NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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August 29, 1985

Docket No. 50-423
B11669

Director of Nuclear Reactor Regulation
Mr. B.J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Reference: (1) J.F. Opeka letter to B.J. Youngblood, Request for Deviations from BTP CMEB 9.5-1, dated July 24, 1985

Dear Mr. Youngblood:

Millstone Nuclear Power Station, Unit No. 3
Request for Deviations from BTP CMEB 9.5-1

In Reference (1), Northeast Nuclear Energy Company (NNECO) transmitted information concerning certain deviations from the Branch Technical Position (BTP) CMEB 9.5-1 for the NRC Staff review and approval. In Reference (1) NNECO also committed to submit additional deviation requests to the NRC at a later date. Accordingly, the information concerning four deviations is attached (Attachment I) hereto for Staff review and approval.

If you have any questions or concerns regarding this submittal, please contact our licensing representative directly.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY
et. al.

BY NORTHEAST NUCLEAR ENERGY COMPANY
Their Agent

J. F. Opeka
J.F. Opeka
Senior Vice President

E. J. Mroczka
By: E. J. Mroczka
Vice President

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STATE OF CONNECTICUT)
) ss. Berlin
COUNTY OF HARTFORD)

Then personally appeared before me E. J. Mroczka, who being duly sworn, did state that he is Vice President of Northeast Nuclear Energy Company, an Applicant herein, that he is authorized to execute and file the foregoing information in the name and on behalf of the Applicants herein and that the statements contained in said information are true and correct to the best of his knowledge and belief.

Lisa E. Weidlich
Notary Public

My Commission Expires March 31, 1988

ATTACHMENT I

Request for Deviations from BTP (CMEB9.5-1)

1. Penetration Seals, a deviation from Section C.5.a(3)
2. Fire Barriers, a deviation from Section C.5.a(1)
3. Concealed Spaces, a deviation from Section C.5.a(11)
4. Internal Sealing of Conduit, a deviation from Section C.5.a(3)

DEVIATION REQUEST

MILLSTONE UNIT NO. 3

Penetration Seals

Branch Technical Position Guidelines

BTP CMEB 9.5-1, Section C.5a(3) states in part:

> "The temperature levels recorded for the unexposed side are analyzed and demonstrate that the maximum temperature does not exceed 325°F."

Response

NNECO has performed a re-evaluation of the qualification testing for the penetration seal designs used at Millstone Unit No. 3. This re-evaluation determined that the penetration seals are not tested in accordance with the guidelines as stated in BTP CMEB 9.5-1, Section C.5.a.(3). Instead, the seals have been tested in accordance with the provisions as set forth in IEEE-634 and ANI/MAERP guidelines. The primary differences between these test methods and the guidelines of Section C.5.a.(3) are the acceptance criteria for the unexposed side temperature rise. The BTP guidelines limit the temperature rise to 325°F. The IEEE-634 and ANI/MAERP test methods specify 325°F above ambient.

The Millstone Unit No. 3 penetration seals were originally specified to comply with paragraph D.3.d of Appendix A to BTP ASB 9.5-1. Paragraph D.3.d specifies that penetration seals should, as a minimum, meet the requirements of ASTM E-119, "Fire Tests of Building Construction and Materials". The acceptance criteria of ASTM E-119 state that the average temperature rise on the unexposed side of the test assembly should not exceed 250°F above ambient and that no single point should exceed 325°F above ambient. The ASTM E-119 test criteria is intended for wall and floor assemblies and is the same testing criteria to which Millstone Unit No. 3's wall and floors have been designed to satisfy.

The ASTM E-119 test criteria recommends that the size of the specimen to be tested be approximately 100 square feet. This size allows thermocouples to be placed at a number of locations on the test assembly in order to record the average temperature rise. When testing penetration seals, insufficient surface area is present to mount a number of thermocouples. The single point maximum temperature rise of 325°F above ambient temperature was therefore used to qualify penetration seals. This concept is reflected in the recently adopted ASTM E-814 (UL 1479) test method. The IEEE-634 and ANI/MAERP test methodologies also specify a single point maximum temperature of 325°F above ambient.

Penetration Seals Acceptance Criteria

Because the penetration seal design meets the acceptance criteria of ASTM E-119, it is NNECO's position that the penetration seals provide a level of fire protection equivalent to the 3-hour rated concrete floors and walls used at Millstone Unit No. 3.

