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

REGION III

Report No. 50-329/78-03; 50-330/78-03

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

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

Facility Name: Midland Nuclear Power Plant, Units 1 and 2

Inspection At: Midland Site, Midland, Michigan

Inspection Conducted: March 21-23, 1978

Inspectors: T. E. Vandel — 5/2/78

E. C. Cook — 5/2/78

K. R. Naidu — 5·1·78

E. W. K. Lee — 5/2/78

Approved By: D. W. Hayes, Chief — 5/2/78
Projects Section

Inspection Summary

Inspection on March 21-23, 1978 (Report No. 50-329/78-03 and 50-330/78-03)
Areas Inspected: Project scheduling of activities through fuel load dates; safety related piping work activities; reactor pressure vessel installation procedures; work activities and record review for containment steel structures and other safety related structures; and followup of previous noncompliance and unresolved matters. The inspection involved a total of 96 inspector-hours onsite by four NRC inspectors.
Results: Of the six areas inspected, no apparent items of noncompliance or deviations were identified in three areas; three apparent items of

noncompliance were identified in three areas (infraction - failure to accurately document inspection results - Section II, paragraph 6; infraction - failure to assure welding voltage requirements are specified - Section II, paragraph 5; deficiency - failure to assure purchased material documentation included compliance to all specification requirements - previous unresolved item escalated).

DETAILS

Persons Contacted

Principal Licensee Employees

T. C. Cooke, Project Superintendent
D. D. Johnson, Construction Control Supervisor
Z. Johnson, Construction Control Engineer
G. S. Keeley, Project Manager
K. R. Kline, Project Control Supervisor
*W. R. Bird, Section Head Quality Assurance Engineering
*J. L. Corley, Section Head Inspection Evaluation and Test Verification
*D. R. Keating, Quality Assurance Engineer
*B. H. Peck, Construction Supervisor
*H. D. Stephens, Quality Assurance Engineer

Other Personnel

W. G. Jones, Project Cost and Schedule Supervisor Bechtel
*V. N. Asgaonkar, Project Manager B&W
*R. W. Shope, Quality Control B&W
*W. L. Barclay, Project Field Quality Control Engineer, Bechtel
*H. D. Foster, Assistant, Project Field Quality Control Engineer, Bechtel
*J. L. Hurley, Assistant Project Engineer, Bechtel
*W. H. Nielson, Field Engineer, Bechtel
*G. L. Richardson, Lead Quality Asurance Engineer, Bechtel

*Denotes those present at the exit interview.

Other personnel of CPCo & Bechtel were contacted during the course of the inspection.

Licensee Action on Previous Inspection Findings

(Closed) Unresolved Matter (50-329/77-05; 50-330/77-08): Revision of the Topical QA Program Manual CPC-1-A, Program Policy section, to reflect organizational changes that have occurred. The inspector reviewed Revision 6 of the QA Program Policy section of the manual dated February 7, 1978, and considered the organization chart revisions satisfactory to resolve the concern.

(Closed) Unresolved Item (50-329/77-13-01; 50-330/77-15-01): It was previously reported that there was inadequate information to verify that the bent containment liner plate referenced in NRC 0094 was repaired. The inspector reviewed field inspection plan C-111-111a, Revision 0, which was reviewed on November 5, 1975. The plan indicates that containment liner plate HRD-9-10 was installed according to drawings. Similarly C-111-111a, Revision 4, dated October 2, 1975, indicates that containment liner plate RD-4-9 was installed according to drawings. The Bechtel personnel stated that no specific repair documents were generated in 1975 and that the liner plates could not have been installed if the bent corners of the liner plates were not straightened. The Bechtel's explanation is accepted.

(Closed) Unresolved Item (50-329/77-13-02, 50-330/77-15-02): It was previously reported that NCR 0083 identified unapproved heat numbers. The inspector reviewed NCR 0083 which addressed the missing heat numbers on the shipment of wall penetrations supplied by Delta Southern. Quality Action Request (QAR) No. SD-56 initiated on December 9, 1977, and closed on January 16, 1978, identifies that several NCRs initiated during 1971, 1972, and 1973 did not have any provisions to formally close the NCRs. In the case of NCR 0083, the original MTRs were reviewed and the NCR was closed. The inspector reviewed NCR 0084 dated December 17, 1970, to which Standard Certified test reports by U.S. Steel Corporation for Heat Nos. 83E774, 22281, and 68212, were attached. MTR from Phoenix Steel Corporation for Heat No. 60215 was attached to NCR 0085 dated December 17, 1970. Sufficient evidence was available in NCRs 0084 and 0085 to resolve NCR 0083.

