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

REGION III

Report No. 50-329/80-01; 50-330/80-01

Docket No. 50-329; 50-330 License No. CPPR-81; CPPR-82

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

Facility Name: Midland Nuclear Plant, Units 1 and 2

Inspection At: Midland Site, Midland, MI

Inspection Conducted: January 8-11, 1980

Inspectors: T. E. Vandel — 2-11-80

E. J. Gallagher — 2-11-80

E. W. K. Lee — 2/11/80

K. R. Naidu — 2-11-80

Approved By: R. C. Knop, Chief, Projects Section 1 — 2/12/80

Inspection Summary

Inspection on January 8-11, 1980 (Report No. 50-329/80-01; 50-330/80-01)
Areas Inspected: Review of procedures and observations of work for electrical components; review of procedures, observations of work, and records review for containment post tensioning activities; reactor coolant pressure boundary and safety related piping welding activity observations an records review; follow up review of previously identified noncompliance and unresolved matters as well as 50.55(e) deficiency reports. The inspection involved a total of 92 inspector-hours on site by four NRC inspectors.
Results: Of eleven areas reviewed during the inspection, two items of noncompliance (infraction, lack of weldor qualification, and deficiency, lack of records sign off) and one deviation (failure to implement a commitment were identified in two areas.

8003310145

DETAILS

Persons Contacted

Consumers Power Company Personnel

B. Marguglio, Corporate QA Director
D. B. Miller, Site Manager
*T. C. Cooke, Project Superintendent
*J. L. Corley, QA Section Head, IE & TV
*D. R. Keating, QA Mechanical Supervisor
*D. D. Balinsky, QA Electrical Supervisor
*B. H. Peck, Construction Supervision
*M. J. Shaeffer, Group Supervisor, QAE
*G. T. Black, Jr., QA Engineer
*R. G. Wollney, QA Engineer
*R. Wheeler, Field Civil Engineer
*R. E. McCue, Project Testing
E. L. Jones, QA Engineer
P. K. Kyner, QA Electrical Supervisor

Bechtel Power Corporation Personnel

*A. J. Boos, Project Field Engineer
*W. L. Barclay, Project Field QC Engineer
*L. M. Brown, QC Engineer
*P. Corcoran, Resident Engineer
*L. A. Dreisbach, Project QA Engineer
*R. C. Hollar, Lead QA Engineer
*R. F. Schulman, Resident Civil Engineer
*E. Smith, Lead QA Engineer

B & W Personnel

*V. N. Asgaonkar, Project Manager
*R. W. Shope, QC Supervisor

*Denotes those present at the exit meeting held on January 11, 1980.

The inspectors also contacted other contractor and licensee personnel during the course of the inspection.

Licensee Action on Previous Inspection Findings

(Open) Noncompliance Item (329/78-03-03; 330/78-03-03) The NRC inspectors reviewed the interim and final reports relative to this matter. During discussions with the licensee and Bechtel personnel, the NRC inspectors determined that there was no documented evidence that the field engineering recommendation in NRC 987 "to rework all fillet welds that have coarse ripples, high crowns, excessive concavity or convexity, and where

the base metal has been ground and grooved to unacceptable thickness" was in fact accomplished. The contractor personnel after consultations stated that an engineering review was performed on the above unacceptable welds, and concluded the welds "as is" were acceptable. The NRC inspectors informed the licensee that these welds will be reexamined during a subsequent inspection.

(Closed) Noncompliance (330/79-22-02) Control of welding material. The inspector established that Bechtel supervising personnel and craftsmen have been instructed the procedure requirements of handling welding rods.

(Closed) Unresolved item (329/79-17-01 and 330/79-17-02) Welder Qualification Records. The inspector reviewed the qualification records of the welders in question. It was determined that the errors have been corrected and a discrepancy was also corrected immediately. Additionally, the inspector randomly selected qualification records of 30 other welders for review, with no further discrepancies being identified.

(Closed) Unresolved Item (329/79-24-01 and 330/79-24-01) B & W procedure: The inspector reviewed the revised procedure No. 9-WG-107, Revision 3. It was determined that the procedure has been revised to clarify the handling of return unused welding material.