In addition, a review was conducted of the areas where penetration seals are installed at Millstone Unit No. 3. Typically, the only combustibles in the immediate vicinity of the penetration seals are IEEE 383 qualified cables. An increased temperature rise of 400°F will not cause the ignition of these types of cables.

No other combustible materials are located in the immediate vicinity of the penetration seals that would be ignited by a temperature of 400°F. It is therefore concluded that transmission of heat through the Millstone Unit No. 3 penetration seals will not cause the ignition of in-situ combustibles in unexposed areas.

Based on the above evaluations, NNECO concludes that the penetration seal design for Millstone Unit No. 3 is an acceptable deviation from the guidelines of Section C.5.a.(3) of BTP CMEB 9.5-1.

DEVIATION REQUEST

MILLSTONE UNIT NO. 3

Fire Barriers

Branch Technical Position Guidelines

BTP CMEB 9.5-1 Section C.5.a(1) states:

> "Fire barriers with a minimum fire resistance rating of 3 hours should be provided to:
>
> (a) Separate safety-related systems from any potential fire in non-safety related areas that could affect their ability to perform their safety function;
>
> (b) Separate redundant divisions or trains of safety-related systems from each other so that both are not subject to damage from a single fire;
>
> (c) Separate individual units on a multiple-unit site unless the requirements of General Design Criterion 5 are met with respect to fire."

Response

NNECO has evaluated its fire barrier design (floor and wall) with respect to the structural steel which forms an integral part of the design itself. The original scope of work related to fire barriers/exposed structural steel, required all structural steel to be coated with fireproofing material to a thickness sufficient to obtain the same fire resistance rating of the barrier. However, during construction of the unit, various segments of the structural steel coating were removed to facilitate the attachment of hangers, supports, etc. The amounts of fire proofing removed cannot be accurately quantified, however, it is estimated that approximately 70% of the original coating remains in place.

To now repair the areas where the coating has been removed would require extensive amounts of labor due to obstructions and on-going testing in preparation for start-up. Therefore, NNECO has hired Professional Loss Control (PLC) to perform a computer assisted analysis on the need for structural steel coating within various areas of the plant. The computer model used is identical to that which was reviewed by both the NRC and their consultants (Brookhaven Labs) and found to be acceptable. The PLC computer analysis reviewed the effects of fire on the structural steel elements in both total burn-out and localized heating applications.

