have been identified without adequate response or corrective action from appropriate site managers.

(2) Evaluations by QA have not been adequate and have not identified the "root cause" of the increases in deficiencies.

(3) Routinely, increases in adverse trends are attributed to increases in production and inspection activity while decreases are attributed to corrective action. However, the trend reports do not substantiate these conclusions, and do not identify the real underlying causes (i.e., inadequate training, instructions, directions, etc.).

(4) There was no evidence of stop-work consideration by the QA manager even with substantial increases in the occurrence of deficiencies in the electrical and mechanical work areas.

Based on the foregoing, Consumers has not implemented the trend analysis program as required by Procedure M-2 in that appropriate corrective action commitments were not established by the appropriate individuals, resulting in failure to take comprehensive corrective action. This failure to take adequate and effective corrective actions as a result of the trend analysis indications, is an item of noncompliance, contrary to 10 CFR 50, Appendix B, Criterion XVI. (329/81-12-04; 330/81-12-04)

After the above findings were brought to the attention of the Consumers site QA superintendent, it was ascertained that the trend analysis program has been the subject of review. The site QA superintendent produced a memo dated May 19, 1981 which identified further weaknesses. These included the description of the trend categories, judgement in assigning trend codes and the variety of evaluations of the monthly trends. This memo proposed a revision to MPQAD Procedure M-2.

Except as noted above no items of noncompliance were identified.

3. Nonconformance Report Reviews

The inspector reviewed all civil NCR's closed by QAE during 1981. These NCR's were opened between May 30, 1980 and April 24, 1981. The closed NCR's were dispositioned appropriately except for 22 repetitive NCR's regarding construction personnel passing QC inspection hold points for concrete expansion anchors. Eighteen QC inspection hold points were "passed" during the month of March 1981. It was subsequently learned by the inspector that these 18 NCR's

were included in the trending analysis. CPCo's corrective action was to issue Quality Action Request F-046 which requested Bechtel Field Engineering and Quality Control to redisposition all NCR's. However, CPCo failed to determine the root cause of the problem, which was that construction craftsmen were repeatedly bypassing an important quality control activity, the inspection of cut rebar. Once the anchor bolts are installed, there is no easy way to verify if rebars have been cut. The NCR's were inappropriately dispositioned by checking the torque on the bolts. This is another example of failure to take adequate corrective action regarding an identified adverse trend and is an item of noncompliance contrary to 10 CFR 50, Appendix B, Criterion XVI. (50-329/81-12-04; 50-330/80-12-04)

Subsequent to the inspectors finding, the QA Site Manager issued Stop Work Order No. FSW-14, regarding the installation of anchor bolts and prohibits the bypassing of the inspection hold points.

Except as noted above no items of noncompliance were identified.

4. Design Control of Block Walls

On April 21, 1980, the NRC requested information on masonary block walls for plants under construction. On September 3, 1980, CPCo responded with the required information.

Bechtel then performed a design review of the walls and determined that the orginal design basis (Ultimate Strength Design) was less conservative than the Working Stress Design method. Consequently, removal of approximately five percent of the block walls in the buildings are required. Bechtel and CPCo performed an evaluation as to whether this constituted a 50.55e reportable item and determined that it did not since the design was in progress and there is no established design methodology at the present time.

Replacement of the block walls and their attachments will be done in accordance with the design change installation requirements.

No items of noncompliance were identified.

5. Overinspection Plans and Implementation

Overinspections performed by CPCo are a means to assess the effectiveness of the contractors QC function by performing augmented QC inspections. The overinspection plans are prepared by the QAE Section and implemented by the IE & TV Section. The inspector reviewed the overinspections performed during 1981 in two civil work areas: grouting and soil borings.

The following overinspections were reviewed:

a. "Inspection of Soil Boring" No. 1 dated April 6, 1981 thru No. 6 dated May 14, 1981.

b. "Preplacement, Placement and Curing Inspection of Grouting and Drypacking (Baseplates, Column Bases and Equipment Bases)" No. 2 dated January 26, 1981 thru No. 11 dated April 27, 1981.

c. "Preplacement, Placement and Curing Inspection of Grouting and Drypacking (Dowels and/or Anchor Bolts)" No. 1 dated January 26, 1981 thru No. 10 dated May 5, 1981.

The overinspection plans reviewed covered their subject manner comprehensively and were being implemented adequately.

No itmes of noncompliance were identified.

6. Permanent Dewatering System

CPCo plans to install 20 of the permanent dewatering wells by the service water structure to be used temporarily for construction dewatering of the remedial fix on the service water structure. The preliminary drawings and specifications were reviewed. The following concerns were discussed with the licensee:

a. It was indicated that the wells are to penetrate five feet into the underlying till (clay) layer. However, the drawings are unclear in this area. The licensee agreed to add this on the drawing.

b. Supplemental borings are to be drilled at every fourth well to verify the aquifer grain size and the required length of well screen. However, there was no indication in the specification to allow the well design (i.e,, the slot size of the screen and its length) to be altered by the new borings. The licensee agreed to include this provision in the specification.

c. The PVC plastic well casing is not classified as safety-related; however, the licensee agreed to include the casing on the Project Quality Control Instruction to verify that the proper material is being installed in the well.

d. The drawings indicate a five foot blank piece of casing on the lower end of the well below the screen. The design of this was questioned in that the well could pull the water table farther down if the screen extended all the way to the bottom of the well. The licensee agreed to review this matter.

e. The drilling operation did not address the fact that the hole should be kept full of water to diminish the possibility of hole blow-in below the water table. The licensee agreed to evaluate this concern.