(Closed) Unresolved Item (329/79-24-02) Ground out in pipe: The inspector reviewed a Bechtel letter to Consumers Power Company dated January 3, 1980 stating that the ground in the pipe was examined and no mimimum wall thickness was violated. However, why and when it was ground was undeterminable.

(Closed) Unresolved Item (330/79-22-01) Design changes after work is complete: This item became an item of deviation (Section I, paragraph 8).

Section I

Prepared By: E. W. K. Lee
Reviewed By: D. H. Danielson, Chief
Engineering Support Section 2

1. Reactor Coolant Pressure Boundary Piping - Welding Material Control (Units 1 and 2)

a. Review of Documents

The inspector reviewed the following documents:

(1) Babcock and Wilcox Construction Company (B & WCC) Procedure No. 9-QPP-118, Revision 1, "Procurement of Weld Filler Material".

(2) B & WCC Procedure No. 9-WG-107, Revision 3, "Storage Handling, and Issuing of Welding Filler Metals".

(3) B & WCC Procedure No. 9-QPP-108, Revision 4, "Receiving Inspection".

(4) Receiving Inspection Reports and Material Certification for ER-316L welding rod with heat No. 74781 and lots No. 30707, No. 23709, and No. 29615; heat No. 464182 and heat No. 761590.

It was determined that the above documents met the PSAR, 10 CFR 50, Appendix B, and the applicable code requirements.

b. Control of Materials

The inspector toured B & WCC welding material issuing station. It was determined that (1) the welding materials are properly identified and segregated; (2) the temperature of the rod ovens is maintained; (3) records are properly kept; and (4) issuance and return of welding materials are controlled in accordance with the approved procedures.

No items of noncompliance or deviations were identified.

2. Reactor Coolant Pressure Boundary Piping - Observation of Work Activities (Unit 2)

The inspector observed the following welding activities:

a. Reactor Coolant Pump No. 2P-51C Pump Gasket Drain System Weld No. 2 on drawing No. FSK-M-2CCA-58-5.

b. Pressurizer System Weld No. 7.

c. Incore Instrument Piping Weld No. F8, No. F10, No. F23, and No. F24.

It was determined that (1) work was conducted in accordance with traveller; (2) proper welding materials were used; (3) welding procedure requirements were met; (4) work area was free of weld rod-stubs; and (5) physical appearance was acceptable.

No items of noncompliance or deviations were identified.

3. Reactor Coolant Pressure Boundary Piping - Visual Examination of Welds (Unit 1)

a. Visual Examination

The inspector visually examined the completed welds of the Reactor Coolant System Welds No. J1-1, No. J1-2, No. J4-1, No. J4-2, No. J4-3, No. J4-4, No. J5-1, No. J5-2, No. J6-1, and No. J6-3.

It was determined that (1) weld surface finish and appearance were acceptable and there was no evidence of wall thinning due to grinding; and (2) arc strikes and weld spatter were not evident.

b. Review of Records

The inspector reviewed weld data sheets for the Reactor Coolant System Welds No. J1-1; No. J1-2; No. J4-1; No. J4-2; No. J4-3, and No. J4-4.

It was determined that (1) the records indicated specified inspections were completed; and (2) records are clear and legible.

No items of noncompliance or deviations were identified.

4. Reactor Coolant Pressure Boundary Piping - Welder Qualification (Units 1 and 2)

a. The inspector established that B & WQC procedure for welder qualification has not been revised since the last review. (IE Inspection Reports No. 50-329/79-17 and No. 50-330/79-17, paragraph 3).

b. The inspector reviewed the randomly selected qualification records of fourteen welders who performed welding on welds stated in paragraphs 2 and 3b. of this report.

It was determined that the above documents met the requirements of ASME B & PV Code Section IX except welder I.D. 624. The inspector established that this welder welded on thickness exceeding his qualified range. This condition is an item of noncompliance as identified in Appendix A. (329/80-01-01; 330/80-01-01)

5. Reactor Coolant Pressure Boundary Piping - Observation of NDE Activities (Unit 1)

The inspector observed magnetic particle examination of the Reactor Coolant System Weld No. J6-1. It was determined that: (1) surface condition was acceptable; (2) procedure requirements were met, (3) personnel were properly qualified and (4) equipment used was currently calibrated.

