

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

IE Inspection Report No: 50-219/75-13

Docket No: 50-219

Licensee: Jersey Central Power and Light Company

License No: DPR-16

Madison Avenue at Punch Bowl Road

Priority: -

Morristown, New Jersey 07960

Category: C

Safeguards Group: -

Location: Oyster Creek, Forked River, New Jersey

Type of Licensee: 1930 MWt, BWR

Type of Inspection: Special, Announced

Dates of Inspection: May 5-7, 1975

Dates of Previous Inspection: April 28-May 1, 1975

Reporting Inspector: *Edward A. Plumlee*
K. W. Plumlee, Reactor Inspector

5/20/75
DATE

Accompanying Inspectors: None

DATE

DATE

DATE

Other Accompanying Personnel: None

DATE

Reviewed By: *R. C. Haynes*
R. C. Haynes, Senior Reactor Inspector

5/20/75
DATE

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SUMMARY OF FINDINGS

Enforcement Action

A. Items of Noncompliance

None

B. Deviations

None

Licensee Action on Previously Identified Enforcement Items

Not applicable

Design Changes

None Identified

Unusual Occurrences

None Identified

Other Significant Findings

A. Current Findings

1. Acceptable Areas

Correlation Between the Facility's Requirements and the As-Built Status of Fire Stops on Safety-Related Electrical Cables and Penetration Seals

A visual examination was performed of fire barriers and compartment boundary penetration seals for safety-related electrical cables. The observed construction of these items correlated with the documented requirements for this facility. (Details, Paragraph 3)

2. Unresolved Items

a. Invokement of Facility Requirements for Fire Stops on Electrical Safety-Related Cables and Penetration Seals in Maintenance and Modification Procedures

An examination was made of the licensee's documented policies and procedures for maintenance and modification

of fire stops on safety-related electrical cables and penetration seals. The licensee is currently reviewing these and will inform IE:I by June 1, 1975 of the results of current efforts. (Details, Paragraph 5)

b. Specific Areas of Concern re: Penetration Sealing

The following items are unresolved*:

- (1) Cable routing
- (2) Combustible seal material
- (3) Fire retardant coating
- (4) Battery room cable run
- (5) Fire stops, seals and closures of penetrations in turbine building, equipment building, and reactor building interior walls and floors.

B. Status of Previously Reported Unresolved Items

Not inspected

Management Interview

At the conclusion of the inspection the inspector held a meeting at the site with the following personnel to discuss the inspection findings:

Jersey Central Power & Light Company

- D. A. Ross*, Manager Generating Stations - Nuclear
- J. T. Carroll, Station Superintendent
- D. L. Reeves, Chief Engineer
- E. I. Riggle, Maintenance Supervisor

The following items were discussed and the inspector's findings were acknowledged by the licensee:

A. Purpose of the Inspection

The inspector stated that the purpose of this inspection was to examine the documented facility requirements for fire stops on safety-related cables and penetration seals, to visually inspect these items for conformance with the requirements, to examine the licensee's provisions for invoking the requirements during maintenance and modification work and to determine the status of the licensee's efforts with respect to the actions listed in IE Bulletins 75-04 and 75-04A.

* Details, Paragraph 4

** Participated by telephone conference circuit

B. Current Findings: Acceptable Areas

1. Correlation Between the Facility's Requirements and As-Built Status for Fire Stops on Electrical Safety-Related Cables and Penetration Seals

A visual examination was performed of fire barriers and compartment boundary penetration seals for safety-related electrical cables. The observed construction of these items correlated with the documented requirements for this facility. (Details, Paragraph 3)

C. Unresolved Items

1. Invokement of Facility Requirements for Fire Stops on Electrical Safety-Related Cables and Penetration Seals in Maintenance and Modification Procedures

An examination was made of the licensee's documented policies and maintenance and modification procedures for fire stops on safety-related electrical cables and penetration seals. The licensee is currently reviewing these matters and will inform IE:I by June 1, 1975 of the results of current efforts. (Details, Paragraph 5)

2. Specific Areas of Concern re Penetration Sealing

The following items are unresolved*:

- a. Cable routing
- b. Combustible seal material
- c. Fire retardant coating
- d. Battery room cable run
- e. Fire stops, seals and closures of penetrations in turbine building, equipment building, and reactor building interior walls and floors.

D. Status of Licensee's Efforts re IE Bulletins 75-04 and 75-04A

The licensee's follow-up to IE Bulletins 75-04 and 75-04A includes the development of procedure preparation guidelines and certain procedures and possibly the installation of a fire suppression system. (Details, Paragraph 6)

* Details, Paragraph 4

DETAILS

1. Persons Contacted

Jersey Central Power & Light Company

J. T. Carroll, Station Superintendent
D. Reeves, Chief Engineer
W. Riggle, Maintenance Supervisor
D. VanNortwick, Plant Electrician B

2. General

a. Plant Status

The plant was in a refueling outage during this inspection.

b. Purpose of Inspection

The purpose of this inspection was to examine the documented facility requirements for fire stops on safety-related cables and penetration seals, to visually inspect these items for conformance with the requirements, to examine the licensee's provisions for invoking the requirements during maintenance and modification work and to determine the status of the licensee's efforts with respect to the actions listed in IE Bulletins 75-04 and 75-04A.

3. Correlation Between the Facility's Requirements and As-Built Status for Fire Stops on Safety-Related Electrical Cables and Penetration Seals

a. Requirements on Cables and Penetrations

(1) FSAR and Technical Specification Requirements

Sealed penetrations are required for containment integrity in the reactor building (secondary containment) walls.