The above five items remain open pending the licensee's response. (329/81-12-05; 330/81-12-05)

No items of noncompliance were identified.

7. Procurement of Materials

MPQAD has assumed responsibility for the review and approval of Field Purchase Orders to assure appropriate quality criteria are contained in these orders. The inspector reviewed MPQAD Procedure M-1 dated March 2, 1981 "QA Review of Bechtel Generated Procurement Documents" and found it to adequately address the quality criteria. It requires that review comments be documented. A memo from Mr. Leonard to MQAE's also requested them to maintain a log of these reviews. A review of this log indicated that they were adequately maintaining the log. However, the inspector requested that the licensee formalize this procedure by including it into their procedure instead of by memo. The licensee also agreed to clarify the status of the purchase orders within the log which was unclear. This item is unresolved pending the revision to Procedure M-1. (329/81-12-06; 330/81-12-06)

The inspector reviewed Purchase Orders, Material Certifications and Material Specification Requirements for grout material, Master Flow and Chemco, and determined that the records are satisfactory.

No items of noncompliance were identified.

8. Quality Assurance Audits

The inspector requested the MPQAD audit schedule to determine if audits are conducted periodically so that the entire civil program is audited at least annually. The inspector was informed that audit schedules are prepared quarterly to cover all forthcoming work activities.

MPQAD personnel indicated to the inspector that they rely on individuals within the organization to prepare the quarterly audit schedules to assure that all activities are being audited. The licensee indicated that they previously recognized that a master audit schedule was needed to assure that all activities are covered and they are presently working on preparing a master audit schedule. The inspector reviewed audit schedules for the second and third quarter of 1981 and found them to cover all ongoing civil activities satisfactorily.

Furthermore, the inspector reviewed audit M-01-19-01 dated April 20-21, 1981, of Woodward-Clyde Consultants Clifton New Jersey Laboratory and found that it was performed according to CPCo procedures.

No items of noncompliance were identified.

9. Project Quality Control Instructions

Project Quality Control Instructions (PQCI's) are written by the contractors to govern their quality control inspection activities. A separate plan is prepared for each separate work activity. The inspector determined that these are being developed and QC inspectors are being certified to individual plans. It is MPQAD's responsiblity

to review these plans to ensure that quality items are covered comprehensively. The inspectof reviewed MPQAD Procedure E-2M, dated March 2, 1981, which delineates how to perform the review, and found that it was being utilized accordingly by MPQAE to review the PQCI's for quality items.

No items of noncompliance were identified.

SECTION IV

Prepared By: R. N. Gardner

R. S. Love

Reviewed By: C. C. Williams

1. Observation of Electrical Work Activities - Terminations

a. The Region III inspectors observed that the Z phase of terminated Class 1E Cable 2AB2322B was in violation of the minimum bend radius criteria at Motor Control Center (MCC) 2B23. Activity 3.11 of Project Quality Control Instruction (PQCI) E-5.0 states, "Verify that the cable or jumper is supported using approved cable ties and the minimum installed cable bend radius is not violated." Bechtel Quality Control had inspected the aforementioned cable termination on May 12, 1981 and the inspection records indicate that activity 3.11 in PQCI E-5.0 was found to be satisfactory. The licensee, MPQAD, subsequent to the NRC inspection, identified the cable bend radius violation on Nonconformance Report (NCR) No. M-01-91-061, dated May 21, 1981.

The Region III inspectors informed the licensee that the above instance is an example of failure to perform an adequate inspection and that this was an item of noncompliance, contrary to 10 CFR 50, Appendix B, Criterion X. (330/81-12-07)

b. The Region III inspectors observed that Consumers Power Company (CPCo) test personnel were determinating and reterminating the electrical power and control cables during the process of removal/installation of MCC circuit breakers temporarily turned over to CPCo for Magnetic Trip Testing. As indicated in the CPCo-Bechtel meeting minutes of December 22, 1980, CPCo has assumed the responsibility for the correct retermination of all such cables associated with MCC circuit breaker testing. The RIII inspectors requested the licensee to develop an inspection plan for the retermination of all electric cables associated with the ongoing test activities. Pending review of this plan, this matter is unresolved. (50-329/81-12-07; 50-330/81-12-08)

No items of noncompliance were identified.

c. The Region III inspectors observed the following crimping tools being used in terminating electrical cables in the auxiliary building:

(1) Tool No. BPC 2593; type MR 8-4
Date Certified: 5/12/81
Recertification Due Date: 11/12/81

(2) Tool No. BPC 2716; type MR 8-4
Date Certified: 2/5/81
Recertification Due Date: 8/5/81

(3) Tool No. BPC 2671; type MR 8-4
Date Certified: 12/2/80
Recertification Due Date: 6/2/81

The pertinent calibration records for the aforementioned crimping tools were reviewed and found to be clear, retrievable and well maintained. Personnel involved in the calibration process were interviewed and found to have a good knowledge of the requirements for calibrating such tools. Each crimping tool is checked monthly and recertified every six months.

No items of noncompliance were identified.

d. The Region III inspectors observed completed and inprocess Class 1E 600 Volt cable terminations in the control room, service water pump house and in the general plant area. Terminations were observed in the following panels and cabinets: 0C20(75); 1C24(50); 1C11(30); 1Y32(14); 1B23(25); 0C180(100); 2B64(10); 1B64(10); 0B64(15); and 1B56(40). (The number in parentheses indicates the approximate number of terminations checked in that panel/cabinet). The following cable scheme numbers were selected at random for a follow-up review of the cable pull cards, QC inspection records and termination landing points as compared with drawing E900, Revision 49: 1BB5606C, 1BB5621F, 1BB5631E, 1AB6302G, 0AY3301A, 0AY3303A, 0BV041D and 0EW21K.

