

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

CO Inspection Report No. 50-247/71-16

Subject: Consolidated Edison Company

Indian Point 2

License No. CPPR-21

Location: Buchanan, New York

Priority

Category B

Type of Licensee: BWR 873 MWe (Westinghouse)

Type of Inspection: Special, Announced (Construction)

Dates of Inspection: November 24, 1971

Dates of Previous Inspection: Sept. 15-16, 24-29 & Oct. 6-11, 1971

Principal Inspector: \_\_\_\_\_

Glen L. Madsen, Reactor Inspector

Accompanying Inspectors: G. V. J. Briggs.

(Performing Inspection) A. V. J. Burzi, Reactor Inspector

*E. M. Howard*

E. M. Howard, Senior Reactor Inspector

Other Accompanying Personnel: NONE

Reviewed By: C. M. Howard

E. M. Howard, Senior Reactor Inspector

Proprietary Information: NONE

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SECTION I

Enforcement Action

None

Licensee Action on Previously Identified Enforcement Matters

None required.

Unresolved Items

None

Status of Previously Reported Unresolved Items

Not applicable.

Design Changes

None

Unusual Occurrences

None

Persons Contacted

The following persons were contacted during the inspection.

Con Ed

- B. Cobean, Assistant Vice President
- A. D. Kohler, Jr., Resident Construction Manager
- F. Fischer, Chief Electrical Engineer
- J. Marubbio, Project Manager, Construction
- J. Makepeace, Startup Manager, Indian Point 2
- E. J. Dadson, Superintendent, Site Quality Control
- O. Beusse, Site Electrical Startup

WEDCo

- D. Anderson, Vice President

Management Interview

The following was discussed with Messrs. Kohler, Dadson, Anderson, and Beusse during the exit interview held on November 24, 1971:

- A. The licensee was asked if he intended to test for insulation deterioration of the cable now in place, which is to be spliced to the new replacement cable. In order to assure that all cable not removed was not damaged internally by the heat conducted by the copper conductor, Con Ed stated that test samples of all cable would be taken, examined, and the results recorded.
- B. Since the burned cable was covered with PVC, a chlorinated hydrocarbon, the licensee was asked what action was intended relative to chloride damage in the building. The possibility of hydrochloric acid formation and absorption in the building concrete was also questioned. The licensee stated that a comprehensive evaluation of chloride contamination would be performed.
- C. The licensee was asked to demonstrate by prototype tests that the resistance drop of the spliced joint would not exceed that of the unspliced cable. Since all of the cables in the trays affected by the fire would be spliced, and all of the splices covered by approximately 15 unventilated boxes, the inspector expressed some concern as to the heat generating capacity of the joints and the heat storage capacity of the boxes. The licensee assured the inspector that low-resistance joints would be made and tests conducted on prototype joints to demonstrate this fact. The results of these tests will also be recorded and be available for review.
- D. The licensee was questioned concerning the details of the mechanical support design for each of the joints. The inspector was interested in how each joint was to be mechanically isolated so as not to be subjected to tension or vibrational stresses. The licensee agreed to provide this information.
- E. The licensee was questioned about fire-resistant or retardant properties of the insulation to be used to cover the splices. The licensee agreed to supply this information.
- F. The licensee was questioned about the details of the scheme to be used to guarantee physical separation of redundant cables. The licensee agreed to supply this information.

- G. The licensee was questioned about the details on the cable support structure within each box. The licensee agreed to supply this information.
- H. The licensee was asked to provide a list of all components that are to be tested with a list of all the tests to be performed and a description of the tests required in order to put all systems affected by the fire back into operating status. The licensee agreed to make and provide these lists.

## SECTION II

### Additional Subjects Inspected, Not Identified In Section I, Where No Deficiencies or Unresolved Items Were Found

#### 1. General

At the outset, Con Ed disclosed that they had decided that, of all possible means for restoring cables damaged by the fire of November 4, they had decided to resort to splicing new cables to those sections of the cables not damaged. They claimed that cost-benefit studies had been made of possible schemes, and on this basis, had decided to splice cables in lieu of replacing the entire cable run. Eleven drawings were made by UE&C outlining the scheme of trays, boxes, and cables. The drawings, however, referred to terminal boards. It appeared that there would not have been enough room in the boxes for all of the boards required, so boards were discarded in favor of free-floating splices. They also felt that each terminal strip connection offered a lesser figure of merit than single splices. The drawings also specified the use of 12-gauge steel for the boxes, but the boxes actually delivered and inspected during the plant tour, in their stockroom, were made of heavier 10-gauge steel.

The four MCC's damaged by the fire were to be replaced by newly constructed ones whose delivery from Westinghouse was expected either on Friday, the 26th or Tuesday, the 30th of November.

During the discussion on the pros and cons of splicing, the inspector stated that, in order to provide sufficient information on which to judge the repair, Con Ed should, as a minimum, assure themselves of the following:

- a. Documented evidence to show that all damaged cable was removed, especially cable that might have been damaged internally by hot copper.
- b. Documented evidence that no damage was done by chloride fumes from the PVC covering of burned cable.
- c. Assurance that heat developed by the resistance drop of the spliced joint would not create another heat dissipation problem.

- d. Assurance that the joint would not be mechanically impaired during installation, and would be properly supported so as not to be subjected to destructive tension and vibrational stresses during its lifetime.
- e. Assurance that the insulation covering the splice would provide the same fire-retardant properties as the normal covering on the cable.
- f. Assurance that separation criteria would be followed for redundant safeguards cables.
- g. Assurance that cables, in making the transition from cut trays to the vertical boxes, would be protected from sharp edges and supported within the boxes.

None of the above requested information was available on the drawings shown to the inspector.

Along with the drawings, the inspector was given two other documents. One was UE&C's Procedures for Preoperational Testing and Checking of Electrical Equipment For Unit 3, which they, evidently, want to invoke for the checkout of equipment damaged in Unit 2, and the second document was an Ad Hoc Conduit and Cable Schedule for use where they have inserted terminal boxes in tray sections to terminate cables damaged in the fire. It is ironic that the splicing and terminating instructions contained in the second document start off with the following admonition: "No splices shall be made in cables, except where specific instructions to the contrary are given. Where splices are unavoidable, they shall not be accomplished without prior notification and approval by UE&C."

## 2. Tour of Damaged Area

The shed, the source of the fire, was gone. In its place was a considerable amount of scaffolding, as workmen were still cutting down wire, trays, and other items near the ceiling damaged by the fire. A good deal of soot had been removed. Stainless piping that had already been cleaned was wrapped in plastic to protect it from the cleaning operation on other parts of the building. The four MCC's were gone and the cable entrance holes in the floor were covered with plywood boards. The walls of the storage room had been cleaned and repainted with a red paint. The corrugated metal of the ceilings was still blackened and was, according to the licensee, to be replaced with new material, since it was likely that the fiberglass insulation sandwiched between the metal sides was, in all likelihood, water soaked. The blower and duct had been cleared away and only the blackened ceiling duct remained.

Details of Subjects Discussed In Section I

None