UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

October 22, 1992

Mr. James M. Taylor
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Taylor:

SUBJECT: PROPOSED BRANCH TECHNICAL POSITION ON ENVIRONMENTAL QUALIFICATION OF ELECTRICAL EQUIPMENT FOR LICENSE RENEWAL

During the 390th meeting of the Advisory Committee on Reactor Safeguards, October 8-10, 1992, we reviewed a proposed Branch Technical Position (BTP) on Environmental Qualification of Electrical Equipment for License Renewal. Our Subcommittees on Plant License Renewal and Reliability and Quality reviewed this matter during a joint meeting on September 16, 1992. The staff proposes that the BTP be issued for public comment. During these meetings, we had the benefit of discussions with members of the NRC staff, its consultants, and representatives of industry. We also had the benefit of the documents referenced.

Under the License Renewal Rule, 10 CFR Part 54, applicants will be required to develop a comprehensive program to identify in their plants all structures, systems, and components (SSCs) which may be subject to age-related degradation unique to the license renewal period. A further program to manage these components to ensure continued safe operation of the plant is also required. The staff is now proposing an additional program, by means of a BTP, which singles out environmental qualification of electrical equipment for special treatment in the license renewal period. The particular concern of the staff seems to be that the qualification standards for insulation used on electrical cables prior to 1984 (representing 87 of 111 licensed nuclear power plant units) may not ensure adequate performance of cables for extended plant life. That, of course, is the issue for all SSCs in a plant, and it is not clear to us why the more general treatment of SSCs called for under 10 CFR Part 54 is not adequate for electrical cables as well.

Industry representatives expressed objection to the staff proposal for a BTP. They believe that while older plant cables were qualified to a lesser standard than has been in use since 1984, these cables have been approved for continued use in the plants (as

R501 1/0

has much other equipment where standards have evolved) and are part of the Current Licensing Basis (CLB) for each of these plants. Their interpretation of 10 CFR Part 54 is that the CLB is to be preserved with the exception that those SSCs subject to age-related degradation unique to the license renewal period should be subjected to specific management programs. They see no need for the BTP and believe it will result in unnecessary cable replacements and add significantly to plant costs for license renewal.

We are not convinced that the proposed BTP has been shown to be necessary or appropriate. It should not be issued for public comment until the matters discussed below have been addressed.

Neither the staff nor the industry presented any risk perspective on this issue. In simple terms, the risk is as follows: During the license renewal period the electrical cable in a key system might degrade in a way that the degradation would remain undetected during normal operation and by normal maintenance, testing, and surveillance practices. Then, during an accident, i.e., a LOCA, the insulation would fail and the key system would not perform its design function to mitigate effects of the accident. Present licensing practice assumes, and experience seems to confirm, that the probability of this sequence during the initial license period is acceptably low. At issue is whether the probability during the license renewal period is significantly greater. No evidence has been presented either way. Analysis of the risk importance of this issue should be made before the BTP is finally accepted or rejected. Such an analysis should include estimates of downside risks inherent in major projects intended to improve nuclear power plant safety.

Many electrical cables are covered with fire retardant materials. These coatings could have important effects on the aging of the cable insulation. Apparently, these effects have not been considered by the staff in development of this BTP. We do not know whether they have yet been explicitly considered in the selection and evaluation of important SSCs in license renewal programs. They should be.

Dr. Thomas Kress did not participate in the Committee's deliberations regarding this matter.

Sincerely,

David A. Ward
Chairman

References:

1. Memorandum dated July 10, 1992, from John W. Craig, Office of Nuclear Reactor Regulation, NRC, for Raymond F. Fraley, Advisory Committee on Reactor Safeguards, Subject: Request for Review of Branch Technical Position on Environmental Qualification of Electrical Equipment for License Renewal, with enclosures
2. Letter dated October 7, 1992, from M. H. Philips, Jr., and W. A. Horin, Counsel to the Nuclear Utility Group on Equipment Qualification, to D. A. Ward, Advisory Committee on Reactor Safeguards, Subject: NRC Staff Proposed License Renewal BTP Regarding Environmental Qualification of Electric Equipment, with enclosures