

D870609

The Honorable Lando W. Zech, Jr.
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Zech:

SUBJECT: ACRS COMMENTS ON DRAFT NUREG-1226, "DEVELOPMENT AND UTILIZATION OF THE NRC POLICY STATEMENT ON THE REGULATION OF ADVANCED NUCLEAR POWER PLANTS"

During the 326th meeting of the ACRS, June 4-6, 1987, and in our 325th meeting, May 7-9, 1987, we discussed NUREG-1226, "Development and Utilization of the NRC Policy Statement on the Regulation of Advanced Nuclear Power Plants." A Subcommittee meeting was also held to discuss this NUREG with the NRC Staff on April 24, 1987. During our discussion, we had the benefit of the documents referenced and also of earlier meetings with the NRC Staff. We had previously reviewed the Advanced Reactor Policy Statement and had commented on the statement in a letter to Chairman Palladino dated October 16, 1985.

When the Advanced Reactor Policy Statement was issued, in July 1986, the Commission directed the NRC Staff to prepare a document that would describe its development. Later the purpose of the document (which became NUREG-1226) was extended to include factors important to implementation of the policy. Our comments will be limited to the implementation aspects of the document. We are in general agreement with the implementation approach, but have several comments.

The early interactions between the Staff and an applicant are to be concerned with review of conceptual design, well in advance of any formal application for a construction permit or a design certification. The Staff reported that it intends to assure a conceptual design that looks ahead to possible future standardization. We concur.

The implementation plan encourages, but does not require, the development of new designs based on building and operation of prototypes. We believe that operation of prototypes prior to certification of designs should be the norm and the only exceptions should be made in carefully evaluated cases, where there exists a sufficiently well-developed experience base.

NUREG-1226 uses the terms "defense-in-depth" and "design-basis accident." These are time-honored terms, but they are inexact as concepts. For example, there is a requirement to consider "beyond design basis" scenarios in the design. This presents, at minimum, a serious semantic problem. We believe the Staff needs to clarify its

use of these terms.

The policy statement encourages use of "performance-based" rather than "prescriptive" requirements. Again we have concerns that these terms are used without being well defined. For example, 10 CFR 50.46 is certainly a performance-based requirement for the design of an Emergency Core Cooling System (ECCS), but prescriptions for analyzing performance are given in excruciating detail in Appendix K. We believe there is a need to clarify both of these terms and concepts.

We believe the attribute "simplicity" is not always a virtue to be encouraged in future nuclear power plants. From the perspective of safety it is important to have plant systems designed to be easy to operate, easy to maintain, easy to understand, and capable of accommodating a broad spectrum of challenges. However, simplicity does not always provide these characteristics. As an example, increased automation, as a means to make a plant easier to operate, may actually make the design more complex. The history of the evolution of engineered systems indicates they often become more complex as they are improved in reliability and performance, including safety performance.

We believe that NUREG-1226 should provide more definitive guidance for sabotage-protection considerations for advanced plant designs. We recognize this as a difficult issue, and it is for this reason that the Staff should give it additional attention.

Additional remarks by ACRS Member David Okrent are presented below.

Sincerely,

William Kerr
Chairman

Additional Remarks by ACRS Member David Okrent

I believe that defense-in-depth should be maintained such that an appropriate containment or other system intended to mitigate severe core melt accidents will be provided.

References:

1. U.S. Nuclear Regulatory Commission, NUREG-1226, "Development and Utilization of the NRC Policy Statement on the Regulation of Advanced Nuclear Power Plants," draft published May 5, 1987.
2. U.S. Nuclear Regulatory Commission, SECY-85-279, Subject: "Revised Advanced Reactor Policy Statement," dated August 21, 1985.
3. U.S. Nuclear Regulatory Commission, "Regulation of Advanced Nuclear Power Plants, Statement of Policy," 51 FR 24643, dated July 8, 1986.

