

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

REGION III

Report of Operations Inspection

IE Inspection Report No. 050-155/75-16

Licensee: Consumers Power Company
212 West Michigan Avenue
Jackson, Michigan 49201

Big Rock Point Nuclear Plant
Charlevoix, Michigan

License No. DPR-6
Category: C

Type of Licensee: BWR GE

Type of Inspection: Special, Announced

Dates of Inspection: November 19-21, 1975

Principal Inspector: *W. S. Little*
C. H. Brown

12/15/75
(Date)

Accompanying Inspectors: None

Other Accompanying Personnel: None

Reviewed By: *W. S. Little*
W. S. Little, Section Leader
Nuclear Support

12/15/75
(Date)

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SUMMARY OF FINDINGS

Inspection Summary

Inspection on November 19-21 (75-16): Reviewed proposed fire seals for penetrations in walls and floors outside the containment; work control and emergency procedures; fire protection and proposed detection. No fire hazards were noted on tour.

Enforcement Items

None.

Licensee Action on Previously Identified Enforcement Items

Not in the scope of this inspection.

Other Significant Items

A. Systems and Components

None.

B. Facility Items (Plans and Procedures)

Fire seals and fire detector installation is to be performed during January 1976 outage.

C. Managerial Items

None.

D. Noncompliance Identified and Corrected by the Licensee

None.

E. Deviations

None.

F. New Unresolved Items

1. Qualification of Penetration Sealant Material

- a. Determine the affect of an improper mix ratio of the two liquids that produce the foam seal on the sealant flammability.

- b. Confirm that a visual comparison of cured samples verify the proper mix ratio.
- c. Evaluate the potential for inhibitors preventing the the proper cure of the foam.
- d. Develop acceptance criterion for the sealed penetrations. (Report Details, Paragraph 3)

G. Status of Previously Reported Unresolved Items

None.

Management Interview

Following the inspection, a meeting was held on November 21, 1975, with Mr. Hartman, Plant Superintendent and other members of his staff. The following items were included in the discussion.

- A. The inspector discussed the new unresolved items pertaining to the fire seal installation. The licensee acknowledged the comments and stated that the items would be referred to their headquarters. (Report Details, Paragraph 3)
- B. The inspector inquired as to who performs the final verification check when welding or burning has been performed near cables, as in the case of the RDS installation. The licensee stated that in this instance the contractor QA procedures final step is the inspection.
- C. The inspector stated that the fire watch qualifications are not specified. The qualifications should be equal for licensee or contractor personnel. The licensee stated that this item would be reviewed. (Report Details, Paragraph 2)

REPORT DETAILS

1. Persons Contacted

C. Hartman, Plant Superintendent
R. Abel, Operations Superintendent
G. Tyson, Maintenance Superintendent
D. DeMoore, Technical Engineer
S. Martin, Engineer
E. McNamara, Shift Supervisor
V. Avery, Shift Supervisor
D. Targgart, Project QA, Electrical Plant Projects
W. Clark, CP Co. GPMD
G. Dziedzic, QA/QC Inspector

POOR ORIGINAL

2. Findings

A tour was taken by the inspector of the control room, penetration room and electrical equipment room. The control of fire hazards appears to be satisfactory. Some dust was noted in the control room panels. The placement of fire seals is to be performed during the upcoming January 1976 outage. The seals are to be made of silicone rubber foam that will be foamed in-place.^{1/} Forms are to be constructed of fiber glass when required. QA/QC verification by procedures appears to be adequate for control except as discussed in paragraphs 3.a and 3.c. Any work packages prepared offsite are reviewed and approved by the PRC. The requirements for the review have recently been made more detailed and any modification is considered to be safety related until the PRC has specifically found it to be otherwise.^{2/}

Onsite personnel are familiar with the emergency procedures. The offsite personnel receive initial lectures on site emergency procedures. The licensee stated a review would be made of the training of personnel that would be used for fire watches and the training upgraded as necessary. The contractor presently at the facility holds weekly safety meeting (requirements of OSHA) and one September meeting was conducted by one of the licensee's personnel covering fire equipment and fire fighting at the facility.

3. Fire Stops

The fire stops are scheduled to be formed during the January 1976 outage by a contractor. The fire stops (seals) are to be constructed of foamed-in-place silicone rubber (Dow Corning Q3-654S) and gaps

1/ See paragraph 3.

2/ See corrective action A0-24-75.

of less than 1/2" caulked with Dow Corning RTV-96-081. The foam produced when two liquids are mixed and allowed to cure. The following information was contained in the contractor's procedure. The foam was tested per ASTM E 119-73 fire endurance test for 5 hours by Factory Mutual Research Corp.^{3/} with acceptable results. The test was performed with the two liquids thoroughly mixed in a 1:1 ratio and properly cured. During the curing hydrogen is evolved and the reaction is mildly exothermic.^{4/} The vendor's data shows 6 volumes of hydrogen evolved in 100 minutes and a total of 8.4 volumes evolved in 500 minutes.

No data was available as to acceptability of the foam with any variation from the 1:1 mix ratio or if the cure was inhibited by several compounds contained in some RTV and cabling insulation formulas. Inhibiting chemicals are stated in vendor literature for the foam. The two liquids have the following properties (partial list).

	Component A	Component B
Flash point	470°F	270°F
Flame point	650°F	390°F

The flammability data for properly mixed and cured foam is as follows:

<u>Time in Flame</u>	<u>Flame & Glow out</u>	<u>& wt Loss</u>
15 sec	7.2 sec	1.3%
60 sec	15.6 sec	13.5%

The contractor's procedure contained requirements for ventilation to remove the hydrogen evolved, and the verification of the foam in the seal by visually examination of a sample as compared to a standard of a known 1:1 mix ratio.

The inspector stated his concerns in the following areas and that these would be carried as unresolved items in the report:

- a. There was no acceptance criterion for the visual comparison of the foam samples. Also there was no statement that the visual comparison verified a proper mix and acceptable flammability.
- b. As both liquids present a fire hazard, would the mix be a fire hazard if the cure was inhibited?

3/ Factory Mutual Report Serial No. 24963.

4/ Approximately 20°C rise internally.

- c. If the cure was inhibited around the cabling, would the seal be acceptable?

Other areas of concern were:

What precautions are to be taken to prevent damage to vital equipment by the acetic acid evolved as the RTV cures? How is the trimming of the foam to be accomplished?

The licensee stated that these items would be referred to their Headquarters.

4. Fire Detection

A fire detection system is to be installed during the upcoming outage. This system is alarmed in the control room and covers 3 zones: electrical equipment/compressor room; sphere penetration room; and cable area in the sphere. The detectors are of the ionization type with an installed alarm to indicate when that detector has alarmed.

5. Work Control Procedures

The work control procedures appear to be satisfactory. Changes and modifications prepared offsite are also reviewed and approved by the PRC. The QA personnel periodically review work in progress to assure procedures are being followed. There is no specific requirement for operations to be notified if a job is restarted. The licensee stated that the incomplete work package maintains sufficient control.

6. Emergency Procedures

The emergency procedures were briefly reviewed and no major area of concern noted. Fires in vital area and methods of control are discussed. The Shift Supervisor is directed to go to the scene of the fire as the man in charge. The licensee stated that a note would be added to remind the supervisor that he still was in charge of the overall operation of the plant.

7. Maintenance of Seals

The licensee is evaluating methods of repair and materials to be used in the seals after they are installed.

8. Fire Drills

The fire drills have not been separated from other emergency drill. The licensee stated that this area would be reviewed for appropriate changes. The fire brigade is trained in fire fighting. It appears