No items of noncompliance were identified.

2. Qualification of QC Inspectors - Electrical

During a review of Consumers Power Company (CPCo) initiated Nonconformance Reports (NCR), Quality Action Requests (QAR) and Audit Finding Reports (AFR), it was noted that MPQAD was identifying numerous noncompliances in items that had been previously inspected and accepted by Bechtel Quality Control inspectors. As a sample, the following documents were selected for follow-up: AFR No. M-02-01-1-06 dated January 27, 1981; QAR No. F-028 dated February 19, 1981; NCR No. M-01-9-1-014 dated February 27, 1981; NCR No. M-01-9-1-016 dated March 24, 1981; NCR No. M-01-9-1-026 dated April 21, 1981 and NCR No. M-01-9-1-045 dated May 6, 1981.

The Region III inspectors requested that the Bechtel Project Quality Control Engineer (PQCE) provide the names and records of the QC personnel involved with the aforementioned nonconformance reports.

The personnel qualification and training records of three QC inspectors were reviewed and compared to the requirements of Regulatory Guide 1.58 and ANSI N45.2.6. Following is a summary of the personnel records reviewed:

Inspector "A"

No previous QA/QC experience

Education: Associate degree in business (No transcript)

Experience:	6/79-8/80	Field Engineer (FERMI)
	3/78-6/79	Material Requisition Engineer (FERMI)
	74-78	Salesman
	8/11/80	Date reported on board
	8/25/80	Certified Level I to PQCI E-4.0 "Installation of Electric Cables." Three (3) hours of documented training.
	8/25/80	Certified Level I to PQCI E-5.0 "Cable Terminations." Three (3) hours of documented training.
	11/18/80	Certified Level I to PQCI E-2.0 "Installation of Cable Tray and Wireway". Two (2) hours of documented training.
	11/21/80	Certified Level I to PQCI W-1.00 "Welding, Heat Treating, and Nondestructive Examination of Q listed and ASME Section III Items". Twelve (12) hours of documented training.

Inspector "B"

Previous QC experience (See 72-76 experience)

Education: Not listed (See 68-70 experience)

Experience:	77-81	Production Manager
	76-77	Manufacturing Manager
	72-76	Industrial Engineer and QC Assistant
	68-70	Taught High School
	3/9/81	Date reported on board
	3/23/81	Certified Level I to PQCI E-4.0 "Installation of Electric Cable". Four (4) hours of documented training.
	3/26/81	Certified Level I to PQCI C-1.50 "Installation and Testing of Expansion Anchors". Five and one-half (5-1/2) hours of documented training.

4/7/81	Certified Level I to PQCI E-5.0 "Cable Termination." Two (2) hours of documented training.
4/30/81	Certified Level I to PQCI E-2.0 "Installation of Cable Tray and Wireway". Two (2) hours of documented training.
5/1/81	Certified Level I to PQCI E-2.1 "Tray Supports." Six (6) hours of documented training.

Inspector "C"

No previous QA/QC experience

Education: BSEE 9/80 (No transcript)

Experience: Miscellaneous parttime work

12/1/80	Date reported on board
12/23/80	Certified Level I to PQCI E-4.0 "Installation of Electric Cable". Five (5) hours of documented training.
12/23/80	Certified Level I to PQCI E-5.0 "Cable Terminations." Six (6) hours of documented training.
3/26/81	Certified Level I to PQCI C-1.50 "Installation and Testing of Expansion Anchors". Two (2) hours of documented training.
5/15/81	Certified Level I to PQCI E-2.0 "Installation of Cable Tray and Wireway". Two (2) hours of documented training.

Discussions with the licensee's contractor (Bechtel) PQCE indicated that all QC inspectors are certified on the basis of an oral examination plus observations of the individual in the field. This type of examination does not provide for an after-the-fact evaluation of the inspector's knowledge or the thoroughness of the examination.

The Region III inspectors informed the licensee that while it was fully recognized that the requirements for education and experience are not absolute, the intent of Regulatory Guide 1.58 and ANSI N45.2.6 is that the individual have the required education and prior related experience in quality assurance, including testing and/or inspection of equivalent construction and installation activities, or documented objective evidence (i.e., procedures and record of written tests) demonstrating that the individual indeed does have "comparable" or "equivalent" competence to that which would be gained from having the required education and experience.

The Region III inspectors indicated to the licensee that due to the liberal interpretation of the aforementioned requirements by Bechtel in the qualification and certification of electrical QC inspectors, the acceptability of the inspections performed by these persons is indeterminate at this time. It was requested that CPCo QAE perform an audit of the QC department to verify the adequacy of training, qualification and examination of the personnel prior to certifying them as Level I or Level II, as applicable, QC inspectors. Pending review of the QA audit report, this matter is unresolved. (329/81-12-08; 330/81-12-09)

No items of noncompliance were identified.

3. Review of Raceway Rework Controls

The Region III inspectors reviewed the licensee's method of controlling the rework of items previously inspected and accepted by Quality Control, such as electrical raceway. The initial installation of raceway is controlled by Bechtel Power Corporation (BPC) Procedure FPE-3.000. When a raceway design change requires rework, a new raceway card is issued by the Bechtel Ann Arbor design office. The rework of such raceway is then controlled by BPC Procedure FPE-1.000.