No items of noncompliance or deviations were identified.

6. Safety Related Piping - Observation of Welding Activities (Unit 1)

The inspector observed the welding of Make-Up and Purification System Weld No. 37C1 on drawing No. M603 sheet 9. It was determined that (1) work was conducted in accordance with traveller; (2) proper welding materials were used; (3) welding procedure requirements were met; (4) work area was free of weld rod stubs; and (5) physical appearance was acceptable.

No items of noncompliance or deviations were identified.

7. Review of Quality Control Inspection Record (Unit 2)

The inspector reviewed the Quality Control Inspection Record of the Service Water System Spools No. OHBC-19-S-619-6-6 and No. 2HBC-88-S-619-6-1 and valve serial No. D0061-1-3. It was determined that on August 21 and 22, 1979, both flanges of the valve were unbolted and then re-bolted. The inspection records indicated that the internal surfaces on the spools were inspected for cleanliness but not the valve. Upon questioning the licensee's contractor, the inspector was informed that the internal surface of the valve was inspected for cleanliness but failed to date and signed off on the record. This condition is an item of noncompliance as identified in Appendix A. (330/80-01-02)

8. Design Changes Made After Completion of Work Activities (Unit 1 and 2)

During the inspection of October 10-12, 1979, (IE Inspection Reports No. 50-329/79-22 and No. 50-30/79-22) the adequacy of tracking the design changes after work activities have been completed was in question.

During this inspection the inspector reviewed a letter from Bechtel Power Corporation to Consumers Power Company dated November 23, 1979. Paragraph 4 of the above letter states, that, "Assurance that the change is implemented is provided by:

a. Field Engineering monitoring of in-process work.

b. Final system walkdown by Field Engineering.

c. Piping configuration review by Quality Control per QCIR P-1.00.

The inspector was also informed by the licensee's contractor that each field engineer may have his own informal method of tracking such a change. The inspector was shown a punch list which was initiated in November, 1979. The inspector asked how and when was the punch list prepared. The licensee's contractor stated that, "Punch list is prepared as a result of (1) awareness of item requiring system completion (including design change of completed work) and (2) as backup by physical walkdown. The punch list can be prepared approximately six months prior to system turn over to the licensee. The inspector stated that none of the above methods provides a positive way of tracking design changes and assuring that completed work is modified in accordance with the design changes.

Furthermore, the inspector established that there is no procedure for handling design changes made after completion of work. This condition is an item of deviation as identified in Appendix B. (329/80-01-02; 330/80-01-03)

Section II

Prepared By: K. R. Naidu
Reviewed By: D. W. Hayes, Chief
Engineering Support Section 1

1. Review of Quality Assurance Implementing Procedures for Instrumentation Units 1 and 2

The inspector reviewed Bechtel specification J-218 (Q) Revision 7, titled, "Technical Specification for installation fo field mounted instrumentation for Nuclear Services" which outlines the requirements for the installation of field mounted instruments, procurement of installation materials and layout detailing, fabrication, and installation of instrument mounting structures, tubing trays, and tray supports. The inspector determined the following:

a. Safety related instruments are listed in Specification J-705 (Q)

b. Receipt inspections are performed to Quality Control Instruction (QCI) R-1.00 and the results documented in the relevant QCIR.

c. Nonconforming components are identified during receipt inspections' cursory visual inspections and are performed to identify shipping damage and verify whether the relevant documents have accompanied the shipment.

d. QCI I-1.10 outlines the installation requirements for instruments and the results are documented in the relevant QCIR. Some of the salient points inspected are:

(1) Tube cleanliness

(2) Bending of impulse lines

(3) Material identity

(4) There is no specific requirement to verify conformance with the separation criteria, based on the assumption that the drawings reflect separation criteria. The NRC inspector stated that if the drawings were wrong then the QC inspectors may not pick up design oriented problems. The licensee agreed with the NRC inspector and initiated to revise the QCI to emphasize separation criteria verification. Pending review of the revised QCI and QCIR, this matter is considered unresolved. (329/80-01-03; 330/80-01-04)

f. Paragraph 5.3.4 of the specification provides the formula for flexibility requirement as L = 15.63 without considering displacement ' '. Pending the correction of this formula, this item is considered unresolved. (329/80-01-04; 330/80-01-05)

g. Welding and NDE activities are performed to QCI/W-1.00 and the results are documented in QCIR/W-1.00A.

