

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-329/84-24(DRP); 50-330/84-25(DRP)

Docket Nos. 50-329; 50-330

License Nos. 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, MI

Inspection Conducted: June 11-15 and June 25-29, 1984

Inspectors: E. A. MacDougall

V. Lettieri

T. Burns

Approved By: *RF Warnick for*
J. J. Harrison, Chief
Section 1D, Midland

8/3/84
Date

Inspection Summary

Inspection on June 11-15 and June 25-29, 1984 (Report No. 50-329/84-24(DRP); 50-330/84-25(DRP))

Areas Inspected: Routine safety inspection by regional personnel of licensee action with regard to 10 CFR 50.55(e) items. This inspection involved a total of 156 inspector-hours onsite by three NRC regional inspectors, including 0 inspector-hours during off-shifts.

Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

Consumers Power Company (CPCo)

*D. Quamme, Site Manager
*R. Wells, Executive Manager, MPQAD
*B. Peck, Construction Superintendent
W. Bird, MPQAD
K. Brewster, Licensing
T. Buczwinski, NUD
P. Donnelly, NAPO
J. Fremcall, NAPO
D. Harris, MPQAD
D. Johnson, Construction
J. Kreple, SMO
*R. Landon, Licensing
N. Leech, Licensing
R. Lockland, Electrical Check-out
N. Reichel, Construction
G. Rowe, SMO
M. Schaeffer, SMO
*P. Strachan, SMO
*R. Whitaker, MPQAD
T. Wojcik, Electrical Check-out
F. Yanik, NAPO

Bechtel Power Corporation

M. Dietrich, PQAE

NRC

*H. Livermore, Site Supervisor
*B. Burgess, Senior Resident Inspector
*P. Hiland, Resident Inspector

*Denotes exit meeting attendees.

Other licensee and contractor personnel were routinely contacted during the course of the inspection.

2. Licensee Action on 10 CFR 50.55(e) Report Items

- a. (Open) 50.55(e) Item (330/77-01-EE): Bulged Liner Plate. Approximately 2,100 square feet of the containment building Unit No. 2 liner plate was bulged inwardly toward the center of the building.

Documents reviewed:

- Bulged Liner Plate Replacement Report (Bechtel), dated August 1977.
- Bechtel Nonconformance Report No. 717, dated February 28, 1977.
- Bechtel Specification 7220-C-111Q, Rev. 13, Technical Specification.
- Bechtel Specification 7220-C-114Q, Rev. 0, Technical Specification for Repaired Liner Plate Surveillance.
- Bechtel Nondestructive Examination Report C111-173W.
- Bechtel Drawings 7220-C1101, Rev. 0 and C1103, Rev. 0.

The evaluation of the bulged liner plate (and subsequent repair) in the containment of Unit No. 2 consisted of a review of the aforementioned documentation of this deficiency from its discovery in February 1977. The review included an evaluation of the effort to determine the cause of the deficiency, repair methods, associated test programs, erection sequence, and the surveillance program to verify the repair. The applicable drawings for this repair effort were reviewed for material selection, weld design, construction, and repair details.

The evaluation process is not complete since additional documentation has been requested (welder qualifications to ASME Section IX and records of qualification for nondestructive test examiners). Additionally, the welding procedures used for the repair were not yet available for review (due to revisions subsequent to 1977). Prior to closing this item, the above mentioned documents will be reviewed and a field inspection will be made.

- b. (Closed) 50.55(e) Item (329/79-06-EE, 330/79-06-EE): Station battery qualification test failure previously reported by Exide as a 10 CFR Part 21 report.

Documents reviewed:

- Exide Station Battery Summary 3/1/84.
- Overinspections, CPCo, 11/15/82.
- Communications - CPCo letters: MJS 1/25/84; MJK 11/9/79; HOWE 8/15/79; WRB 87-79; BLC 7960; AJA 2178. Bechtel letters: 1/16/80; 12/17/78; 11/20/79; 8/17/79; BLC 8114; BLC 8041; BLC 8281. Exide letter: 8/2/79.
- Installation Verification - Bechtel QC Inspection Records 174243, 142244, 174241, 172242. Bechtel In Process Inspection Notice 7220.

- Receiving Verification - Bechtel QC Inspection Records 159565, 159574. Bechtel material reviewing report for station batteries. Bechtel engineering and quality verification document requirements for station batteries. Certificates of Conformance for station batteries. Exide battery test dated 3/3/82.
- Vendor Surveillance - Bechtel SN7220-19305, 7226-19306. Bechtel quality surveillance report PS0-221A QSA 27, 29.
- NCR Consumers Power Company - M-01-8-8-106. NCR complete responses LAD-1000. Action Item 525.