The Region III inspectors questioned the licensee's contractors Field Engineers concerning the rework of raceway when there are no design changes, e.g., rework consisting of the removal and subsequent reinstallation of the raceway to the original installation drawings and specifications. The inspectors requested to see the procedure being used to control such rework and were given a copy of an unapproved procedure that was being used by the Field Engineering Department. During further investigation by the Region III inspectors, it was determined that the lack of approved rework procedures had been previously identified by Bechtel Quality Assurance on Audit Finding Report (AFR) No. SA-97, dated April 3, 1980. Under Section 10(b), Recommended Actions, of the AFR it states, "Establish procedures for control of the alteration and/or removal of previously Q.C. accepted components. For example: Provide control for "ripout" of welds, cable trays, pipe sections, etc." This finding was closed on July 22, 1980, without such procedures having been established. Consumers Power Company (CPCo) AFR No. M-01-02-1-06 dated January 27, 1981, re-identified the rework of raceway without documented and approved procedures. As of May 22, 1981, approved procedures for rework of electrical raceway have not been developed.

The Region III inspectors informed the licensee that the above is an example of failure to take prompt corrective action and that this was an item of noncompliance, contrary to 10 CFR 50, Appendix B, Criterion XVI. (329/81-12-09; 330/81-12-10)

4. Review of Quality Assurance Records - Quality Action Requests

The Region III inspectors reviewed Quality Action Requests (QAR) Nos. F-032 and F-033 and determined the following:

a. QAR No. F-032, dated March 25, 1981, identified that the Electrical Construction Quality Trend Graph B-2 for the period of January 22, 1981 thru February 17, 1981 showed an increase in deficiencies over those of previous periods. The indicated cause for this increase was construction not assuring completion of and/or not installing the items per drawings and specifications prior to reporting the item complete. Construction was requested to take corrective action to reduce and/or eliminate these deficiencies in the future and to provide MPQAD with a response that states the corrective action to be taken. Examples of items identified were:

(1) Threads not coated.
(2) Unapproved coatings.
(3) Uninsulated conduit bushings.
(4) Anchor bolt problems.
(5) Too many bends between pull points.
(6) Exceeding the maximum cable pull tensions.

The reported action taken was to instruct construction to make a closer inspection of raceway prior to sign-off and reporting the item complete. A contributing factor identified by construction was the increase in production by a factor of two. QAR F-032 was closed on April 13, 1981.

The Region III inspectors noted that the B2 Graph for the period of March 1, 1981 thru March 31, 1981 showed a decrease in the number of deficiencies.

b. QAR No. F-033, dated March 25, 1981, identified that the Electrical Construction Quality Trend Graph B3 for the period of Janurary 22, 1981 thru February 17, 1981 showed an increase in deficiencies over those of previous periods. The indicated cause for this increase was Field Engineering not assuring the completion of work prior to reporting the item ready for final inspection. Field Engineering was requested to take corrective action to reduce and/or eliminate these deficiencies in the future and to provide MPQAD with a response that states the corrective action to be taken. Examples of areas identified were:

(1) Anchor bolts.
(2) Supports.
(3) Coating of welds.
(4) Separation.
(5) Cable splices.
(6) Cable tie downs.

The reported action taken was to instruct Field Engineering to make a closer inspection of items prior to sign-off and turnover to Quality Control for acceptance inspection. A contributing factor identified was the increase in production by a factor of two. QAR F-033 was closed on April 13, 1981.

SECTION V

Prepared By: I. T. Yin

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

1. Review of Procedures and Specifications

In conjunction with observation of large bore pipe system installations and inspection of small bore piping design activities at the site on May 18-21, 1981, the inspector reviewed the following Bechtel procedures and specifications, and had no adverse comments:

- QCI C-1.50, "Installation and Testing of Expansion Anchors," Revision 7, dated July 29, 1980.
- QCI P-2.10, "Pipe (Component) Supports Installation," Revision 6, dated April 21, 1981.
- QCI P-2.00, "Pipe (Component) Supports Final Setting," Revision 5, dated April 13, 1981.
- Bechtel Engineering Department Project Instruction EDPI-4.46.9, "Project Engineering Review of Field Mark-up Working Prints (Redlines)," Revision 0, issued on November 7, 1980.
- Bechtel Technical Specification 7220-M-366(Q), "Field Fabrication of ASME Section III Pipe Supports, Hangers, and Restraints for 2½ Inch and Larger Piping in a Nuclear Power Plant," Revision 3, dated May 13, 1980.
- Bechtel Technical Specification 7220-C-305(Q), "Design, Furnishing, Installation and Testing of Expansion Type Concrete Anchors," Revision 13, dated December 30, 1980.
- Bechtel Technical Specification 7220-M-326(Q), "Installation, Inspection, and Documentation of ASME Section III Pipe Supports, Hangers, and Restraints for Piping in a Nuclear Power Plant," Revision 6, dated February 6, 1981.
- Bechtel Technical Specification 7220-M-343(Q), "Design, Documentation, and Field Fabrication of ASME Section III Pipe Supports, Hangers, and Restraints for Pipe 2 Inch or Smaller," Revision 6, dated November 24, 1980.
- Bechtel Engineering Department Procedure, EDP-4.37, "Design Calculations," Revision 2, dated May 27, 1976.
- Bechtel Manager of Engineering Directive, MED-4.37-0, "Design Calculations," Revision 15, dated January 21, 1981.

The Region III inspectors noted that the B2 Graph for the period of March 1, 1981 thru March 31, 1981 showed a decrease in the number of deficiencies.

No items of noncompliance were identified.