Unresolved Item (50-329/77-13-03; 50-330/77-15-03): It was reported in the above inspection reports that UT reports of the above embedment did not provide information in the following three areas.

a. Whether water was used as a couplant or the object was immersed in water and tested. The licensee stated that water was used as couplant.

b. The significance of the Bechtel's Shop Inspector's (BSI) Signature on the UT report. Whether it indicates that the BSI witnessed the UT or merely reviewed the UT after it was completed. The licensee stated that the BSI signature on the UT report indicates that he reviewed the test report. Whether he witnessed the test itself could only be determined by examining the "Supplier Quality Surveillance Reports" which are stored in the Bechtel Ann Arbor Office. Bechtel stated that the surveillance reports were not reviewed.

c. The Distance Amplitude Curve (DAC) did not indicate calibration point; however, the report stated that it was calibrated at 75% full screen height. Further discussions on the subject indicated that the UT required examination for possible laminar tear of a heat affected zone directly below a weld to determine any laminar tear. The DAC curve was not calibrated because only one point namely the 75% of the full screen height was required.

During the initial inspection in December 1977, this embed had been installed in place and rebar was being installed around it. Concrete had not been placed and hence the licensee had the opportunity to reexamine the piece and confirm, if necessary, that there were no tears in the heat affected zone. Bechtel Specification 7220-C-233-Q requires the contractor Willste and Company to submit their UT procedures for approval only if they are doing the UT; approval of UT procedures was not required if a subcontractor performed the UT. In this case, a subcontractor performed the UT; the procedures were not available at site for review. The inspector requested the licensee to make available the UT procedure which was used to perform the NDE. This matter will be further reviewed during a subsequent inspection.

Unresolved Item (50-329/77-13-04; 50-330/77-15-04): It was identified that Shop Welding Inspection Reports of Haven Busch did not document whether [illegible] which were repaired were reinspected after repair. Bechtel visited the vendor's facility to determine whether any additional records were available. During the visit, it was reported that examination of the available records indicated that only in some instances the reexamination was documented on the reverse side of the report. The reverse side was not copied and sent to the site. There appeared to be a misuse of the documentation of the inspection results; consequently there was not documentation on reinspections. Bechtel is awaiting an assessment by Haven Busch as to the extent of inadequate documentation, including a reasonable rationale to justify the inadequate documentation. This information is expected to be reviewed by the Bechtel Project Engineering personnel through the Project Supplier Quality Supervisor. It should be noted that in the meantime some of these embeds would be burried under concrete precluding further inspections.

This item has been escalated to an item of noncompliance contrary to 10 CFR 50, Appendix B, Criterion VII and Paragraph 5.3 of the Consumers Power Company EPPQASD Procedure No. 7. (50-329/78-03-01; 50-330/78-03-01)

(Closed) Unresolved Item (50-329/77-13-05; 50-330/77-15-05): It was previously identified that several G-321-D forms related to certain components, were signed by the Bechtel Shop inspector even though there

were deficiencies in the records. Bechtel was requested to explain the significance of the shop inspector's signature on the G-321-D form. During this inspection, the RIII inspector reviewed a letter from the Bechtel Ann Arbor office to the Midland QA Lead Engineer, dated December 20, 1977, which in essence concludes that "there are no specific, written instructions for the requirements for completing Line 22 of the G-321-D since the entire Bechtel Supplier Quality Manual is applicable and each G-321-D may have unique project or client requirements." The shop inspector performs only surveillance inspection and the majority of that is on a random or sampling basis. The inspector has no further questions.