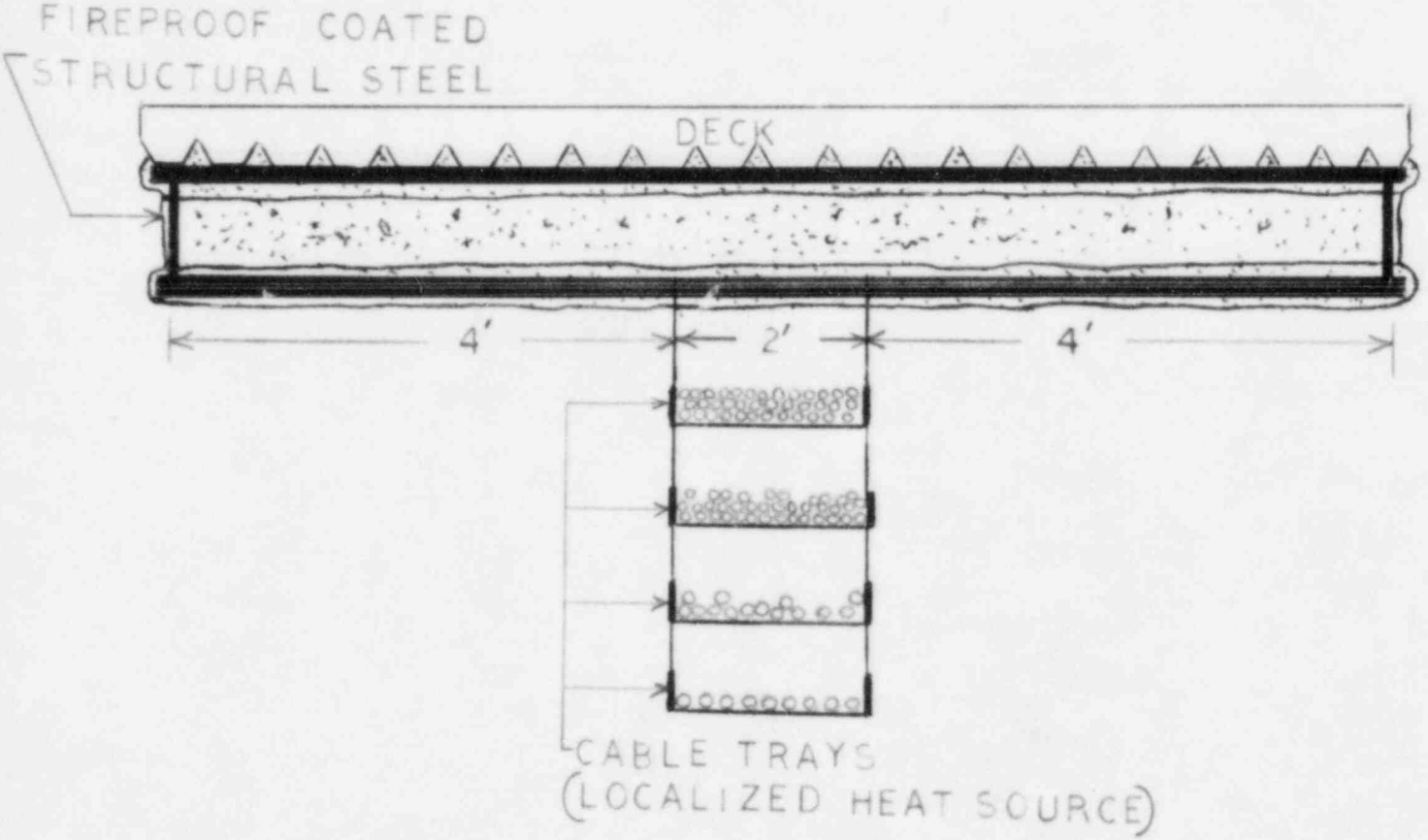
Areas that the fire modeling computer analysis focused on were:

1. Cable Spreading Room, Fire Area CB-8
2. Control Room, Fire Area CB-9
3. Computer Room, Fire Areas CB-10A and 10B
4. Instrument Rack Room, Fire Areas CB-11A and 11B
5. Kitchen Area, Fire Area CB-12
6. Chiller Room, Fire Area CB-13
7. Mechanical Equipment Room, Fire Area CB-14

The results of the PLC analysis show that with totally uncoated steel, none of the areas will suffer steel failure due to a fire involving the entire room contents. However, for fire areas CB-8, CB-9, CB-10A and B, CB-11A and B, and CB-12, there exists a possibility of steel failure due to localized heating effects on selected beams. In response to localized heating concerns, PLC has recommended the application of fireproofing material from a horizontal distance of four (4) feet on either direction of the heat source (cable/cable tray). Refer to attached sketch for fireproofing details.

It is NNECO's position that any beams that would be adversely affected by localized heating will be completely repaired as recommended by PLC prior to start-up. All other beams not affected by localized heating will not be repaired, but will be left as is (approximately 70% covered). Due to the conservatisms contained in the PLC analysis, which were previously accepted by the NRC at the Limerick Station it is considered that a level of protection equivalent to Section C.5.a of BTP CMEB 9.5-1 will be provided, and a deviation is, therefore, requested.

LOCALIZED HEATING/FIRE-PROOF COATING REPAIR



SKETCH
NO SCALE

DEVIATION REQUEST

MILLSTONE UNIT NO. 3

Concealed Spaces

Branch Technical Position Guidelines

BTP CMEB 9.5-1 Section C.5.a(11) states:

> "Concealed spaces should be devoid of combustibles."

Response

Two areas within Millstone Unit No. 3 have been identified as areas where electrical cable/cable trays have been installed above suspended ceilings. The first area is fire area CB-12, the kitchen area adjacent to the control room complex. Cables in a nine inch wide tray and a twelve inch wide tray are routed above the kitchen ceiling. The combustible loading from this quantity of cables is approximately 7500 BTU/FT^2. The kitchen area is separated from the control room by 3-hour rated construction. Early warning smoke detection is provided above the ceiling, while heat detection is provided below the ceiling. Due to this combination of detection and the location of the kitchen immediately adjacent to the control room, any potential fires would be rapidly detected and extinguished by the fire brigade.

