U. S. ATOMIC ENERGY COMMISSION
DIVISION OF COMPLIANCE
REGION III

Report of Construction Inspection

CO Report No. 329/71-1
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Licensee:	Consumers Power Company (Midland Units 1 & 2) CPPR not yet issued Category A
Date of Inspection:	January 7, 1971
Dates of Previous Inspection:	September 29 and 30 and October 1, 1970
Inspected By: C E Jones for G. C. Gower	Reactor Inspector 1-21-71
C E Jones for R. E. Oller	Metallurgical Engineer 1-21-71
Reviewed By: C E Jones for W. E. Vetter	Sr. Reactor Inspector 1-22-71
Proprietary Information:	None

SCOPE

Type of Facility:	Pressurized Water Reactor
Power Level:	3563 (Mwt), 662 (Mwe) each unit
Location:	Midland, Michigan
Type of Inspection:	Special, announced
Accompanying Personnel:	None

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Scope of Inspection: The purpose of this special inspection was to review the measures taken to protect materials, equipment, and foundation structures during a temporary construction shutdown period. A review of the security measures for the general construction area was also made. The status of several follow-up items was discussed.

SUMMARY

Safety Items - None.

Noncompliance Items - None.

Unusual Occurrences - None.

Status of Previously Reported Problems - Previous Inspection Report Nos. 329/330/70-6 listed four items of nonconformance. The following information regarding these items was obtained during this inspection.

1. According to Messrs. N. Paige and B. Peck, corrective action by the applicant to improve the use of vibrators has been taken. Bechtel established a special crew of craft personnel to do the vibrator work. This crew has been trained in the proper use of vibrators.

2. Regarding the taking of aggregate gradation and organic tests in accordance with the PSAR, Mr. Peck said that Consumers Power has reviewed the frequency of aggregate testing and, where necessary, more frequent tests will be made to comply with the PSAR.

3. Mr. Peck stated that they have been taking concrete samples for slump in accordance with ASTM-C-172-54 (Revised 1958) which requires only a single sample of concrete from stationary mixers. ASTM-C-172-68, which is a later edition, requires samples at two intervals during discharge of the middle portion of the batch. This difference in requirements has been brought to the attention of the applicant by telephone and will receive follow-up attention at the time concrete work resumes.

4. Regarding the lack of prompt attention on the part of QC inspection staff to identify and correct apparent deviations, the applicant, (according to Peck) has requested that Bechtel upgrade the QC

inspection force in the area of concrete placement. In this regard, Peck reported that Bechtel and Consumers Power (CP) have conducted reviews of the ACI-301 standard. Additionally, special inspector training sessions have been conducted for the site inspection force and Bechtel has assigned a full-time engineer to inspect all Q-list pours.

The results of the UT testing performed on the auxiliary building base slab by Letcher Associates were also reviewed during the current inspection. Two reports were reviewed which described the testing methods used and the results. The reports indicated that the structure was sound and free of significant voids. (II-C)

Other Significant Items - None.

Management Interview

Persons in attendance:

N. Paige - Project Superintendent
C. Hills - QA Engineer (Jackson, Michigan office)
B. Peck - Field QA Engineer
F. Plutchak - QA Engineer, Bechtel Corporation

The inspectors summarized the inspection findings and said that the actions taken to protect materials, equipment, and structures appeared to be adequate. The applicant was also told that the audit program to assure implementation of the protective measures appeared to be adequate.

The applicant was questioned to determine if advance planning was in progress to establish the actions to be taken to restore the site to full construction status when required. Mr. Paige said that the planning in this area will depend to a large extent on the length of shutdown. However, he said that the planning to cover resumption of construction would be Bechtel's responsibility and he anticipated that it would include adequate steps to verify the integrity of the existing structures, etc., before resuming construction. The applicant was urged to give consideration to this aspect of the facility shutdown status.

The applicant was informed that the information obtained regarding the status of previously reported problems was beneficial; however, since construction work had been terminated for the shutdown period, it appeared that these items should remain in the follow-up status until work resumes and further inspection efforts indicate they have been resolved.

Subsequent to the inspection, on January 18, 1971, the applicant was informed by telephone that CO had completed a review of the four items listed under the "Status of Previously Reported Problems," section of this report and would issue a CDN on Items 1 and 2. The applicant was also informed that all four items would receive follow-up attention during future inspections.

DETAILS

I. Persons Contacted

Same as listed above for Management Interview.

II. Results of Inspection

A. Applicant's Planning for Shutdown Period

Consumers Power Company (CP) has prepared a "Shutdown and Protection Plan" for the Midland site. Preparation and implementation of this plan was accomplished with assistance from the Bechtel Corporation Engineering Section in San Francisco. This plan was organized in three specific areas as follows:

1. Site Storage and Material Summary.

2. Preservation of Plant Foundation Structure.

3. Site Surveillance During the Shutdown Period.

Since the implementation of the plan, Bechtel engineers have inspected the site. According to CP, Bechtel will continue to provide engineering assistance as required. The next Bechtel site inspection is slated for early spring...when thawing is anticipated.

B. Compliance Observations

1. Storage of Materials, Equipment, and Supplies

The storage condition and location of all materials, equipment, and supplies were described in the shutdown plan. The inspectors performed a visual inspection of selected items and determined that conditions were in accordance with the plan. It was noted that valves and rotating equipment, such as electric motors or pumps for installation in the plant, had not been shipped to the site prior to shutdown and, consequently, the need for special treatment of this equipment was not required.