Other Inspection Areas

1. Licensee/NRR Facility Construction Scheduling Meeting

A construction scheduling meeting was held at the Midland facility site on March 21 and 22, 1978, with the following personnel in attendance:

Nuclear Regulatory Commission (NRC)

R. J. Cook, RIII Inspection
L. P. Crocker, NRR/DPM
D. S. Hood, NRR/DPM
W. H. Lovelace, MIPC
T. E. Vandel, RIII Project Inspector

Consumers Power Company (CPCo)

T. C. Cooke, Project Superintendent
D. D. Johnson, Construction Control Supervisor
G. S. Keeley, Project Manager
K. R. Kline, Project Control Supervisor

Bechtel Associates Professional Corporation (Bechtel)

W. G. Jones, Project Cost and Scheduling Supervisor

The facility scheduling philosophy for completion of Units 1 and 2 as scheduled for fuel load dates of November 1980 for Unit 2 and November 1981 for Unit 1 was presented and discussed. Mr. Lovelace of the Office of Management Information and Program Control presented their facility scheduling experience and Methodology for Fuel Load Date Forecast.

2. Reportable Deficiencies (50.55(e))

During the inspection the licensee discussed the following reported deficiencies:

a. The licensee performed an NDE records audit of the radiography performed on the decay heat removal pumps based on information from B&W Canada Ltd. that indicated some irregularities existed in the radiographic techniques used by the nondestructive test subcontractor in the examination of the pumps. The NDE audit revealed several discrepancies which required all decay heat removal pumps to be returned to the pumps manufacturers for additional radiography and repairs if necessary. The licensee stated that their NDE personnel were reviewing the reexamination and any subsequent repairs of the decay heat removal pumps.

b. The licensee has been informed via a design change that seismic supports for the containment spray system piping located in the containment dome were welded directly to the pipe without benefit of load distribution pads. This would allow stresses in excess of ASME Code allowable to be induced in the spray piping. The licensee is presently involved in evaluating the extent of repairs necessary to rectify the potentially overstressed conditions of the containment spray system.

SECTION I

Prepared By: E. W. K. Lee

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

1. Reactor Vessel Installation - Review of QA Procedures

The inspector reviewed Babcock and Wilcox Construction Company (B&WCC) QA Manual, Rev. 0 dated November 4, 1977, three B&WCC Field Construction Procedures and three Reliance Truck Company Procedures relative to the installation of the Reactor Vessel. The procedures reviewed included testing, handling, placement, leveling, setting and cleanliness preservation. The inspector determined that the QA Manual met 10 CFR 50, Appendix B requirements and the procedures are acceptable and good construction practices were adhered to.

No items of noncompliance or deviations were identified.

2. Safety Related Piping - Observation of Work and Work Activities

The inspector observed the following safety related piping work activities:

a. Handling and protection of Unit 1 Auxiliary Feedwater System Spool No. IDBC-5-S-633-7-2.

b. Weld end preparation of Unit 1 Auxiliary Feedwater System field weld No. 8C1 on drawing No. M633, sheet 4.

c. Installation and alignment of Unit 2 Feedwater System flued head No. 2Z38.

The inspector determined that work activities were performed in accordance with the applicable procedures and good construction practices were adhered to.

No items of noncompliance or deviations were identified.

3. Safety Related Piping (Welding) - Observation of Work and Work Activities

a. Joint Preparation and Alignment

The inspector observed fit-up of Unit 1 Decay Heat Removal System field weld No. 1 on drawing No. M610, sheet 6 and Auxiliary Feedwater System field weld No. 8C1 on drawing No. M633, sheet 4. It was determined the joint alignment met the applicable code requirements and QC verified the alignment prior to welding.

b. Welding of Root Pass

The inspector observed welding of root pass of Unit 1 Decay Heat Removal System field weld No. 1 on drawing M610, sheet 6 and Auxiliary Feedwater System field weld No. 8C1 on drawing No. M633, sheet 4. It was determined that: (1) proper welding procedure was used, (2) welders were currently qualified and (3) physical appearances were acceptable.

c. Welding Beyond Root Pass

The inspector observed welding of Unit 1 Component Cooling Water System field weld No. 59 on drawing No. M616, sheet 6, Auxiliary Feedwater System field welds No. 19C1 and No. 8C1 on drawing No. M633, sheet 4. It was determined that: (1) applicable welding procedure was used, (2) welders were currently qualified, (3) welding procedure requirements were met and (4) work area is free of weld rod-stubs.

d. Storage and Control of Welding Materials

The inspector visited the welding material issuing location at Unit 1. 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.

No items of noncompliance or deviations were identified.

