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U. S. NUCLEAR REGULATORY COMMISSION

OFFICE OF INSPECTION AND ENFORCEMENT

REGION I

IE Inspection Report No: 50-286/75-20

Docket No: 50-286

Licensee: Consolidated Edison Company
of New York, Inc.
4 Irving Place
New York, New York 10003

License No: CPPR-62

Priority: --

Category: B

Safeguards Group: --

Location: Buchanan, New York (Indian Point 3)

Type of Licensee: PWR 1050 MWe (Westinghouse)

Type of Inspection: Special, Announced

Dates of Inspection: June 30 and July 1, 1975

Dates of Previous Inspection: June 11-13 and 25-27, 1975

Reporting Inspector: L. W. Gage
L. W. Gage, Reactor Inspector — DATE 7/11/75

Accompanying Inspectors: None — DATE

DATE

DATE

DATE

Other Accompanying Personnel: None

DATE

Reviewed By: R. C. Haynes
R. C. Haynes, Senior Reactor Inspector — DATE 7/14/75

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

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

An examination was performed of the modification procedures for the installation of fire barriers and compartment boundary seals for safety-related cables. There is correlation between these procedures and the facility's construction modifications. (Details, Paragraph 4)

2. Unresolved Items

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

An examination was performed of the installation of fire barriers and compartment boundary seals, and the application of fire-retardant coating, for safety-related cables. There are certain areas where correlation does not yet exist. (Details, Paragraph 3b)

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:

Consolidated Edison Company of New York Inc.

Mr. H. W. Cairns, Supervisor of Construction Inspection
Dr. G. I. Coulbourn, Manager, Indian Point #3, Construction
Mr. P. B. Upson, Chief Construction Inspector

WEDCO, Inc.

Mr. B. W. Garrow, Quality Assurance Engineer

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 special, announced 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, and to examine the licensee's provisions for invoking the requirements during maintenance and modification work.

B. Current Findings: Acceptable Areas

The inspector stated that his review of the following area revealed acceptable findings:

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

   An examination was performed of the modification procedures for the installation of fire barriers and compartment boundary seals for safety-related cables. (Maintenance procedures were not addressed; the licensee has not prepared any, but stated that the seals, properly installed, preclude a requirement for later maintenance.) There is correlation between these procedures and the facility's construction modifications. (Details, Paragraph 4)

C. Unresolved Items

The inspector stated that the following item was observed and is considered to be unresolved:

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

   An examination was performed of the installation of fire barriers and compartment boundary seals, and the application of fire-retardant coating, for safety-related cables. There are certain areas where correlation does not yet exist. (Details, Paragraph 3b).

DETAILS

1. Persons Contacted

Consolidated Edison Company of New York, Inc.

Mr. H. Cairns, Supervisor of Construction Inspection
Dr. G. Coulbourn, Manager, Indian Point #3, Construction
Mr. D. Milano, Field Engineer
Mr. P. Upson, Chief Construction Inspector

WEDCO, Inc.

Mr. B. Garrow, Quality Assurance Engineer

2. General

a. Plant Status

Plant construction was reported as 99+% complete.

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, and to examine the licensee's provisions for invoking the requirements during maintenance and modification work.

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

a. Requirements

The inspector reviewed the licensee's Final Safety Analysis Report. It did not contain any details of the design of penetration seals for safety-related cables, nor did it refer to fire-retardant coatings on safety-related cables. However, in response to the NRC inspector's request for construction specifications applicable to fire stops and penetration seals, the licensee provided a drawing, number

A202465, Revision 2, (UE&C drawing number 9321-F-31603-2). This drawing is titled "Cable Tray Layout from Turbine Building to Containment Building."

It provides the following instructions (which are accompanied by sketches):

"Firestop for Cables Entering Equipment Through Floor:"

"OPERATION

1. Stuff loose fiberglass in opening to 1/4" below floor level.
2. Fill remaining depression to floor level with Flamemastic 71A (sprayable).
3. Smooth out layer with trowel or by hand.
4. Spray bottom of opening with 1/4" layer of Flamemastic 71A. If coating shows signs of sagging, a thin coat shall be applied and allowed to dry to touch (approx. 10 min.) then continue spraying until 1/4" layer is obtained.
5. Spray cables with 1/8" coating for a distance of one foot below opening.
6. Smooth out bottom layer with trowel or by hand.

NOTES

1. Flamemastic 71A is a sprayable or trowelable fireproofing compound, waterbase, non-toxic non-flammable, and odorless, 1/16" coating. Will withstand 15 minutes exposure to propane torch at 2050°F with no burn-through.
2. To install additional cables, insert rod through Flamemastic & fiberglass followed by cable. After cable is installed, patch opening on each side with Flamemastic 71A, mastic applied by trowel.
3. Flamemastic 71A, sprayable & Flamemastic 71A mastic are manufactured by the Dyna-Therm Corporation, Cape Royal Bldg, Cocoa Beach, Florida, 32931."

"Firestop for Cable Trays Through Walls, Floors & Entering Switchgear:"

"OPERATION FOR HORIZONTAL OR VERTICAL TRAY

1. Spray top and bottom of cables in tray with 1/8" layer of Flamemastic 71A sprayable for a distance of 1 ft on either side of proposed transite barrier.