2. Observation of Installed Instruments Units 1 and 2

The inspector observed that the following instruments had been installed in Units 1 and 2:

At elevation 656' Unit 1 Containment Reactor Coolant Loop A Hot Leg Flow Transmitters.

1 FT -0101A2
1FT - 0101A4

At elevation 656' Unit 2 Containment Reactor Coolant Loop B Hot Leg Flow Transmitters.

2FT - 0201B3
2FT - 0201B4
2FT - 0201B5
2FT - 0201B6

Reactor Coolant Loop A Hot Leg Flow Transmitters

2FT - 0201A2
2FT - 0201A4

The inspector observed that in Unit 2 the tubing had been installed to the above instruments, but were being dismantled because the separation criteria was not met. The installation was according to drawing FSK-JC2-0037 (Q) sheets one to four. Discussions with licensee personnel indicate that the drawings reflected neither the separation criteria nor Project Engineering approval, both of which are specified in Paragrpah 5.3.7 of the Specification J-218 (Q). On January 11, 1980, prior to the conclusion of the NRC inspection, the licensee initiated NCR M-01-4.0-002 to document the following nonconforming conditions:

a. That the drawings FSK-JC2-0037 (Q) sheets 3 and 4, illustrating the instruments tubing routing for flow transmitters 2FT-0201B1, B2, B3, B4, B5, and B6 have violated separation criteria specified in Section 5.3.7 of specification J-218 (Q) Revision 8.

b. That the tubing for the above transmitters was installed according to the above drawings even though the drawings were not approved

by the Bechtel Ann Arbor Project Engineering as required by Paragraph 4 of Section 8 of the Specification J-218 (Q).

Pending review on the corrective action, this matter is considered unresolved. (329/80-01-05; 330/80-01-06)

3. Review of Electrical Specifications Units 1 and 2

The inspector reviewed Babcox and Wilcox Specifications 08-101. 8000003-02 for Nuclear Instruments and Reactor Protection Systems. The inspector determined the following:

a. Design criteria specified the following salient requirements:

(1) Single failure criteria

(2) Redundancy

(3) Independancy

(4) Loss of power

(5) Manual protection system trip

(6) Equipment removal

b. The following standards are referenced:

(1) IEEE 279-1971 criteria for protection system for Nuclear Power Generating Stations (NPGS)

(2) IEEE 323-1971 qualifying Class 1 electrical equipment for NPGS

(3) IEEE 344-1971 seismic qualification for Class 1E electrical equipment for NPGS.

c. The inspector requested the licensee to provide additional information on the following matters.

(1) A paragraph in the middle of page 7.2-19 Revision 18, dated February, 1979, of the Midland FSAR reads, "The isolation device circuits possess the same flame retardance, maximum operating temperatures. . .as the remaining protection system internal circuitry." Since IEEE 383 (type test of class 1E electrical cables. . .for NPGS) has not been referenced in the design specification, the inspector requested information as to whether other requirements were imposed to meet flame retardance requirements for the internal cables.

(2) The above paragraph continues to state, "The tests and analysis of the isolation device circuits permit less than six inches of physical separation." The licensee was requested to ascertain and provide information as to who reviewed these tests and analysis.

(3) The licensee was requested to obtain clarification whether the term "isolation device circuits" used in the above paragraph included internal wiring to the isolation devices which will preclude intermingling of protective and control function wiring.

Pending the availability of the information requested in the above three paragraphs, this item is considered unresolved. (329/80-01-06; 330/80-01-07)

Section III

Prepared By: E. J. Gallagher
Reviewed By: D. W. Hayes, Chief
Engineering Support Section 1

1. Containment Prestressing System (Unit 2)

During this inspection the containment prestressing system procedures quality records and inspection and testing personnel qualifications were inspected. In addition, specific allegations that were reported to the Region III NRC office on January 7, 1980 regarding prestressing system equipment calibration records, stressing sequence, qualification of inspection personnel and prestressing work activities were addressed during this inspection.

a. Procedures

The inspector reviewed the following procedures for containment prestressing work activities:

(1) C-2, Revision 13 (Nov. 9, 1979), Technical Specification for post-tensioning system including FCR C-1986 (revised stressing sequence) and FCR C-2079 (revised stressing sequence) to drawing C2-170-3. Both of these field changes to the stressing sequence were reviewed and discussed with the Bechtel design engineer since the stressing sequence is different than what is normally specified. It was shown that design control measures were in effect for the review and approval of the subject stressing sequence changes.

