May 16, 2002

Mr. Alan Nelson
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1776 I Street, NW., Suite 400
Washington, DC 20006-3708

Mr. David Lochbaum
Union of Concerned Scientists
1707 H Street, NW
Suite 600
Washington, DC 20006-3919

SUBJECT: PROPOSED STAFF GUIDANCE ON THE IDENTIFICATION AND TREATMENT OF ELECTRICAL FUSE HOLDERS FOR LICENSE RENEWAL

Dear Messrs. Nelson and Lochbaum:

The purpose of this letter is to provide you with the opportunity to comment on the enclosed guidance on the identification and treatment of electrical fuse holders. This is consistent with our goal to more efficiently resolve license renewal issues identified by the staff or the industry, as outlined in NRR Office Letter No. 805, "License Renewal Application Review Process." Based on your response to this letter, the staff will decide how to finalize and implement this guidance.

The staff developed this guidance to ensure that screening of fuse holders is conducted in accordance with the requirements of 10 CFR 54.21. We are requesting comments on the proposed guidance and request that you submit a schedule for resolution to ensure a timely closure of this issue. The staff plans to incorporate this position into the improved renewal guidance documents (NUREGs 1800, and/or 1801) in a future update. It is also possible that comparable changes might be needed to NEI 95-10, Revision 3, "Industry Guidance for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule." If you have any questions regarding this matter, please contact Peter Kang at 301-415-2779.

Sincerely,
Original Signed By: JRTappert
for Pao-Tsin Kuo, Program Director
License Renewal and Environmental Impacts
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Project 690

Enclosure: As stated

cc w/encl: See next page

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PROPOSED STAFF POSITION ON SCREENING OF ELECTRICAL FUSE HOLDERS

Staff Position

Consistent with the requirements specified in 10 CFR 54.4(a), fuse holders (including fuse clips and fuse blocks) are considered to be passive electrical components. Fuse holders would be scoped, screened, and included in the aging management review (AMR) in the same manner as terminal blocks and other types of electrical connections that are currently being treated in the process. However, fuse holders inside the enclosure of an active component, such as switchgear, power supplies, power inverters, battery chargers, and circuit boards, are considered to be piece parts of the larger assembly. Since piece parts and subcomponents in such an enclosure are inspected regularly and maintained as part of the plant's normal maintenance and surveillance activities, they are not subjected to an AMR. This staff position only applies to fuse holders that are not part of a larger assembly. The reasons for support of this position follow:

Rationale

The intended functions of a fuse holder are to provide mechanical support for the fuse and to maintain electrical contact with the fuse blades or metal end caps to prevent the disruption of the current path during normal operating conditions when the circuit current is at or below the current rating of the fuse. Fuse holders perform the same primary function as connections by providing electrical connections to specified sections of an electrical circuit to deliver rated voltage, current, or signals. These intended functions of fuses meet the criteria of 10 CFR 54.4(a). In addition, these intended functions are performed without moving parts or without a change in configuration or properties as described in 10 CFR 54.21 (a)(1)(i) and are the bases for including fuse holders as passive, long-lived electrical components within the scope of license renewal and subject to an AMR.

For license renewal purposes, fuse holders/blocks are classified as a specialized type of terminal block because of the similarity in design and construction. Terminal blocks are passive components subject to an AMR for license renewal. The fuse holders into which the fuses are placed are typically constructed of blocks of rigid insulating material, such as phenolic resins. Metallic clamps are attached to the blocks to hold each end of the fuse. The clamps can be spring loaded clips that allow the fuse ferrules or blades to slip in, or they can be bolt lugs to which the fuse ends are bolted. The clamps are typically made of copper.

Operational experience as discussed in NUREG-1760 (Aging Assessment of Safety-Related Fuses Used in Low-and Medium-Voltage Applications in Nuclear Power Plants) identified fuse holders as experiencing a large number of degradation-related failures. Aging stressors such as vibration, thermal cycling, electrical transients, mechanical stress, fatigue, corrosion, chemical contamination, or oxidation of the connecting surfaces can result in fuse holder failure. Typical plant effects observed from fuse holder failures due to aging resulted in: challenges to safety systems, cable insulation failure due to over-temperature, failure of a containment spray pump to start, and a reactor trip. Clearly, managing age-related failures of fuse holders would have a positive effect on the safety performance of a plant. Information Notices 91-78, 87-42, and 86-87 are examples that underscore the safety significance of fuse holders and the potential problems that can arise from age-related fuse holder failures.

NUCLEAR ENERGY INSTITUTE

Project No. 690

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