Isolation required for 4160 volt dual emergency circuits includes a firewall between the switchgear; physical separation of bus sections, feeders, power centers and motor control centers; and enclosure of feeders to vital equipment in rigid steel conduit.

(2) Other Requirements

Insulation on power cables and control cables was stated to be self-extinguishing material (either GE VULKENE or FLAMINOL brand).

b. Observations

(1) Acceptable Areas

Visual examination of the electrical cable trays, conduits and penetration seals verified the correlation between as-built construction and the above requirements, as follows:

Control room floor penetrations were examined, and 769* appeared to be sealed. Two others were found not sealed and the licensee sealed them before the completion of the inspection.

The licensee stated that nine others, that could not be examined because of physical location, were sealed.

Except for a few unused thimbles closed off by steel discs and plastic bushings, the control room penetrations appeared to be sealed by a (dry) mineral wool** packing material.

Reactor building (secondary containment) wall and roof penetrations were examined. All 167*** electrical cable trays, conduits and spare thimble penetrations identified appeared to be sealed (described below). The licensee stated that a typical cable tray penetration seal was:

- (a) (Original application) two injections were made (inner and outer seal) of pourable Kaowool which hardened in place.
- (b) Periodic leak testing and resealing resulted in the additional application of one or more of:

Pourable Kaowool or similar material
Dry packed Kaowool or similar mineral wool
Duxseal
Isofoam

* Inspector's count

** Kaowool, manufactured by Babcock & Wilcox

*** Inspector's count

Inspection of the 4160 volt ducts and switchgear verified that isolation was provided as described by paragraph 3.a.(1).

Inspection of the emergency diesel generator rooms and cables verified that isolation was provided and there was a concrete wall between the diesel generators and between the two control panels.

Fire-fighting equipment was visible. As an example a fire hose and portable fire extinguishers were available near the entrance to the cable room.

The lower bays of the turbine building were equipped with automatic overhead sprinklers.

Insulation on power cables and control cables was examined on a sampling basis and was identified as either GE VULKENE or FLAMINOL, on each sample.

4. Specific Areas of Concern re Penetration Sealing

a. Cable Routing

The inspector examined a combination storage/cable pulling room containing 25 cable trays, 67 rigid conduits and 14 non-rigid* conduits. Areas connecting** to this room included:

Main cable room (openings 5X5 and 5X3 ft)
Pipe tunnel (opening 4X4 ft)
460 volt distribution room (opening 2X4 ft)
DC battery room (tunnel 5X6 ft)

The main cable room also has openings to an equipment room above the control room (a pipe chase opening, 2X10 ft, partly filled by ventilation ducts, conduits, pipes, etc.) and to the turbine building (nine cable trays through a corridor).

The inspector found that there were no cable-penetration fire stops. The licensee stated there was no requirement to provide cable fire stops, or to close up or seal the above openings.

b. Combustible Seal Material

The licensee's review of fire stops and seals following issuance of IE Bulletins 75-04 and 75-04A apparently identified Isofoam

* Greenfield type

** Estimated sizes of openings follow

as combustible. The licensee removed a piece of Isofoam from an electrical penetration seal. It was ignited and burned completely.

The licensee stated that the Isofoam was at most only an inch or two thick and did not extend from one side of the seal to the other; thus propagation of fire through a seal was stated to be unlikely.

No test data were available that would substantiate the licensee's position on flame resistance of seals. The licensee stated that there was no requirement to remove or coat over the Isofoam.

c. Fire Retardant Coating

No fire retardant coating was evident and the licensee did not commit to apply such coatings to electrical cables or penetration seals.

d. Battery Room Cable Run

All electrical cables supplied from battery room DC distribution panels A and B are collected into a single cable tray.

The licensee stated that the specifications do not require isolation of these cables.

e. Fire Stops, Seals and Closures of Penetrations in Turbine Building, Equipment Building, and Reactor Building Interior Walls and Floors

Turbine building, equipment building and reactor building interior wall and floor penetrations were examined where electrical cable trays, conduits and spare thimbles pass through. Typically, no seal or closure of these penetrations was evident. (No requirement was identified to seal or close the openings identified.)

The above items a through e are considered to be unresolved pending completion of the licensee's follow-up on IE Bulletin No. 75-04A and a subsequent review of their actions by an NRC inspector.

5. Invokement of Facility Requirements for Fire Stops on Electrical Safety-Related Cables and Penetration Seals in Maintenance and Modification Procedures

Job orders are used to initiate work on cables, fire stops and penetration seals. The licensee's supervision controls the work to

be done, states what procedures are to be used, supervises work as it progresses, and accepts the completed job. However, no maintenance or modification procedures for penetration seals were provided by the licensee.

This item is considered to be unresolved pending completion of the licensee's review of their procedures as a part of the licensee's response to IE Bulletin No. 75-04A (Details, Paragraph 6) and subsequent review of their findings and actions by an NRC inspector.

6. Status of Licensee's Efforts re IE Bulletins 75-04 and 75-04A

The licensee's reply* to IE Bulletins 75-04 and 75-04A described their efforts on procedure preparation guidelines that specifically address the concerns of Item 3, parts a through e of IE Bulletin 75-04A. This is scheduled for completion by June 1, 1975.

* Licensee's letter to IE:I dated April 24, 1975