The inspector requested to be notified if any further changes to the stressing sequence occur.

(2) C-146 Revision 3B (October 11, 1979), Field Installation Manual, including FCR's Nos. 2188, 2187, 2185, 2184, 2175, 2172, 2166, 2062, 2048, 2047, and 2041.

The inspector indicated a conflict between FCR No. 2062 and 2185. FCR 2062 approved the adjustment of both overstress value and lift-off value in the event of broken or missing tendon wires. This was concurred with INRYCO via telex dated August 21, 1979. Subsequently, FCR 2185 was issued which requested a clarification whether both overstress and lift-off should b sted or just overstress value Bechtel Engineering re. 3 with approval of adjusting only the overstress v. ue. Because of this discrepancy the inspector requested a telecon with Bechtel Engineering.

It was explained that the first FCR 2062 was in error and FCR 2185 was to rectify that apparent error. There are no further questions on this matter at this time.

The inspector also requested justiiication of the revision to permit grease temperature to be increased first from 180°F to 210°F and subsequent to three nonconforming conditions to be increased again to 250°F. Specification C-49 was shown to permit maximum grease temperatures to be 250°F without any deleterious effects on the grease material.

b. Qualification of QC Inspectors for Prestresssing Work

During a May 14-17, 1979 inspection (Report No. 329/79-10; 330/79-10) this NRC inspector had indicated to the licensee that none of the Bechtel QC inspectors to be assigned the inspection of the containment prestressing system had any prior related work experience on prestressing systems. At this time no work had begun on the prestressing system. During a follow-up inspection on September 11-14, 1979 (Report 329/79-19; 330/79-19) this inspector issued an item of nomcompliance in that the licensee's contractor failed to meet the requirements of Regulatory Guide 1.58 and ANSI N45.2.6 in that the QC inspectors permitted to inspect the prestressing system were not qualified to the requirements of the regulatory guide.

Following the above, this inspector was requested by the licensee to re-evaluate the qualifications of the assigned inspectors. The NRC inspector developed a series of questions based on the requirements of the Prestressing Field Installation Manual. The licensee administered this examination to the QC inspectors. The results are documented in NRC report 329/79-22; 330-79-22. The results indicated that a number of assigned inspectors did not have a clear understanding of the requirements and therefore were not qualified.

Subsequent to the above, a meeting was held in the Region III NRC office in Glen Ellyn on October 25, 1979. The results of that meeting are documented in NRC report 329/79-23; 330/79-23.

During this inspection, this inspector in conjunction with the licensee's representative administered a practical examination to eight QC personnel to demonstrate their ability to inspect prestressing system buttonheads. The QC inspectors were required to inspect 12 buttonheads for head dimensions, eccentricity, and crack influence and record the results of their inspection.

The results of this practical examination indicated that seven of the eight QC inspectors understand how to inspect buttonheads. However, it was clear that one of the assigned QC inspectors was unable to perform the inspections on buttonheads. This individual has been previously identified in Report 329/79-18; 330/79-18 as Individual "A" and later identified in report 329/79-22; 330/79-22 as Individual "B".

The licensee has directed Betchtel to remove the individual from any further quality control functions.

In addition, the licensee is reviewing the records to determine the inspections performed by the individual to determine what reinspection is necessary.

This matter remains open and will be followed during subsequent inspections. In addition, the inspector is to witness any reinspection of completed work.

c. Calibration of Prestressing System Jacks and Gauges

(1) Prestressing Jacks

The following prestressing jacks have been used during the course of prestressing work activities:

Jack Type	Calibration Date
Prescon #1	8/1/79
Prescon #3	8/1/79
Pine #9363	8/30/79
Pine #9365	8/30/79
Dugdeon #8780	10/16/79
Dugdeon #8778	10/16/79
Dugdeon #8779	11/16/79
Dugdeon #8783	11/16/79
Dugdeon #8784	11/16/79

The specific allegation that the above jacks were not properly calibrated by the INRYCO was investigated. This NRC inspector discussed the calibration procedure with representatives from INRYCO quality assurance group in Melrose Park, Illinois.

