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

September 14, 1982

Honorable Nunzio J. Palladino
Chairman
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Dr. Palladino:

SUBJECT: ACRS REPORT ON SECY-82-1A: PROPOSED COMMISSION POLICY STATEMENT ON SEVERE ACCIDENTS AND RELATED VIEWS ON NUCLEAR REACTOR REGULATION

During its 269th meeting, September 9-11, 1982, the Advisory Committee on Reactor Safeguards reviewed SECY-82-1A, "Proposed Commission Policy Statement on Severe Accidents and Related Views on Nuclear Reactor Regulation." In its review the ACRS had the benefit of Subcommittee meetings held on August 6, 1982 and September 8, 1982, discussions with the NRC Staff, and the documents listed.

The ACRS recommends against publication for comment of the policy statement on severe accidents in the form proposed in SECY-82-1A. This recommendation is based in part on the following:

1. The NRC Staff, in SECY-82-1A, proposes to replace the long-term generic rulemaking effort relating to core melt accidents by multiple severe accident rulemaking actions designed to certify specific standard plant design applications, and by regulatory decisions based on generic evaluations regarding all classes of existing plants. For future plants, compliance with the recently implemented CP rule* would be required; in addition, a probabilistic risk assessment (PRA) would be required as part of the construction permit (CP) review. The applicant would also have to consider all Unresolved Safety Issues and commit to meet those requirements for design features for prevention, management, or mitigation of severe accidents that are shown in the course of the rulemaking to be cost-effective. Applicants would also be expected to address in their safety analysis reports external events, human errors, and sabotage.

   Although SECY-82-1A notes the problems associated with the immaturity of PRA, it seems to rely very heavily on the PRA process for benefit/cost decisions during the proposed rulemaking actions on "requirements for design features for prevention, management, or mitigation of severe accidents." Instead of attempting to have the Commission provide the designer with policy guidance, as feasible, prior to his making most major design decisions and having accomplished much of his detailed design, the proposed process appears to leave many safety-related design decisions to benefit/cost analysis during the different rulemakings,

* Federal Register Notice dated January 15, 1982, (47 FR, p.2286)

despite the likelihood that many issues will include uncertainties sufficiently large to render the benefit/cost ratio unclear.

If this approach is followed, what general guidance will be provided for the designer in deciding which approaches to use to prevent core melt accidents, to mitigate core melt accidents, to improve containment effectiveness, to reduce the likelihood of significant sabotage, etc.? Even if the Commission had adopted and made effective for this purpose a set of safety goals and quantitative design objectives similar to those in NUREG-0880, would PRA be adequate to guide the decision-making? Is it likely that features added as a result of the rulemaking will fit as well into the overall plant design as those initially incorporated by the designer? Furthermore, on what basis is it expected that an appropriate consistency in safety approach would be accomplished among several different rulemakings, each devoted to a specific standard plant?

If there were to be only one standard plant and there were an extended period for review and evaluation of several preliminary design concepts before the applicant had to choose a specific concept and perform the detailed design analysis needed for a CP, the approach in SECY-82-1A might be feasible and appropriate.

We believe that, before embarking on the course proposed for future CPs in SECY-82-1A, a concerted effort should be made by the NRC Staff and the ACRS to develop policy guidance on as many of the relevant safety issues as are tractable, and to propose an alternate approach to the Commission in which such policy guidance is provided to applicants for future standard plant designs. The time scale for accomplishment of such an effort might be two years, roughly the same period now envisaged as needed to make decisions concerning severe accident requirements for existing reactors, as well as to perform a first trial test of implementation of safety goals.

2. In SECY-82-1A the NRC Staff draws the conclusion that standard plant designs now at the Final Design Approval stage of development, when upgraded to conform with the recent CP rule, can be shown to meet the safety goal for a broad range of future sites, including consideration of severe accidents. The NRC Staff notes that it does not expect its present views on severe accident considerations to change substantially as a result of ongoing research with regard to the fundamentals of the present designs and their general adherence to NRC safety policy. The NRC Staff expects research results to permit further risk reduction by identifying worthwhile refinements in the design of operating reactors or their operating practices rather than identifying major redesign needs. Fairly strong conclusions have also been drawn in SECY-82-1A about the benefit/cost trade-off of several possible design features to mitigate accidents; however, the NRC Staff now believes that one of these conclusions may be reversed when external events are considered.

We believe it is premature to draw many of these conclusions. If the NRC Staff believes that strong technical bases exist for them, it would be well to have such bases made available for review, evaluation, and critique by the Commission, the ACRS, and others, prior to publication for comment of the policy statement in SECY-82-1A.

With regard to future plants, we believe that the NRC should examine and evaluate the safety-related changes now proposed or underway for LWRs in countries like France, the Federal Republic of Germany, Japan, Sweden, and the United Kingdom before arriving at its own judgment on what is appropriate for the U.S. For existing nuclear power plants, it is premature to assume that the available PRAs provide a generic basis for decision-making. On the contrary, despite their uncertainties, the PRAs indicate the existence of important plant-specific differences which need to be factored into the formulation of policy. Again, the specific backfitting approaches currently underway or contemplated for LWRs in other countries should be examined and evaluated for their relevance to U.S. policy.

3. Because of their close interrelation, one would expect that the proposed safety goals, the related implementation plan, the backfitting policy statement, and the severe accident policy statement would be closely integrated and would follow a coherent safety philosophy. Unfortunately, this is not the case. We recommend that an increased effort be made to accomplish such integration.

4. With regard to existing plants, we believe it would be productive for the NRC Staff to draft alternate positions on the most significant safety issues and to establish what would be needed in order to evaluate the alternatives. The ACRS would be willing to cooperate with the NRC Staff in such an effort.

Sincerely,

P. Shewmon
Chairman

References:

1. SECY-82-1A, Policy Issue (Affirmation) from W. J. Dircks, Executive Director for Operations, Subject: Proposed Commission Policy Statement on Severe Accidents and Related Views on Nuclear Reactor Regulation, dated July 16, 1982
2. Letter from E. P. Rahe, Jr., Manager, Nuclear Safety Department, Westinghouse Electric Corporation, to Dr. Paul Shewmon, Chairman, Advisory Committee on Reactor Safeguards, Subject: severe accident policy in SECY-82-1A, dated September 3, 1982