SECTION II

Prepared By: K. R. Naidu

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

1. Review of Containment Structural Steel Supports Records (Unit 2)

The inspector reviewed the records relative to the structural steel beams 209 B1, 212 B1, 212 B2, and 220 B1 which form the supports for the core flooding tank. Material Receiving Report (MRR) AEO-1204 dated January 12, 1976, indicates the following:

a. Beams 209 B1, 212 B1, 212 B2, and 220 B1 were visually inspected and determined acceptable on January 12, 1975.

b. Field Inspection Plan C-38-R-58, Revision 0, indicates that the material was purchased to Material Requisition 7220/C-38, title "Structural Steel for Auxiliary Building Above Elevation ± 603'." In response to a question why reactor building structural steel was purchased under the requisition for auxiliary building structural steel, the Bechtel representative stated, that this was additional material which was ordered against the specification.

c. Preparation and painting record dated December 4, 1975, documents that surface preparation and painting (Carbo Zinc-11) was inspected by inspector No. 82.

d. Material certifications identify the steel beams with heat numbers as indicated below:

Beam	Heat Number
209 B1	180T5 82
212 B1	181T0 42
212 B2	181T0 42
220 B1	181T0 42

Material certifications certified that the above beams conformed to the requirements of ASTMA-36-74.

e. Test Reports indicate that MT inspections were performed on selected welds by W. H. Flood and Company.

f. Stiffening plates were welded to some of the above beams in the field to serve as reinforcement. Documentation on the stiffening plates were not available onsite during the inspection. The inspector stated that lack of documentation would be considered an unresolved item. (50-329/78-03-04; 50-330/78-03-04)

No items of noncompliance or deviations were identified in the above areas.

2. Observation of Containment Structural Steel Support Welding Activities (Unit 2)

The inspector observed structural steel suppport welding activities relative to the core flood tanks.

a. Weld on Beams 209 B1 to 212 B1 was identified to be performed by weldor I95; weld on Beams B212 B2 to 209 B1 was identified to be performed by weldor I25. Quality Control Inspection Records (QCIR) indicate that the fitup was checked. Weldor qualification records indicate that weldors indentified as I95 and I25 were qualified to the procedures used.

b. Weldrods were being stored at the work location in portable electrode ovens.

c. Uncontrolled weldrod was not observed at this work location.

d. Two QC welding inspectors were assigned to inspect ongoing activities in the Unit 2 reactor building area.

No items of noncompliance or deviations were identified in the above areas.

3. Review of Containment Structural Steel Supports Welding Records (Unit 2)

The inspector reviewed QCIR No. C 304-543 which covered the inspections on the welding performed on the splice on column 3 adjacent to the core flooding tanks and determined the following:

a. The welds on the east side and west side of the column were visually inspected for weld size, length, location, contour, and surface and were determined acceptable.

b. Heat treatment and NDE were not specified.

c. Weld procedure P1-A-LH Structural was specified.

d. Weldor identified as I30 performed the welding; records indicate that the weldor was qualified to weld to procedure P1-A-LH Structural.

e. Fit up was checked and released on March 16, 1978.

f. Back gouge was inspected and released for welding.

g. Final inspection was performed on March 17, 1978, and determined acceptable.

No items of noncompliance or deviations were identified in the above areas.

4. Observation of Inadequate Concrete Cover on Steam Generator Pedestals (Unit 2)

On March 22, 1978, the inspector observed that several rebars on the inner peripheries of the steam generator pedestals were exposed due to inadequate concrete cover. The relevant drawings were:

C-360Q, Reinforced Concrete Sections and Details, Sheet 2, Revision 10, dated January 6, 1978.

C-355Q, Reinforced Concrete Plan at Elevation 593'-6", Revision 6, dated February 19, 1978.

The inadequate concrete cover was documented in Field Change Request (FCR) C-1072 dated August 10, 1977, and identifies that both the north and south Unit 2 steam generator curbs had concrete cover problems on all three sides. The cover problems on the inside and outside edges were attributed to an incorrect layout of drill holes for the grouted ties. That the rebar protruded too high was attributed to Revision 4 of drawing C-360 which added 8 drilled and grouted ties on top of the original curb ties (embedded in the base slab) but kept the top of the curb at elevation 594'-9". The field requested change was to increase the top of the steam generator curbs to elevation 594'-11" and fill the inside of the curb to certain dimensions specified with 5000 psi grout. This change was approved by Bechtel Resident Engineer on August 15, 1977.