5. Storage of Electric Cable - Cable Storage Yard

The Region III inspectors made a tour of the electric cable storage yard. Items checked were as follows:

a. Storage area free of weeds.
b. Storage area contoured to provide drainage.
c. Cable receiving area identified.
d. Cable/cable reels stored on dunnage.
e. Cable separated as to type.
f. Cable reels identified as to type, footage, etc.
g. Cable ends sealed.
h. Nonconforming cable segregated and/or identified.
i. Excess cable/cable reels identified.
j. Cable stored so as to prevent damage from vehicle traffic.

No items of noncompliance were identified.

Bechtel MED 4.37-1, "Design Calculations - Piping Stress Analysis Instructions," Revision 2, dated November 30, 1979.

No items of noncompliance were identified.

2. Inspection of Large Bore Pipe Suspension System Component Installations

On May 18-19, 1981, the inspector observed approximately 100 installed large bore pipe hangers, restraints, anchors, and snubbers in the Unit 1 and Unit 2 Containment Buildings and in the Auxiliary Building. Ten restraints and anchors were selected for an in-depth review and resulted in the following findings:

a. Rigid Frame Support FSK-M-2HBC-181-1-H5 (Q)

This restraint was installed in the Auxiliary Building, Fl. El. 584, Decay Heat Removal Heat Exchanger Room No. 125. Thick washers were observed at one of the concrete expansion anchor bolts. The 2" embeddment length for the 5/8" bolt was authorized by Bechtel field engineer on September 12, 1980. The calculation for the Red Line No. SH-1545 was properly prepared and reviewed. QC inspection was completed on September 24, 1980.

b. Rigid Frame Support FSK-M-1HBC-153-H2 (Q)

This restraint was installed in the Auxiliary Building, Fl. El. 599, Make Up Pump Room No. 214. Questions were raised relative to the requirement for jam nut installation. However, the inspectors questions were adequately resolved.

c. Rigid Frame Assembly 4-2CCB-79-H4

This restraint was installed in the Auxiliary Building, Fl. El. 599, Make Up Pump (1VM-51C) Room No. 212. One of the 5/8" J-type concrete expansion bolts of 6½" length was cut. The UT record, dated December 10, 1980, indicated 6" actual length. This length was considered to be acceptable. The anchor bolt installation was QC inspected and accepted on December 18, 1980. In regard to the concrete anchor bolt installation locations, the inspector observed bolts installed only 2" from the embeddment plate. This is in violation of Bechtel Specification 7220-C-305 (Q), Table 4.2 requirements. This nonconformance was accepted by Bechtel Field Engineering (Red Line No. LH 4276, dated October 8, 1980) with instructions that "Paint Embed for Non-use 12" above and below each bolt." The instruction was based on the requirements established in Bechtel Drawing No. C-143 (Q), "Project Civil Standards Reinforcing Concrete General Notes and Details," Sheet 4, Revision 4, dated October 27, 1980, where it was stated in Note No. 39, that "Inserts may be interrupted for grouted and expansion anchor bolts where insert is interrupted for anchor bolts, no attachment is permitted to insert for a distance above and below the anchor bolts of 12" (from center line of anchor bolts)." However, the embed was not painted and the installation had been inspected and accepted by QC personnel on December 23, 1980.

d. Rigid Frame Restraint FSK-M-1FCB-46-1-H1

This restraint was installed in the Auxiliary Building, Fl. El. 568, Spray Pump and Decay Heat Removal Pump Room No. 27. The clearance between the 3/4" pipe and the restraint was measured to be 5/32", which exceedes the Bechtel Standard Drawing FSK-M-PGS-104(Q) and Bechtel Specification 7220-M-326(Q) requirements. The maximum acceptable gap should be 1/8". The installation was QC inspected and accepted on May 19, 1980.

e. Rigid Frame Restraint 18-1HCB-2-H13

This restraint was installed in the Auxiliary Building, Fl. El. 568, Reactor Building Spray Pump and Decay Heat Removal Pump Room No. 27. Clearances on one of the restraint contact locations was measured to be from 1/16" to more than 3/8". By calculation, the fabrication angle exceeded the 2° established in Bechtel Specification 7220-M-366(Q), Paragraph 5.4.1, which states that "Dimensional tolerances apply to fabrication of component pipe supports where the tolerances are not explicitly stated. The angles, formed or torch cut, should be ±2°." The installation was QC inspected and accepted on May 5, 1980.

Furthermore, since portions of the clearance was 3/8" or more and exceeded the Bechtel Specification 7220-M-325(Q) tolerance, the applicability of Bechtel Specification 7220-M-366(Q) was questionable. This is an unresolved item. (329/81-12-10; 330/81-12-11)

f. Sliding Stanchien Assembly 2HBC-124-H7

This assembly was installed in the Auxiliary Building, Fl. El. 584, Decay Heat Removal Exchanger Room No. 125. Fair sized gaps covering large areas were observed between the concrete wall surface and the base plate. The condition was contrary to Bechtel Specification 7220-M-326(Q) Paragraph 5.11.1 requirements, which state that, "The clearance between the concrete walls and the structural attachment plates should not exceed 1/16 inch over a maximum of 20% of the bearing area; otherwise grouting is required to ensure proper bearing." The assembly was QC inspected and accepted on September 5, 1980.

g. Rigid Frame Assembly 12-2HBC-124-H5R

This assembly was installed in the same area as Item f above. Holes were drilled within the shear cone areas of the installed concrete expansion anchor bolts. The distance was measured to be 5 inches from the center of the 1¼" bolt to the edge of one of the holes. This condition is in violation of Bechtel Specification 7220-C-305(Q), Table B-3 which requires that the distance for the 1¼" dia. bolt under these conditions should not be less than 7½ inches. The assembly was QC inspected and accepted on March 18, 1980.

