



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

July 21, 1977

United States Nuclear
Regulatory Commission
Washington, DC 20555

SUBJECT: REPORT ON ADVANCED REACTOR SAFETY RESEARCH

Dear Commissioners:

During its 207th meeting, July 14-15, 1977, the Advisory Committee on Reactor Safeguards completed its review of advanced reactor safety research programs sponsored by the NRC and ERDA. In its review, the Committee had the benefit of a Subcommittee meeting held in Denver, Colorado on June 16, 1977 at which presentations were made by representatives of the NRC and ERDA, and of the documents listed. The Committee has reported previously on fast reactor safety research in its reports of December 17, 1970, January 14, 1975, and August 20, 1976, and on high-temperature, gas-cooled reactor (HTGR) safety research in its report of July 21, 1972.

This review was conducted by the ACRS in response to a request from the NRC, Office of Nuclear Regulatory Research and pursuant to the provisions of proposed legislation (H.R. 3455) which directs that no money appropriated therein be used for regulatory research related to advanced reactor safety "except as directed by the Commission by majority vote, following receipt by the Commission of a recommendation supporting the need from the Advisory Committee on Reactor Safeguards."

The ACRS believes that there is need for a regulatory research program related to safety of advanced reactors and that the funding levels proposed by the NRC Staff for advanced reactor safety research in FY 1978 are reasonable in view of the reactor development program described by ERDA at the June 16, 1977 Subcommittee meeting.

The ACRS expects that it will be asked to conduct a review of the overall NRC safety research program this year, in accord with H.R. 3455, and hence did not attempt to conduct a detailed review of all aspects of the NRC advanced reactor safety research program at this time. Nevertheless, the Committee believes that the scope and the direction of the NRC advanced reactor safety research program for FY 1978 are generally appropriate.

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The Committee believes that there is a need in this program, as in the NRC program on light water reactor safety, for anticipating possible problems beyond those associated with the design basis accidents considered in the licensing process. The identification of such accident scenarios may lead to changes in the approach to evaluation of core overheating events, of criteria relating to maintenance of containment integrity, or of reliability requirements for specific systems or components. In this regard, limited probabilistic studies on both HTGR's and fast breeder reactors are recommended in order to discover and delineate possible deficiencies in current design and safety evaluation approaches, and to identify areas warranting emphasis in future safety research efforts.

The ERDA representative described a program in which alternate advanced reactor concepts would be studied during the next two years. The ACRS believes it would be useful for the NRC to have a small group follow the development of these concepts and prepare an outline of probable safety issues in order to provide a sound basis for the rapid development of the NRC's safety review capability, should this be required.

The Committee wishes to emphasize, as it has in the past, the importance of regulatory-oriented safety research, not only in maintaining competence of the NRC Staff, but in providing a group of experts on whom the NRC Staff and the ACRS can draw, as required.

Sincerely,


M. Bender
Chairman

References:

1. U.S. Nuclear Regulatory Commission, "LMFBR Safety Technology Review-1976," Draft-November 1976.
2. U.S. Nuclear Regulatory Commission, "Liquid Metal Fast Breeder Reactors Safety Research Program Plan," NUREG-0167, March 1977.