The selected items and their storage condition were as follows:

a. Stainless Steel Pipe

The 4" diameter stainless steel piping assemblies for the radwaste system were observed to be stored on wooden supports in a weatherproof building. All the pipe ends were adequately capped for protection.

b. Carbon Steel Piping

The large diameter main condenser cooling water pipe was observed to be stored in the open, on dunnage, at the Dow Chemical Company (Dow) railroad siding. No special storage requirements were identified in the plan for this pipe.

c. Containment Liner Plate

The major portion of the prefabricated sections of containment liner plate were observed to be stacked vertically in the open on dunnage at the Dow railroad siding. These sections had been painted by the manufacturer to retard rusting. Weld end preparations were not painted and will require cleaning when used.

d. Containment Penetrations

The carbon steel, capped and painted, containment penetrations were individually stored on dunnage at the Dow siding.

e. Cadwelding Equipment and Materials

The inspectors observed that the Cadwelding molds, related equipment, and splices were stored in a weatherproof building. CP representatives stated that the Cadwelding powder had been returned to the vendor.

f. Electrical Materials and Equipment

The inspectors observed that electrical conduit, elbows, and other equipment were stored in an enclosed area of the field office building. Construction transformers were found to have been covered and stored in a weatherproof building. The inspectors were told that the plastic ABS-Type conduit was covered with a tarpaulin and stored outdoors on dunnage.

g. Welding Rod

By observation, it was determined that sealed containers of welding electrodes were stored in an area of the field office. According to CP, all partially used containers and all loose welding electrodes had been removed from the site, in accordance with the shutdown plan.

2. Preservation of Plant Foundation Structures

According to CP, the major concern with protecting the foundation structures centered around the prevention of extensive subsoil freezing and thawing beneath the structures, since this condition could produce upheaval and damage to the existing structures. In general, the protective measures consisted of covering the structures with insulating type materials and monitoring the temperatures. At the time of the inspection, the temperature history indicated that there would not be a problem in this area.

Following are the observations made by the inspectors:

a. Reactor Building - Unit No. 1

It was observed that the reactor building foundation had been covered with about three feet of straw. The entire structure and straw had been enclosed with a wood frame and covered with plywood. The plywood was sealed with tar paper and tar. A clock type temperature recorder had been installed to record the temperature of the upper surface of the concrete slab. This recorder is read each shift by the security guard.

Provisions were made to monitor for water collection at the low point of the structure and suction pumps were placed in these locations in the event that they are needed. Provisions for fire protection have been made. Water supply lines have been heat traced and insulated.

b. Reactor Building - Unit No. 2

The Unit No. 2 foundation had not progressed as far as Unit No. 1 prior to shutdown and different protection measures were effected. The reactor building foundation was covered with a minimum of three feet of sand. Sheet plastic was placed over the sand. The tendon gallery roof was covered with mesh wire, straw and sheet plastic. A temperature recorder was installed to monitor the interface temperature between the concrete and sand. This recorder is also to be read each shift.

c. Turbine Building

Protection relative to this structure was noted to be essentially the same as described in Item a, above, for the Unit No. 1 reactor building.

d. Auxiliary Building

This structure was noted to have been covered with three feet of straw; however, the straw has been protected from wind, i.e., by having been covered with sheet plastic instead of plywood. It was explained, by Mr. Paige, that chances of serious freezing and upheaval were less likely in the case of this structure because the concrete slab was about six feet thick. Provisions for water removal consisted of the installation of an automatic float actuated sump pump. This pump has been centrally located in a sump capable of receiving water from several locations. A concrete temperature detector and recorder has been provided.

3. Site Surveillance During Shutdown

CP has prepared and implemented a "Site Shutdown Surveillance Procedure." This document included guidelines for conducting site surveillance during the shutdown period. Additionally, a general field audit form had been modified for use in documenting the surveillance activities. Audits are scheduled to be performed by the CP QA Engineer on a weekly basis. Copies of completed audit forms were reviewed by the inspectors and found to be adequate for the intended purpose. It was noted that the audit forms are reviewed by the CP Midland Project Superintendent. Significant audit points were observed to be as follows:

a. Four storage areas, i.e., the Dow railroad siding, the county farm area, the plant outside area, and the concrete batch plant and testing laboratory.

b. Field office building - records and document storage, valuable tools and materials.

c. Plant foundation structures - temperature detection and recording instruments, sump pump operation, fire hazards, fire protection equipment, water drainage and general integrity of coverings.

d. Site security system - completeness of audits by 24-hour security guard service and adherence to established procedures.

4. Batch Plant and Testing Laboratory

Shutdown and protection of the concrete batch plant was determined to be the responsibility of Champion, Inc. According to Mr. Paige, CP may purchase the batch plant. If this occurs, CP will expand their shutdown plan to take over the surveillance of the concrete batch plant.

The W. H. Flood Testing Laboratory was inspected during the visit. It was noted that 83 concrete cylinders were still in the curing process. Curing temperatures were being maintained and recorded on a shift basis by the security guards. The last of the concrete cylinders are scheduled to be broken by Flood personnel on February 15, 1971.

C. Followup on Previous Inspection Findings

In addition to the four items included above, under "Status of Previously Reported Problems," followup was made on the results of ultrasonic tests (UT) made on the auxiliary building base slab. During this inspection, two reports prepared by Letcher Associates were reviewed by the inspectors. These reports described the UT tests performed on the auxiliary building base slab,[1/] methods used, and the results obtained. The reports indicated that the base slab was a sound structure and free of significant voids. This item is being removed from our list of follow-up items.

1/ Refer to CO Report No. 329/70-6, pg. 3, Management Interview, Item 1.