h. Anchor 2½"-1CCB-2-H7

The pipe anchor assembly was installed in the Auxiliary Building, Fl. El. 599, Make Up and Purification System Room No. 214. Drop-in type concrete anchor bolts of ¼" diameter and 1" long were observed installed approximately 1½" from 5/8" structural concrete expansion anchor bolts. This violation is similar to the problem described in Item g above. The anchor assembly was QC inspected and accepted on October 14, 1980.

i. Sway Strut FSK-M-2HBC-137-3-H3 (Q)

The strut unit was installed in the Auxiliary Building, Fl. El. 599, Make Up Pump Room 213. An improper sized bolt spacer was observed installed in the pipe clamp, causing a large space between the pipe and the clamp shoes. The unit had not been QC inspected.

j. Rigid Restraint 3" - 2HBC-216-H5

The unit was installed in the Auxiliary Building, Fl. El. 645, Chiller Room No. 506. No problems were identified.

The piping suspension system components that were not constructed and installed in accordance with the drawing and specification requirements, as stated in Paragraphs c - i above are considered to be a deficiency in the pipe hanger program. This is an item of noncompliance, contrary to 10 CFR 50, Appendix B, Criterion V. (329/81-12-11; 330/81-12-12)

The failure of the QC inspectors to identify the above installation deficiencies is considered a lack of sufficient QC inspection, program implementation. This is an item of noncompliance, contrary to 10 CFR 50, Appendix B, Criterion X. (329/81-12-12; 330/81-12-13)

3. Review of Site Small Bore Piping Design Activities

The inspector reviewed the subject activities at the site Bechtel Small Bore Piping Design Center on May 19-21, 1981.

a. Design Control

The inspector selectively reviewed several of the small bore pipe system isometric drawings that had been issued for fabrication and installation, and had the following findings:

(1) FSK-1-HCB-271-1, Revision 2

Piping stress calculations including summary sheets were not included in the design package.

(2) FSK-1-GCB-36-2, Revision 2

Piping stress calculations including summary sheets were not included in the design package.

(3) FSK-MO-2HCB-136-2

The preliminary stress calculation package dated November 6, 1980, contained sufficient stress summaries, references, and design basis documentation.

(4) FSK-M-0HCC-58-3, Revision 3

Piping stress calculations including summary sheets were not included in the design package.

(5) FSK-M-2HBC-138-1

The preliminary stress calculation package dated November 6, 1980, contained sufficient stress summaries, references, and design basis documentation.

In discussion with the Small Pipe and Hanger Group Supervisor, the inspector was told that the stress calculations will be performed after the "stress walkdown" approximately ninety days prior to the system turnover for startup testing. The inspector stated that failure to document stress calculations prior to issuance of drawings for construction is in nonconformance with Bechtel EDP-4.37, Revision 2, Paragraphs 7.5 and 8.3, which state that, "Calculations shall be checked and approved, in accordance with these procedures, prior to issuing drawings for construction,... Exceptions to this requirement shall be approved by the Project Engineer," and "To ensure follow-up and finalization of incomplete work, preliminary calculations tentatively committed to final design work are filed, after review, in a separate binder entitled, "Committed Preliminary Design Calculations (CPDC)." This is an item of noncompliance, contrary to 10 CFR 50, Appendix B, Criterion III. (329/81-12-13; 330/81-12-14)

On May 21, 1981, the licensee informed the inspector that, as of that date, 1363 isometric drawings had been issued for construction. The total number of stress calculations involved was 924. Among these, 174 were considered to meet the CPDC status and 750 lacked sufficient stress analysis documentation.

b. Document Control

During the above design control review on May 19 and 20, 1981, the following document control deficiencies were identified at the Small Bore Piping Design Center:

(1) An out-of-date copy of Bechtel Specification 7220-M-343(Q), Revision 3, dated January 18, 1979, for field design of 2"

and smaller piping systems, was presented to the inspector by the Small Pipe and Hanger Group Supervisor during the course of technical discussions. Subsequently, it was identified that the Specification should be Revision 6, dated November 24, 1980. The Supervisor was not aware of the revision, and as a result the copy used by him had not been stamped "Superseded."

(2) In review of Bechtel hanger calculation No. 412-2-11, (FSK-M-1HCB-271-1, Revision 2), performed on March 12, 1980 and checked on March 22, 1980, it was observed that the hanger design loads were not in accordance with Specification 7220-M-343 (Q) values. Subsequently it was determined that the design loads had been superseded by AP Engineering, Inc. calculation, dated February 24, 1981. However, the original hanger calculation sheet was not marked "Superseded."

(3) In conjunction with the design calculation review, it was identified that the specific revision number of the specification or procedure, on which the calculation was based, was not included in the calculation package. The inspector could not determine if the design had been based on applicable up-to-date criteria.

This is an item of noncompliance, contrary to 10 CFR 50, Appendix B, Criterion VI. (329/81-12-14; 330/81-12-15)

c. Control of Installation Changes

Due to design changes and interferences, approximately 5,600 feet of installed small bore piping, including suspension systems, inside the Auxiliary Building was removed between December 1980 and May 14, 1981. In fact, since late 1979 27 area task forces were assigned to coordinate the various installation change activities for about 20 different areas in the Auxiliary Building.

