



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

March 13, 1978

Honorable Joseph M. Hendrie
Chairman
U. S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: PROPOSED RESEARCH ON SYSTEMS TO IMPROVE SAFETY

Dear Dr. Hendrie:

The Advisory Committee on Reactor Safeguards has reviewed the proposed research program on systems to improve the safety of nuclear power plants, as embodied in the draft report, "Report to the U.S. Congress on NRC Plans for Research Directed Toward Improving the Safety of Light-Water Nuclear Power Plants," dated March 3, 1978. This report was reviewed by the full Committee at its 215th meeting, March 9-10, 1978. The proposed program was reviewed by a Subcommittee at a meeting on February 23, 1978. In addition, members of the Committee Staff attended the meetings of the NRC Research Review Group on January 10 and February 10, 1978.

The proposed program has been developed in response to the requirement by Congress in the FY 78 Budget Authorization Act for the NRC. Although the pertinent section of the Act bears the subheading, "Improved Safety System Research," the wording of new subsection (f) refers to "...projects for the development of new or improved safety systems..." The NRC Staff has recognized, and pointed out in its report, that the requirement for "development," if interpreted literally, could compromise the position of the NRC as an impartial judge of safety systems incorporated into nuclear plants. The NRC Staff has proposed, therefore, that its program be limited chiefly to the evaluation of new concepts for improving reactor safety. The Committee agrees with this approach. In its recent report to the Congress (NUREG-0392), the Committee stated:

"...The ACRS believes that the development, testing, and proof of efficacy of new or improved safety systems should not be the responsibility of the NRC, but should be conducted by the nuclear industry or DOE. However, the ACRS believes that it is a proper and even necessary function of the NRC to perform or sponsor research on concepts that, if developed and implemented by the appropriate bodies, could lead to improvements in safety."

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The NRC Staff has recommended five research projects as having the greatest prospect of leading to improved safety. They are:

- A. Alternate containment concepts, especially vented containments.
- B. Alternate decay heat removal systems, especially bunkered systems.
- C. Alternate ECCS concepts.
- D. Improved accident response.
- E. Advanced seismic design.

The Committee concurs in these choices and believes that these studies should be undertaken even though their risk reduction potentials are not yet clearly known. These studies and the follow-on programs will serve to place in perspective the extent and suitability of possible safety improvements.

The NRC Staff has stated in its report that most of these research projects will require only one to two years for completion, the possible exceptions being Projects A and E. Although these five projects in themselves would not appear to represent the sort of "long-term plan" requested by the Congress, the NRC Staff has proposed that two additional programs be undertaken, as follows:

- F. Improvement of the methodology for evaluating research topics and alternate plant designs.
- G. Scoping studies of the eleven additional research topics that have been suggested.

These programs can be expected to provide a basis for a longer term effort.

The Committee believes that Project F on the development of better methods for evaluating concepts proposed to improve safety is essential to the success of this new effort. Although there will always be a large subjective or judgmental element in the selection of research projects on improved safety, these selections should be made on as quantitative and factual a basis as practical. It seems evident also that it will be extremely difficult to provide a suitable methodology without at some point addressing the question of how safe is safe enough.

Sincerely yours,

Stephen Lawroski
Stephen Lawroski
Chairman