During an inspection of the batteries and a review of the documents, our minor concerns were answered. The batteries that were installed in 1979 did not meet purchase specification in that they did not pass the voltage requirements of the IEEE 323-1974 standard due to cell defects. These batteries were removed from the site and were replaced with new ones that did meet the purchase specification.

This item is closed.

- c. (Open) 50.55(e) Item (329/78-01-EE, 330/78-01-EE): Reactor Coolant Pump (RCP) Motor Flange. For all eight RCPs in Units 1 and 2, there is a deficiency in the design of the motor flange rabbet. This deficiency reduces the rabbet flange's ability to withstand shear loads. If not corrected, this deficiency could permit the motor structure to become detached from its mounting as a result of a LOCA or similar forces. Should the motor become detached, it could damage other systems and components in the vicinity of the motors that are vital to plant safety. Additional information was received from CPCo; however, the engineering analysis documenting how this item was resolved was not complete. This information had been requested approximately June 13, 1984. A discussion between the NRC and the licensee after the June 29, 1984, exit meeting concluded that B&W would be requested to express mail the information directly to the NRC (BNL). A second field inspection was performed; however, the cover plates were installed and the inspector could not observe the modified bolting arrangement.

Documents reviewed:

- CPCo letter titled "Reactor Coolant Pump Motor Flange Deficiency," April 12, 1978, File M-18, Serial 5139.
- Field Construction Procedure Number 112, Rev. 3, dated 12/17/81.
- B&W letter titled "RC Pump/Motor Bolting," April 27, 1978, CPCo 1812, File 12B/T1.2/12E42/12E26.2.
- B&W letter titled "RCP Motors FCA #24," July 18, 1978, File 12B/T1.2/12E42.

- CPCo letter titled "RCP Motors, FCA #24," July 18, 1978, File 0815.1, M1.8, Serial 3268.
- CPCo letter titled "Reactor Coolant Pump Motor," May 14, 1979, File M-1.8, Serial CSC-4083.
- CPCo letter titled "Reactor Coolant Pump Motor Flanges," January 31, 1979, HOWE 34-79.
- CPCo letter titled "RCP Motor Flanges," August 30, 1978, HOWE 153-78.
- CPCo letter titled "RCP Motor Flanges," June 30, 1978, HOWE 108-78.
- CPCo letter titled "RCP Motor Flanges," March 30, 1978, HOWE 37-78.
- CPCo letter titled "RCP Motor Flanges," February 10, 1978, HOWE 13-78.
- GE drawing titled "Assembly Vertical Ind. Motor Reactor Coolant Pump Motor," 816E331, Rev. 9, September 19, 1982.
- GE Parts List titled "Assembly Vertical Ind. Motor Reactor Coolant Pump Motor," Sheets 1 through 5, various revisions.
- GE drawing titled "Outline," 816E327.

The evaluation to date of the Reactor Coolant Pump Motor Flanges has consisted of reviewing documentation, a preliminary field inspection of the reactor coolant pumps, and requesting either missing or additional documents.

The inspector is reviewing documents on hand and will review those forthcoming from the licensee. This review, together with further field inspections, should resolve this issue.

- d. (Open) 5C.55(e) Item (329/79-04-EE, 330/79-04-EE): Consumers Power Company (CPCo) uses States Sliding Link Terminal Blocks in their switchgear, motor control centers, control panels, and other electrical equipment cabinets. Since July 1979, cracked links have been found in these terminal blocks.

Documents reviewed:

- 7/20/79 - Bechtel Management Corrective Actions Report (MCAR) 32; closed out 1/5/81.
- 7/26/79 - Bechtel Nonconformances Report.
- 8/10/79 - Interim report, CPCo to NRC. Also interim reports 10/26/79 and 1/18/80.
- 2/4/80 - Bechtel Associates letter to Multi-Amp Corp.

- 2/28/80 - Bechtel to CPCo "Final Report" on MCAR 32.
- 9/16/80 - CPCo cover letter enclosing Sandia Laboratories report of 9/10/80.
- 8/20/81 - CPCo internal correspondence regarding terminal block testing procedure.
- 2/24/83 - CPCo procedure #GPE.01, Rev. 3.