The inspector noted that procedural provisions to control the effects of design revisions on small bore piping and piping suspension systems were questionable in the following areas:

(1) Design instructions on how to modify the existing installed system; what parts of the system will be changed, what to do with the removed components, and what measures should be taken to control field and shop weld locations and identification.

(2) Voiding of the portion of installed and inspected system records that were revised by design changes.

(3) If the cut-off portions, including hangers, are to be installed in a different system, instructions on how to transfer installation or QC records (travelers, FCR's, DCN's, NCR's, etc) into the new piping system record files.

(4) QC inspection records will not be assembled until just before system turnover. What measures will be taken to ensure effective QA audit and surveillance under these conditions?

This is considered an unresolved item. (329/81-12-15; 330/81-12-16)

4. Audits of Site Small Bore Piping Design Activities

On May 20-21, 1981, the inspector reviewed the following licensee and Bechtel QA audits and review of small bore pipe design activities at the site:

- CP Audit Report No. M-01-24-0, performed on September 24 - October 13, 1980. Audit areas included the small pipe and support design process including review and approval, document control, and personnel training. Nine findings were identified.

- CP Audit Report, No. M-01-17-1, performed on April 8 - 10, 1981. Audit areas included staff implementation of EDP's and control of Red lined Drawings. One finding was identified.

- Bechtel audit report of audits performed on December 11, 1979 in the areas of support design. Eleven findings were identified.

- Bechtel audit report of audits performed on July 8, 1980 on stress calculations. No deficiencies were identified. The report stated that, "The stress calculations were found to be in accordance with standard engineering practice."

- Bechtel QA Management Audit performed on August 25 - 29, 1980, at the site and at the Ann Arbor office in the areas of piping and pipe supports. Audits in small pipe design included Red Line drawing control and pipe hanger calculations.

- Bechtel QA Audit from May 18, 1981 to May 22, 1981. No discrepancies were identified in the hanger calculations.

Subsequent to the audit report review and discussions with the responsible CP and Bechtel staff, the inspector concluded that there were inadequate audits and surveillances of the site small bore pipe and hanger design activities. The determination was based on:

a. Piping stress analysis was not audited by CP. Where the piping stress analysis was audited by Bechtel QA, the MED 4.37-1, "Design Calculations - Piping Stress Analysis Instructions", Revision 2, dated October 16, 1979 requirements were misinterpreted. The Bechtel small pipe design staff and QA staff interpreted Paragraph 9.0 of MED 4.37-1, which states, "the period following reconciliation of all as-built piping drawings with the stress

analysis" to mean no formal stress calculations will be documented prior to system installation and walkdown verification. The measures taken are in direct violation of EDP-4.37, Revision 2 requirements including Paragraphs 7.5 and 8.3 as discussed in Paragraph 3.a of this section of this report.

b. CP Audit Report No. M-01-24-0, performed on September 24 - October 13, 1980, identified a large number of deficiencies in small bore piping suspension system design. Consistent deviations from Bechtel EDP-4.37 relative to the design review of weight calculations, thermal analysis, pressure effects, nozzle movements, checking and verification of design basis, and completeness in documentation were identified in the report, however, there was no technical audit followup in the first two quarters of CY 1981, and there were no audits planned for site small bore design activities for the third quarter of CY 1981.

This is an item of noncompliance, contrary to 10 CFR 50, Appendix B, Criterion XVIII. (329/81-12-15; 330/81-12-16)

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 Section I, Paragraph 2.b; Section II, Paragraphs 3.a and 3.b; Section III, Paragraph 7; Section IV, Paragraphs 1.b and 2; Section V, Paragraphs 2.e and 3.c.

Exit Meeting

The inspectors met with licensee representatives (denoted under Persons Contacted) for update meetings on May 19, 20 and 21, 1981, and conducted an exit meeting at the conclusion of the inspection on May 22, 1981. The inspectors summarized the purpose and findings of the inspection. The licensee acknowledged the findings reported herein.

Based on discussions between the licensee representatives and the NRC inspection staff on May 22, 1981 an Immediate Action Letter (IAL) was issued by Region III to ensure immediate and effective corrective action regarding each of the adverse issues identified in Section V of this report (piping and pipe supports).

piping isometric drawings issued for construction but not yet installed, in the order of installation.

6. During the conduct of the reviews, identified in items 4 and 5, you will document all discrepancies and will notify cognizant NRC Region III staff of any significant discrepancy. (An example of a significant discrepancy is if the reviewed calculation indicates that stresses in the pipe that is depicted on an isometric drawing issued for construction exceed code allowables).

7. Audits will be conducted at completion of steps one through four, and periodically during steps five and six, to ensure adequacy of the program.

Please inform us immediately if your understanding of these items is different from that stated above.

Sincerely,

G Bert Davis

for James G. Keppler
Director

cc: Central Files
Reproduction Unit NRC 20b
PDR
Local PDR
NSIC
TIC
Ronald Callen, Michigan Public Service Commission
Myron M. Cherry, Chicago

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

Exhibit "A"

May 22, 1981

Docket No. 50-329
Docket No. 50-330

Consumers Power Company
ATTN: Mr. James W. Cook
Vice President
Midland Project
1945 West Parnall Road
Jackson, MI 49201

Gentlemen:

Based on Discussions between Mr. J. W. Cook and Mr. R. C. Knop on May 22, 1981, we understand that you will not issue fabrication and construction drawings for the installation of the safety related small bore pipe and piping suspension systems until steps one through four below have been completed and audited.

1. MED 4.37-0 will be revised to include requirements that the specific revision number of the specification or procedure, of which the calculation was based on, is identified in the calculation package. (Note: This action was completed on 5/21/81 by issuance of Revision 16 of MED 4.37-0).

