

Nebraska Public Power District

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March 12, 1993

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Subject: Cable Spreading Room Thermo-Lag Radiant Energy Shields
Cooper Nuclear Station
NRC Docket No. 50-298/DPR-46

- Reference: 1) Letter from Samuel J. Collins (NRC Division of Reactor Safety) to G. R. Horn (NPPD) dated February 26, 1993, "NRC Inspection Report 50-298/93-05 (Notice of Violation)"
- 2) Letter from J. M. Pilant (NPPD) to D. B. Vassallo (NRC) dated June 2, 1983, "Fire Protection Rule 10 CFR 50, Appendix R, Preliminary Supplemental Response (Revision 2)"
- 3) Letter from D. B. Vassallo (NRC) to L. G. Kuncl, "Exemption Requests - 10 CFR 50.48, Fire Protection and Appendix R to 10 CFR 50"

Gentlemen:

During the week of February 1, 1993, the NRC conducted an inspection (NRC Inspection No. 50-298/93-05) of the fire protection program at Cooper Nuclear Station (CNS). During this inspection, it was noted that radiant energy shields in the Cable Spreading Room, which utilize Thermo-Lag 330 material, had not been declared inoperable nor was a fire watch assigned as a compensatory measure. During the exit meeting on February 5, 1993, the Nebraska Public Power District (District) committed to providing the NRC additional information which would further support the District's position that the subject cable enclosures are qualified as non-rated radiant energy shields, and therefore, continue to meet the original design basis and satisfy the District's licensing commitments contained in the applicable Appendix R exemption. The purpose of this letter is to provide the additional information in support of the above stated position. Contained in this letter are two detailed evaluations performed by Engineering Planning and Management, Inc. (EPM) and ABB Impell Corporation. A formal response to Reference 1 will be submitted in separate correspondence. The District will maintain a fire watch in the subject area until this issue is either resolved or the Thermo-Lag material is replaced.

The specific radiant energy shields in question are located in the Cable Spreading Room at CNS. These radiant energy shields, made of Thermo-Lag 330 material, are non-rated and are used specifically for the protection of Division II 125/250V dc power feeds and Division II 4160V ac power feeds in Fire Area VII, Fire Zone 9A. The EPM Fire Hazards Evaluation defines the design bases for the

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partial height non-rated radiant energy shield enclosures and assesses the capability of these enclosures to perform their intended function. The design basis of the radiant energy shields is defined as follows:

"The design basis function of the Cable Spreading Room cable enclosures is to protect the vertical runs of required Division II safe shutdown conduits from a possible floor based transient combustible fire of limited severity. These enclosures act to ensure that fire propagation from potential combustibles in the immediate area would be delayed sufficiently to ensure adequate time for detection and suppression system actuation prior to the onset of cable damage."

The Design basis fire is defined by CNS procedure 0.7.1 "Control of Transient Combustibles" which allows five gallons of lube oil or equivalent to be brought into the Cable Spreading Room. However, because there is no reason to bring this much oil into this room, a more conservative case of 5 gallons of acetone was used in the enclosed Fire Hazards Evaluation. More realistic amounts of transient combustibles in this room are small amounts of acetone (1 pint) or trash (10 lbs. of ordinary combustibles). All three transient fire scenarios mentioned above were modelled as part of this evaluation.

The results of EPM's analysis indicate that the fire duration times for the above mentioned scenarios are relatively short (4.4 seconds for an acetone fire and 3.5 minutes for a trash fire) when compared to fire endurance test results stated in NRC Information Notice 92-55 where the Thermo-Lag material of .5 inch thickness met all of the requirements until 22 minutes into the test. Based on this data, the radiant energy shields in the Cable Spreading Room are considered adequate to meet their design basis function.

The specific radiant energy shields in question were installed as part of the District's implementation of Appendix R. The District had committed, in Reference 2, "... to install (using materials which have been tested to a one-hour rating in other configurations) radiant energy shields around the Division 2 conduits of concern to protect against floor based fires in the vicinity of the vertical conduits of interest." This commitment was acknowledged in the exemption granted (Reference 3), which stated, in part, that "... because of the physical configuration of the cables and equipment in the cable spreading room, the installation of a one-hour fire barrier may be difficult. Instead, the licensee has proposed the use of fire resisting barriers to enclose the vertical cable risers".

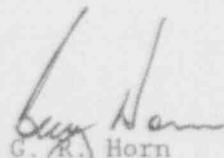
The installation of radiant energy shields in question does not require qualification to a one-hour barrier. The above commitment does state that the material was to have been tested (and assumed to be qualified) to a one-hour rating in some other configuration. The tests, referenced in the enclosed ABB Impell evaluation, demonstrate that there are other configurations where the Thermo-Lag material has been successfully tested to a one-hour rating, thus satisfying the District's commitment of "using materials which have been tested to a one-hour rating in other configurations" for the radiant energy shields in the Cable Spreading Room.

The ABB Impell evaluation discusses the testing that Texas Utilities completed demonstrating that there are configurations utilizing Thermo-Lag panels that have passed one hour fire endurance tests. The ABB Impell evaluation also indicates that the issue of combustibility identified in NRC Information Notice 92-82 could create additional concerns associated with these configurations. However, the EPM analysis noted that combustibility does not have an effect, in that, the scenarios modelled indicate that suppression (either automatic or manual) would occur long before the material could be significantly challenged by the fire.

Based upon the enclosed documents, the District maintains that the radiant energy shields in the Cable Spreading Room are adequate to meet the design basis intent, and thus, satisfy the District's licensing commitments. However, the District will maintain a continuous fire watch in the Cable Spreading Room until this issue is resolved, or the subject Thermo-Lag material is replaced.

Should you have any questions or require any additional information, please contact me.

Sincerely,



G. R. Horn
Nuclear Power Group Manager

GRH/dnm
Enclosures

cc: U.S. Nuclear Regulatory Commission
Region IV
Arlington, TX

NRC Resident Inspector
Cooper Nuclear Station