Cracked sliding links were found on the States Terminal Blocks of Q-rated electrical equipment in July 1979. The licensee could not advise as to how many links are in use on Q-rated equipment, but there are many thousands installed. These cracked links present an unacceptable electrical connection in safety related equipment. The licensee has taken the following steps to resolve this problem.

- (1) Replaced cracked links found in 4160 volt switchgear 2A06.
- (2) Analyzed cracked links to determine cause of problem (stress corrosion cracking that occurred due to excessive cold working of the brass bolt and subsequent exposure of the brass to a corroding agent during the nickel-plating process).
- (3) Inspected a sample of 417 links representing a sub-sample of the Q-rated groups of equipment. Eight of the links broke on tightening; this represents 1.9 percent of the links tested. However, the links were then checked with a 10X magnifying glass and high intensity lights. Sixty-two cracked links were found. This represents 15 percent of the links tested and includes the 1.9 percent that did not tighten.
- (4) Issued procedure GPE.01 to check out 100 percent of the links when the equipment is turned over from Bechtel to CPCo.

In the course of our inspection, the terminal blocks in question were examined in the field. In addition, the testing method used was witnessed by the inspector. The sample of links tested showed that 1.9 percent failed on tightening, but about 13 percent were also cracked after tightening. This cracking only showed up under a careful examination with a magnifying glass. The present testing method is limited to tightening up the bolt with no set torque requirement. If the link cracks, the bolt will not tighten and is replaced with a new link.

This method is unsatisfactory in that the links with cracks that only showed up with a magnifying glass are still installed. It is not possible to visually inspect 100 percent of the links in the installed condition without disassembly or removal. The licensee does not plan to perform these actions at this time.

Additional actions by the licensee will be required to resolve this issue.

- e. (Open) 50.55(e) Item (329/78-06-EE, 330/78-06-EE): Small Break Analysis. CPCo was notified by B&W in May 1978 that a problem existed in the small break analysis of lowered loop 177 fuel assembly (FA) plants of which Midland is one. It was determined that the Emergency Core Cooling System (ECCS) analysis for B&Ws 177 FAs may be nonconservative for a small break in the Reactor Coolant Pump discharge. This problem required revisions to the Makeup and Purification system for Units 1 and 2.

Based on several meetings between CPCo, Bechtel, and B&W and a review of Bechtel's recommendations; CPCo authorized Bechtel to install High Pressure Injection (HPI) line crossovers downstream of the HPI line isolation valves and outside of the building, as well as five check valves per unit requiring no operator action. P&IDs M-403 Sheet 2(Q) (Unit 1) and M-404 Sheet 2(Q) (Unit 2) Makeup and Purification System were revised to include the crossovers and check valves described above. The licensee has confirmed that the valves are properly installed in the revised lines.

Documents reviewed:

- Bechtel drawing M-402B(Q), Rev. 10, "Reactor Coolant & Pressure Control," Unit 2.
- Bechtel drawing M-404, SH 2A(Q), Rev. 8, Makeup and Purification, Unit 2.
- Bechtel drawing M-404, SH 2B(Q), Rev. 9, Makeup and Purification, Unit 2.
- Midland 1&2 FSAR, Section 6.3, including Rev. 49, 10/83.
- Midland SER, NUREG-0793, May 1982, including supplements 1, 2, and 3.
- B&W May 1, 1978 letter from James H. Taylor to NRC, Robert L. Baer.
- B&W Topical Report, B&W-10109, Rev. 3, 8/77.
- Procedure OPS-9201.1, Rev. 0, Tabs 1, 5, and 9.

The Midland SER, NUREG-0793, appears to accept the small break analysis referenced in this 50.55(e). However, it is not clear that the SER addresses all the concerns reflected in the 50.55(e) report. Therefore, the NRC is pursuing two parallel paths. The first is to determine, by contacting various authors of the SER, to determine if the SER covers all the concerns addressed in the 50.55(e) report. The parallel path is to determine if the analysis is acceptable. This review involves two major questions: is the B&W computer code acceptable for this break size and does the licensee have the hardware plus procedures to respond to this size break? Also a review of the Emergency Procedures brought up two problems. The first was some technical changes that could improve the procedure. The second, still to be made, is whether a licensed operator can isolate the broken HPI line within the required 20 minutes.

Additional actions will be required by the licensee to resolve these issues.

3. Exit Interview

The inspectors and the Midland NRC site team met with the licensee representatives on June 15 and again on June 29. The Senior Resident Inspector summarized the scope and findings of the inspections. The licensee acknowledged the inspector's findings.