2. Conduct document control review to ensure that all the applicable up-to-date specifications and procedures are in place in the work locations.

3. Conduct training on MED 4.37-1 (Design Calculations), the importance of following QA procedures in general, and use of specification M 343 for all personnel within the small bore piping design group performing stress analysis for safety-related piping.

4. Establish plans and schedules to review all small bore piping isometrics that have been issued without supporting calculations properly packaged to the revised MED 4.37-1 requirements.

5. Perform the reviews identified in Item 4, above, to accomplish the following:

   a. Bring the calculation documentation up to the level required by MED 4.37-0, Rev. 16.

   b. Ensure that the calculations are technically adequate.

In conducting those reviews, the highest priority shall be given to

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[illegible] ACTION LETTER

Midland
RIII FILE COPY
PRIF

James W Cook
Vice President - Projects, Engineering and Construction

General Offices: 1945 West Parnall Road, Jackson, MI 49201 • (517) 788-0453

March 30, 1984

Director of Office of Inspection
and Enforcement
Att Mr Richard C DeYoung
US Nuclear Regulatory Commission
Washington, DC 20555

MIDLAND PROJECT - ALAB-106 QUARTERLY REPORT
DOCKETS NOS 50-329 AND 50-330
FILE: 0.4.6 SERIAL: 28074

Pursuant to the second and third conditions of the Memorandum and Order ALAB-106 dated March 26, 1973, and Amendment No 1 to the Midland Plant Construction Permits, we are submitting ten copies of our forty-fifth (45th) report covering the period April 1, 1984 through June 30, 1984.

James W. Cook

JWC/WRB/lr

CC: RJCook, USNRC Resident Inspector
Midland Nuclear Plant

JGKeppler, NRC Region III

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PER A. WA MAY MAYCRAFT

OC0384-0048A-MP01

Cable misinstallations

1. testimony
2. March 3, 1982 - draft report from licensee on results of overinspections.
3. April 7, 1982 - revised report from licensee on results of overinspections.
4. April 26, 1982 - NRC inspection report 82-06 issued to document the upgrading of the unresolved item to an item of noncompliance. Inspection on March 17-19, 1982.
5. May 14, 1982 - meeting with licensee at RIII to discuss licensee report of May 14, 1982 and the licensees preliminary plans to address the issue. NRC report 82-09 issued June 28, 1982
6. June 14, 1982 - licensee's response to 82-06 and updated report on cable misinstallations.
7. August 30, 1982 - NRC inspection report 82-07 issued to document the extent of QC inspection deficiencies in regards to safety related pipe support and restraint installations. Inspection on April 21-23, 1982.
8. September 2, 1982 - NRC letter to licensee requiring a 100% overinspection of all class 1E cables pulled (or partially pulled) before March 15, 1982 and a sample overinspection for those after March 15, 1982
9. October 15, 1982 - licensee letter to NRC agreeing to complete 100% overinspections as requested, also to perform the requested sample reinspections.
15. FSAR requirements

Cable misinstallations

As I previously testified (1), the licensee, at the NRC's request, identified 9 QC inspectors against whom MPQAD had written NCRs. The licensee was required to perform a 100% overinspection of items previously inspected by these individuals. The licensee did complete these overinspections for 8 of the 9 QC inspectors but stopped after performing 500 of the total 1147 for the remaining inspector.

CPCo submitted the initial report (2) on the special electrical overinspection to the NRC on March 3, 1982. This report identified 61 misrouted cables. A revised report (3) was submitted on April 7, 1982 to reflect the now identified 55 misrouted cables.

During an NRC inspection (4) on March 17-19, 1982 I informed the licensee that the failure of QC inspectors to identify the 55 misrouted cables was escalated from an unresolved item to an item of noncompliance.

A meeting (5) was held in R III on May 14, 1982 during which the licensee submitted a bound report (with enclosed sketches) on the misrouted cables. The possible cause of the misroutings was discussed along with the licensee's preliminary proposal for addressing the generic affects of the misroutings. The licensee was informed (15) of the R III concern that the potential for other misrouted cables was contrary to the Midland FSAR.

An updated report (6) was submitted to the NRC on June 14, 1982.

I reviewed the licensees submitted reports and was not convinced that the NRC could accept 5% undetected misrouted cables. I also contacted NRR and determined that they were not receptive to the licensee's proposed revision to the FSAR.

On September 2, 1982 the NRC submitted a letter (8) to the licensee requiring a 100% overinspection of all class 1E cables pulled (or partially pulled) before March 15, 1982 and a sample overinspection for those pulled after March 15, 1982.

On October 15, 1982 the licensee submitted a letter (9) to the NRC agreeing to the overinspections.

Previous Testimony

100% overinspections were performed on 8 of 9 inspectors. a 250 cable sample was inspected for the ninth. I requested the licensee to inspect another 250 cable sample. Once completed. I requested the licensee to perform a 100% overinspection of Mr. Urbany's previous inspections. This was due to the increase in deficiencies from 3 to 29. The licensee refused to comply with this request.

steps we required the licensee to take:

1. determine if previous inspections performed by the 9 QC inspectors were acceptable.
2. verify the adequacy of the training, qualifications and examination of Bechtel QC personnel.

improvements made by licensee:

1. Bechtel is now documenting OJT as part of cert. process
2. NP&AD is overviewing Bechtels QC cert program.

I testified that I believed these changes would result in adequate QC certifications. I also stated that ~~the~~ certifications prior to these changes were indeterminate.