INRYCO Calibration Procedure QA 9.1.6 states that, "if less than 66% of the readings are used in the computation, the ram will be recalibrated." INRYCO explained that readings below 1000 PSI are omitted per procedure and that

of the remaining readings are used. This is included in the procedure in that, "During computation of large rams, usually in excess of 250 tons...the first reading of 1000 PSI will always be deleted from the calculations and will not be considered in the tolerance check on the 66% acceptable readings noted below.

Based on a review of the calibration records, readings of 500 PSI and 1000 PSI were deleted as permitted by the procedure. In addition, readings of 2000 and 3000 PSI were deleted. However, this still permits more than 66% of the readings to be effectively used in calculating the ram area. Therefore, the allegation that readings were being omitted is correct; however, this is acceptable per the INRYCO procedure.

The calibration records noted above were reviewed and found to meet the INRYCO procedure for calibrating prestressing jacks. INRYCO indicated that the procedure being used for Midland is QA 9.1.G, Revision 1, dated March 5, 1979.

It was also noted that the calibration record did not include the theoretical ram area as an entry on the form for Prescon Jack #1 and #3, Dugdeon Jack #'s 8780, 8778, 8783 and 8784. Discussion with INRYCO QA indicated that this information was neglected from the form; however, was available and corrections would be made to the form. INRYCO indicated revised calibration records would be sent to the licensee and NRC office. This item remains unresolved pending corrections of calibration records. (329/80-01-07; 330/80-01-08).

(2) Prestressing Gauges

The inspector observed comparison of prestressing gauge No. N-601 and N-1113 to the master gauge. The calibration comparison meets the required tolerance of 0.5% of maximum gauge reading.

Gauge N-17 was identified as being out-of-tolerance or December 15, 1979 in that the gauge was out 400 PSI at each increment of calibration. The gauge was returned to INRYCO and a nonconformance report 2812 issued to document the occurrence. This NCR is open and will be reviewed when resolved.

d. Review of Nonconformance on Prestressing System

The inspector reviewed nonconformance reports relative to the prestressing system. The following is a list of those nonconformance reports reviewed:

NCR NO.	STATUS
2842	open
2841	open
2806	closed
2812	open
2757	open
2750	open
2735	open
2689	closed
2688	closed
2683	closed
2678	closed
2655	closed
2641	closed
2638	closed
2616	closed
2583	open
2582	closed
2559	closed
2505	closed
2383	open
2382	closed
2373	closed
2205	closed

Nonconformance reports identified as open are to be reviewed during a subsequent inspection to review the resolution.

e. Closure of Reportable 50.55(e) on Tendon Lengths

The Final Report on the Unit 2 containment Building prestressing tendons was received by the RIII NRC office on October 31, 1979 (HOWE 281-79). The notification dealt with prestressing system tendons that were shipped to the site with indeterminate wire lengths. Tendons were fabricated by INRYCO at their Wiremill facility in Florida. All of the suspect tendons have been rejected and removed from the construction site. In addition, corrective action has been taken to adjust the fabrication equpment that caused the deficiency to occur.

Additional inspection effort on this issue is documented in NRC Report 329/79-19; 330/79-19 (page 3). This reportable deficiency

is considered closed. Continuing inspections will be performed in this area.

No items of noncompliance were identified in the above areas.

Unresolved Matters

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 identified during this inspection are discussed in Section II and III of this report.

Exit Interview

The inspectors met with licensee representatives (denoted in the Persons Contacted paragraph) at the conclusion of the inspection. The scope and purpose of the inspection were outlined along with the summarization of the results. The licensee representatives acknowledged the indicated results. The NRC inspector also emphasized that the review of Bechtel's quality records needed improvement. Examples indentified by the NRC inspector are unresolved items (qualification of welders 329/79-17-01) and the item of noncompliance during this inspection (missed signoff on Quality record). The inspector noted that other recordkeeping deficiencies were identified by the licensee during their audits.