The corrective action will be completed after the sole plates are installed. Corrective action recommended appears to be acceptable.

No items of noncompliance or deviations were identified in the above areas.

5. Review of Welding Procedure P1-A-LH Structural

The inspector reviewed Bechtel Welding Procedure Specification (WPS) P1-A-LH Structural which was being used to weld structural steel and determined that the welding voltage requirements were not specified. The above WPS referenced a General Welding Procedure (GWP) which was to be used in conjunction with the WPS P1-A-LH Structural. Paragraph 4.2.1, on Sheet 3 of 18, of the GWP Revision 2, dated September 1, 1977, states "Electrical process variables shall be specified in the applicable WPS." The Bechtel personnel informed the inspector that the welding voltage was never measured and recorded. American Welding Society (AWS) D1.1-1972 code which was referenced in the WPS in Section 4, Paragraph 4.10.2, states "The classification and size of the electrode, arc length, voltage, and amperage shall be suited to the thickness of the material. . . . "

Also, in Section 5, Paragraph 5.5.2.1(4), the AWS Code states "A change of more than 15% above or below the specified mean arc voltage and amperage for each size electrode used is considered a change in the essential variable and requires establishing a procedure qualification." The inspector stated that the control of welding was considered inadequate in that the welding voltage was not specified in the WPS and that this was contrary to 10 CFR 50, Appendix B, Criterion IX and Paragraph 5.2 of the Consumers Power Company Quality Assurance Program Procedure for Design and Construction Procedure 9-1.

This is an item of noncompliance identified in Appendix A. (50-329/78-03-02; 50-330/78-03-02)

6. Observation of Electrical Cable Tray Welds

The inspector observed the welds on the seismic Class 1 cable tray supports in the lower cable spreading room at elevation [illegible]' in the auxiliary building and noted that several welds were inadequate in size. At the request of the RIII inspector welds on Column [illegible], which were documented as inspected and acceptable in QCIR-C304-24[illegible], were reinspected and the results documented as follows in Bechtel Discrepancy Log W097:

a. Welds on Column 19 where attachment is made to structural steel are required to be 5/16" size with a 5/8" return, by Detail 3 of Drawing E740(Q). Reinspection by the Bechtel QC inspector indicated the following as welded conditions:

(1) Weld Southwest Side

Leg 1/4" x 5/16"
one end return undersize
one end return short

(2) Weld Northwest Side

Undersize throat, complete length of the weld
one end return short

(3) Weld Southeast Side

Legs 1/4" x 5/16"
one end return short
one end return undersize

(4) Weld Northeast Side

Undersize throat, complete length of the weld

The inspector stated that QCIR-C304-244W was in error in that the reinspection results established that the welds did not meet the criteria established in Drawing E 740 (Q). The inspector further stated that this is considered an item of noncompliance and is contrary to 10 CFR 50, Appendix B, Criterion IX and Paragraph 5.2 of the Consumers Power Company Quality Assurance Program Procedure for Design and Construction Procedure 9-1. The inspector recommended that corrective action to correct the above noncompliance should include a complete reinspection of all the welds in the lower cable spreading room to determine compliance with the relevant drawings. (50-329/78-03-03; 50-330/78-03-03)

Furthermore, the inspector observed that additional work, such as installation of cable trays to attachments that had been welded to various structures, had taken place even though the welds had not been inspected.

Selected welds were reinspected at the request of the RIII inspectors. The QC inspector determined that some of the

welds were nonconforming. The inspector noted that a system should be developed and implemented to perform timely inspections of welds to preclude installations of items on attachments with nonconforming weldments. The licensee agreed to review this matter. This is considered an unresolved item. (50-329/78-03-05; 50-330/78-03-05)

Except at noted, no items of noncompliance or deviations were identified in the above areas.

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. An unresolved item disclosed during the inspection are discussed in Section II, Paragraphs 1.f and 6.

Exit Interview

The inspectors met with licensee representatives (denoted under Persons Contacted) March 23, 1978 at the conclusion of the inspection and summarized the scope and findings of the inspection. Licensee comments are noted in the applicable sections of this report.