The second area is within the Service Building. Three, thirty inch cable trays pass vertically from the normal switchgear room through the west corridor and up to the 49'6" elevation of the service building. At the 49'6" elevation, the trays are routed above suspended ceiling of an office area and into the mechanical equipment room. The cables within these trays are non-safety related. No equipment required for safe shutdown is located within this area of the service building. No automatic suppression or detection capability is provided in this area. However, manual suppression capability is readily available. In the event of a fire in the concealed ceiling area or other areas in the service building, personnel discovery or smoke detection in the adjacent mechanical equipment area would summon the fire brigade to extinguish the fire.

Based on the above evaluations, it is NNECO's position that a level of protection equivalent to Section C.5.a(11) of BTP CMEB 9.5-1 is provided. A deviation is therefore requested.

DEVIATION REQUEST

MILLSTONE UNIT NO. 3

Internal Sealing of Conduit

Branch Technical Position Guidelines

BTP CMEB 9.5-1, Section C.5.a.(3) states:

> "Openings through fire barriers for pipe, conduit, and cable trays which separate fire areas should be sealed or closed to provide a fire resistance rating at least equal to that required of the barrier itself. Openings inside conduit larger than 4 inches in diameter should be sealed at the fire barrier penetration. Openings inside conduit 4 inches or less in diameter should be sealed at the fire barrier unless the conduit extends at least 5 feet on each side of the fire barrier and is sealed either at both ends or at the fire barrier with noncombustible material to prevent the passage of smoke and hot gases. Fire barrier penetrations that must maintain environmental isolation or pressure differentials should be qualified by test to maintain the barrier integrity under such conditions."

Response

Plant design of many conduits does not allow for access to the inside of the conduit at the fire barrier. However, conduits were sealed at the fire barrier penetrated, if access for installation was adequate. If accessibility was not feasible, NNECO intends to internally seal conduits at the first available opening or junction, beyond the penetrated fire barrier on both ends of the conduit. As a technical basis for this proposal, NNECO has conducted fire tests to verify the fire resistance of conduits not sealed at the fire barrier. The attached fire test reports provide the technical details showing that a level of fire protection equivalent to Section C.5.a.(3) is provided. The test assemblies were exposed to the fire test curve specified, by ASTM E-119. During the test, the conduits/seals prevented the spread of fire through the test assembly, and the unexposed side temperature of the penetration seals, both internal and external, did not exceed 400°F.

Thermocouples placed on the conduit surface showed that the temperature rise on the metal surface immediately adjacent to the wall was significantly below the melting temperature of the conduit. Additional thermocouples mounted every 6 inches along the conduit showed a proportional decrease in temperature in conjunction with the distance away from the wall.

In addition, a review was conducted of the areas where penetration seals are installed at Millstone Unit No. 3. Typically, the only combustibles in the immediate vicinity of the penetration seals are IEEE 383 qualified cables. An increased temperature rise of 400°F will not cause the ignition of these types of cables.

No other combustible materials are located in the immediate vicinity of the penetration seals that would be ignited by a temperature of 400°F. It is therefore concluded that transmission of heat through the Millstone Unit No. 3 penetration seals will not cause the ignition of in-site combustibles in unexposed areas.

Based on the above test data/evaluation, NNECO concludes that the internal sealing of conduits larger than 4 inches at the first available point beyond the fire barrier penetrated is an acceptable deviation from the guidelines of Section C.5.a.(3) of BTP CMEB 9.5-1.

CTL
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May 1, 1985

Mr. Gregory J. Jarosz
Manager of Technical Development
Transco Products, Inc.
55 East Jackson Blvd.
Chicago, Illinois 60604

Transco Fire Test Report #TR-193

Dear Mr. Jarosz:

We have received a copy of your Test Report #TR-193, dated March 25, 1985, describing fire and hose stream tests of #TCO-002 Medium Density Silicone Elastomer seals. This test was performed on March 18, 1985, at the fire research facilities of Construction Technology Laboratories.

After review, we find that the report accurately describes test procedures, observations during test, and quantitative results.

Very truly yours,

michael gillen

Michael Gillen
Senior Research Engineer
Fire Research Section

MG/sr

Copy to--
W. G. Corley
E. A. B. Salse
T. J. Rowe
Central Files
CR5573-4324

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