2. If opening between top of cables and wall is in excess of 4 inches fabricate 1/4" transite sheet to reduce the size. Cut sheet into two parts, "A" & "B". Part "B" should fit snugly around bottom of tray. Part "A" should be fitted to provide 2-4 inches of space above the top of the cables.
3. Install transite barrier using expansion bolts or sheet-metal screws (as req'd), washers, & stiffener plates.
4. Stuff opening above cables and around tray with loose fiberglass packed tight. Thickness of fiberglass layer should not exceed 4 inches.
5. Spray both sides of fiberglass layer with 1/4" layer of Flamemastic 71A sprayable.
6. For vertical tray, replace all references to top and bottom with front & back respectively and follow same operation.

NOTES

1. Flamemastic 71A sprayable or mastic is non-toxic, non-flammable, odorless, and has a water base. 1/16" coating will withstand 15 minutes exposure to propane torch at 2050°F with no burn-through.
2. Flamemastic 71A sprayable & Flamemastic 71A mastic are manufactured by the Dyna-Therm Corporation, Cape Royal Bldg, Cocoa Beach, Florida, 32931.
3. To install additional cables, break out required opening in Flamemastic layer between part "A" and existing cables. After installation, patch opening with Flamemastic 71A mastic."

These instructions are supplemented by the following construction inspection procedures:

(1) WEDCO Construction Department Procedure No. WCE-0-4 (Rev. 3, dated 10/9/74), which states, in part:

"6.0 Procedure - Part B

Following completion of cable installation in a given tray or conduit, WEDCO will verify that the completed installation has been inspected for: ...

6.2 Separation and fire barriers are installed in accordance with latest drawings.
6.3 Firestops are provided per drawings where trays, conduit and cable pass through walls and floors. ...

The above verification will be documented on Part B of the 'Conduit and Tray Inspection Checklist.'"

(2) WEDCO QA Procedure No. WQA-4-0-6, titled "Channel Cable Separation Checklist" (Rev. 3, dated 3/20/75), which states, in part:

"2.0 Scope

The scope of this procedure shall include an audit of all Class I electrical control cabinets.

"6.0 Procedure - Part B ...

"6.3 Q.C. shall verify the appropriate fire barriers are installed and are in entry or access openings to the cabinet prior to core loading. Visual inspection will verify appropriate fire barriers as indicated on construction drawings. FIre stops are part of the installation electrical specifications."

This inspection is documented on a Final Inspection Checklist.

b. Observations

The inspector examined the safety-related cable penetrations in the Containment Building, Fuel Storage Building, Primary Auxiliary Building, Cable Tunnel, Control Building, and Diesel-Generator Building. Floors, walls, and ceilings were examined wherever possible, although the construction effort -- especially in the Containment Building -- precluded a final, complete inspection.

The majority of cable penetrations were sealed, and the seals were made as specified in drawing number A202465. Noticeable areas that still required penetration sealing were (1) floor penetrations between the upper and lower levels in the Cable Tunnel, and (2) floor penetrations inside cabinets in the Control Room -- where penetration modifications were being made.

The inspector found three items of concern:

(1) Conduit Used As Sleeving

The inspector found that several of the unsealed floor penetrations in the upper level of the Cable Tunnel appeared to be lead-ins to metal conduits. The Constructor

indicated that such penetrations would not be sealed. However, when the inspector observed the same penetrations from the other side (the ceiling of the lower level), he found that the conduit did not extend beyond the penetration and was merely used as a sleeve. The Constructor investigated this, and later stated that all such penetrations would be sealed.

(2) Wall Penetrations of Certain Cable Trays

The inspector found a grouping of cable trays, with open penetrations, that went through the wall between the Control Building and the Turbine Building.

The Constructor indicated that these open penetrations may have been designed this way, to provide ventilation. However, his review of the construction drawings could not verify this. The Constructor then stated that these cable penetrations would be investigated and, if there was no design requirement for them to remain open, they would be sealed.

(3) Apparent Shrinkage in Mastic Seal

The inspector found several cable penetration seals, in the floor of the Control Room, where the mastic seal appeared to have shrunk and pulled away from the concrete edges of the penetration. The licensee then stated that all such penetrations would be inspected and, if necessary, repaired. Penetrations that the licensee finds that require such repair will be tracked on his "punch list" (a computerized listing of uncorrected nonconformances).

The correlation between the facility's requirements and the as-built status of cable fire stops and penetration seals is considered unresolved pending completion of the construction effort and resolution of the three items of concern mentioned herein.

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

The inspector examined the modification procedures for the installation of fire barriers and compartment boundary seals for safety-related cables. (Maintenance procedures were not addressed; the licensee has not prepared any, but stated that the seals, properly installed, preclude a requirement for later maintenance.)

The modification procedures are contained in drawing number A202465 (Rev. 2), titled "Cable Tray Layout from Turbine Building to Containment Building." They are stated in the "Notes" sections of the instructions quoted in Details, Paragraph 3a of this report.

There is correlation between these procedures and the facility modifications that the inspector observed in the Control Room.