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The Honorable Kenneth M. Carr
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Carr:

SUBJECT: PROPOSED POLICY ISSUES IDENTIFIED IN SECY-91-078, "CHAPTER 11 OF THE ELECTRIC POWER RESEARCH INSTITUTE'S (EPRI'S) REQUIREMENTS DOCUMENT AND ADDITIONAL EVOLUTIONARY LIGHT WATER REACTOR (LWR) CERTIFICATION ISSUES"

During the 372nd meeting of the Advisory Committee on Reactor Safeguards, April 11-13, 1991, we discussed the two Policy Issues identified in SECY-91-078 related to the certification of the Evolutionary Light Water Reactors. Our Subcommittee on Improved Light Water Reactors also discussed these issues on April 9-10, 1991 in its continuing review of the EPRI Advanced Light Water Reactors (ALWR) Requirements Document. During these meetings, we had the benefit of discussions with representatives of the NRC staff and EPRI. We also had the benefit of the documents referenced.

The staff's position regarding the first Policy Issue is that "an evolutionary ALWR design should include an alternate power source to the non-safety loads unless the design can demonstrate that the design margins in the evolutionary ALWR will result in transients for a loss of non-safety power event that are no more severe than those associated with the turbine-trip-only event in current existing plant designs." The staff's major concern is that the ALWR designs are departures from past practice and may result in an increased frequency of shutdowns that require cooling by natural circulation. Presently licensed plants have electrical systems that provide an alternate power source to non-safety loads on shutdown. However, the staff did not substantiate its concerns with respect to the proposed EPRI design requirements.

EPRI claims that the ALWR is designed to safely accommodate shutdown with natural circulation and that the increased frequency of such events is small with this design. The EPRI requirements for the ALWR electrical system design fully meet General Design Criterion (GDC) 17, "Electric Power Systems," and the staff guidance contained in Regulatory Guide 1.32, Revision 2, "Criteria for Safety-Related Electric Power Systems for Nuclear Power Plants." The ALWR electrical power system design is arranged to supply electric power to the plant's safety loads from the main generator, the plant switchyard, an independent transmission line, a gas turbine generator, and the diesel generators. The design uses a generator circuit breaker between the main generator and the step-up transformer and has an improved full turbine load rejection capability. EPRI claims high reliability of electric power to the unit auxiliary transformers and has provided data to support its claim that the benefits derived from adding an alternate power

source to the non-safety loads are small and not cost effective. We concur with the EPRI position.

The staff's position regarding the second Policy Issue is based on a misunderstanding of the text of the EPRI requirements. As a result, the staff proposes an additional requirement that "at least one offsite circuit to each redundant safety division should be supplied directly from one of the offsite power sources with no intervening non-safety buses, in such a manner that the offsite source can power the safety buses upon a failure of any non-safety bus." The staff's concern is that routing offsite power to the safety buses through non-safety buses may subject safety equipment to undesirable disturbances on the non-safety buses. Therefore, the staff's position would require the capability to supply safety buses directly from offsite power. The staff did not substantiate its concern. However, the EPRI requirements for ALWR electrical power system design already provide one alternate circuit to each of the redundant safety divisions directly from offsite power. This meets the staff's position. EPRI agreed to clarify the text to document this requirement. EPRI's position is that the direct circuit from offsite to each of the redundant safety divisions should be the backup power supply and the normal supply should be from the plant's auxiliary electric system. We concur with EPRI's position, but do not believe that this should become a regulatory requirement.

Sincerely,

David A. Ward
Chairman

1. SECY-91-078, Memorandum dated March 25, 1991 for the Commissioners from James M. Taylor, Executive Director for Operations, Subject: Chapter 11 of the Electric Power Research Institute's (EPRI's) Requirements Document and Additional Evolutionary Light Water Reactor (LWR) Certification Issues (Predecisional)
2. U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, Draft Safety Evaluation Report on Chapter 11the Advanced Light Water Reactor Requirements Document for Evolutionary Plant Designs, March 1991
3. Electric Power Research Institute, "Advanced Light Water Reactor Requirements Document, Chapter 11 - Electric Power Systems," Issued April 11, 1989