

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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May 15, 1984

Docket No. 50-423
B11193

Mr. Thomas T. Martin, Director
Division of Engineering and Technical Programs
Region I
U.S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

- Reference: (1) T. T. Martin to W. G. Council, dated January 10, 1984.
(2) W. G. Council letter to T. T. Martin, dated February 9, 1984.

Dear Mr. Martin:

Millstone Nuclear Power Station, Unit No. 3
IE Inspection Report No. 50-423/83-18

In Reference (1), a deviation from the Final Safety Analyses Report (FSAR) was identified and transmitted to us as a result of the subject inspection. Specifically, the deviation relates to the use of cable splices in a manhole (#3B) at Millstone Unit No. 3.

In Reference (2), Northeast Nuclear Energy Company (NNECO) committed to providing a final response and analysis justifying the practice of utilizing splices, on a case-by-case basis on Millstone Unit No. 3. This letter provides that information, as follows:

Millstone Unit No. 3 FSAR Amendment 3, page 8.3-43 states that "cable splices in raceways are prohibited." Revision 2 to Regulatory Guide 1.75 entitled Physical Independence of Electrical System (dated September 1978), provides guidance on page 1.75-3, Item 9 regarding the prohibition of splices, however, the document goes on to state that "splices are not by themselves unacceptable. If they exist, the resulting design should be justified by analysis. The analysis should be submitted as part of the Safety Analysis Report."

It is NNECO's position that the Millstone Unit No. 3 cable installation is, to date, and will continue to remain in compliance with the subject Regulatory Guide. The key to this position lies in the particular locations where splices have been utilized, none of which are in raceways.

IEEE Standard 384 defines "raceway" as "a any channel that is designed expressly for supporting or enclosing wires, cables or busbars." Raceways, in general, span the intervening distance between power supplies, loads, control boards, junction

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boxes, manholes, containment electrical penetrations, instrumentation, etc. All of these end and intermediate pieces of equipment represent suitable locations for cabling connections whether these be made on terminal blocks, via qualified connectors or via an engineered splice.

Regarding the particular splice in question in Reference (1), recognize that the splice was made in a manhole (#3B) and will remain in that manhole (i.e, it won't be pulled into the underground duct) throughout the plant life. A manhole to an underground cable duct bank system is analogous to a junction box in an exposed metallic conduit system. The use of a junction box as a splice location has always been accepted.

The majority of manholes in existence today are in underground utility distribution service. In that service, the manhole satisfies a twofold requirement, serving as both a cable splice and pull point. Splices qualified for the particular service have been used in manholes on a very extensive basis in the power distribution field with a very high degree of success.

Thus, it is NNECO's position that a manhole is not a raceway and, as such, an FSAR change is not required. In that NNECO's interest does not end with meeting only the letter of the law, we believe the intent of the regulation is also fully satisfied on a technical basis. The key to a particular location being an acceptable one to house a splice lies in the accessibility of the location. Every manhole has a removable cover, much like a junction box cover, which allows a splice to be inspected and, if necessary, tested. The splice is thus accounted for and not buried somewhere in the miles of duct, conduit or cable tray throughout the plant.

It is worth noting that at one time NNECO considered the option of splicing all the cables in certain of the manholes midway along lengthy duct bank runs. As an example the distance between the Intake Structure and the Control Building is sufficiently long as to challenge today's cable pulling techniques. Although the use of innovative techniques (such as pulling the cable in both directions from the midway manhole) eliminated the need to use splices on an extensive basis, the choice between the use of splices and the method finally used was not entirely clear. In some instances, cable integrity will be best preserved through the designed use of splices.

In addition, there are several cable interface situation types on Millstone Unit No. 3 that will require the use of splices. Examples are:

- o at the junction of field power cables and motor pigtail leads
- o on large 480 volt power circuits at the outboard side of the containment electrical penetration
- o on the inboard side of the containment electrical penetrations using LOCA qualified in-line splice kits on Class 1E circuits
- o in the motor control center top hats to transition from large diameter field cables (installed to reduce voltage drop per the degraded voltage issue) to cabling sufficiently small to terminate on standard breakers and motor starters

o on instrumentation supplied with pigtails

NNECO believes the above-described splice instances are common to all nuclear power plants and thus, not worthy of further discussion.

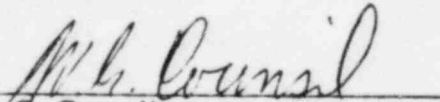
As a final point, be advised that in no instance will NNECO allow a splice to be utilized without engineering review and approval of such features as the splice location and adequacy of materials and techniques to be utilized.

We consider this to be our final report closing out the deviation identified in IE Inspection Report No. 50-423/83-18.

We trust the above response satisfactorily responds to your concern regarding this issue.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY



W. G. Council
Senior Vice President