D860219

The Honorable Thomas P. O'Neill, Jr.
Speaker of the United States
House of Representatives
Washington, D.C. 20510

Dear Mr. Speaker:

In accordance with the requirements of Section 29 of the Atomic Energy Act of 1954, as amended by Section 5 of Public Law 95-209, the Advisory Committee on Reactor Safeguards (ACRS) submits herewith its comments on the Nuclear Regulatory Commission's (NRC's) Safety Research Program for Fiscal Year 1987.

We note with increasing concern the continued decrease in the level of funding available for the NRC's safety research program. We are convinced that a continuing research program is needed in order for the NRC to fulfill its regulatory responsibilities effectively and fairly. We believe that there is some level of funding below which a research program will be ineffective or impractical, but do not now know what that level should be. The NRC has similar concerns, and has commissioned the Committee on Safety Research of the National Research Council to undertake a study and make recommendations regarding the NRC's future safety research activities. Although the NRC certainly will inform the Congress of the recommendations of that Committee, we believe that our charter, as well as the request from the Congress for us to review the safety research program, suggests, or requires, that we review that report and provide the Congress with an independent evaluation of its recommendations together with our view on the content and appropriate funding level for an NRC safety research program in the future. We propose therefore to provide you with such a report within about six months after the report of the National Research Council Committee has been received.

At this time, we request your reconsideration of the statutory requirement that we provide the Congress each year with a report on the NRC's proposed research program and budget. We believe that it would be more useful to the Congress if we provided comments to you on the research program from time to time as seems appropriate to the issues.

Sincerely,

David A. Ward
Chairman

Attachments:

1. Advisory Committee on Reactor Safeguards, U.S. Nuclear Regulatory Commission, "Review and Evaluation of the Nuclear Regulatory Commission Safety Research Program for Fiscal Year 1987 - A Report

to the Congress of the United States of America," dated February 1986.

2. Letter from David A. Ward, Chairman, Advisory Committee on Reactor Safeguards, to Nunzio J. Palladino, Chairman, U.S. Nuclear Regulatory Commission, Subject: ACRS Comments on the NRC Safety Research Program and Budget for Fiscal Year 1987," dated June 11, 1985.

D860219

The Honorable George H. W. Bush
President of the Senate
Washington, D.C. 20510

Dear Mr. President:

In accordance with the requirements of Section 29 of the Atomic Energy Act of 1954, as amended by Section 5 of Public Law 95-209, the Advisory Committee on Reactor Safeguards (ACRS) submits herewith its comments on the Nuclear Regulatory Commission's (NRC's) Safety Research Program for Fiscal Year 1987.

We note with increasing concern the continued decrease in the level of funding available for the NRC's safety research program. We are convinced that a continuing research program is needed in order for the NRC to fulfill its regulatory responsibilities effectively and fairly. We believe that there is some level of funding below which a research program will be ineffective or impractical, but do not now know what that level should be. The NRC has similar concerns, and has commissioned the Committee on Safety Research of the National Research Council to undertake a study and make recommendations regarding the NRC's future safety research activities. Although the NRC certainly will inform the Congress of the recommendations of that Committee, we believe that our charter, as well as the request from the Congress for us to review the safety research program, suggests, or requires, that we review that report and provide the Congress with an independent evaluation of its recommendations together with our view on the content and appropriate funding level for an NRC safety research program in the future. We propose therefore to provide you with such a report within about six months after the report of the National Research Council Committee has been received.

At this time, we request your reconsideration of the statutory requirement that we provide the Congress each year with a report on the NRC's proposed research program and budget. We believe that it would be more useful to the Congress if we provided comments to you on the research program from time to time as seems appropriate to the issues.

Sincerely,

David A. Ward
Chairman

Attachments:

1. Advisory Committee on Reactor Safeguards, U.S. Nuclear Regulatory Commission, "Review and Evaluation of the Nuclear Regulatory Commission Safety Research Program for Fiscal Year 1987 - A Report to the Congress of the United States of America," dated February 1986.

2. Letter from David A. Ward, Chairman, Advisory Committee on Reactor Safeguards, to Nunzio J. Palladino, Chairman, U.S. Nuclear Regulatory Commission, Subject: ACRS Comments on the NRC Safety Research Program and Budget for Fiscal Year 1987," dated June 11, 1985.

D860219

REVIEW AND EVALUATION OF THE NUCLEAR REGULATORY COMMISSION SAFETY RESEARCH PROGRAM FOR FISCAL YEAR 1985

A REPORT TO THE CONGRESS OF THE UNITED STATES OF AMERICA

INTRODUCTION

In a letter to NRC Chairman Palladino, dated June 11, 1985, the Advisory Committee on Reactor Safeguards (ACRS) commented on a proposed research program for FY 1987 based on program-support funding of $128.6 million. A copy of that letter is attached. The funding now proposed for FY 1987 is $99 million.

Our comments herein address chiefly the changes in the research program that have been proposed to accommodate this substantial change in funding level.

The program has been reduced substantially in scope from what we reviewed and commented on in June 1985. Some studies that should be continued, and will ultimately be required, have had to be stopped or drastically reduced. For the rest, with some exceptions, we believe that most of the important questions or concerns that confront the NRC

are being addressed. Our comments for each of the five Decision Units are presented below.

REACTOR ENGINEERING

We agree with the proposed funding for mechanical/structural engineering and primary system integrity programs, but are concerned about the decision to terminate the work on the qualification of electrical equipment, as noted below.

Electrical Equipment Qualification

The current proposal would fund work on aging of equipment the reliability of which can be assured by periodic maintenance while zeroing out funding aimed at assuring the performance of safety-related electrical equipment whose performance in an accident or fire cannot be assured by currently available knowledge. We recommend that the work on electrical equipment and its fire response be continued and funded by deferring some of the work on maintainable equipment.

THERMAL-HYDRAULIC TRANSIENTS

Research in this Decision Unit addresses issues that are fundamental to the safe operation of nuclear power plants. Historically, a large portion of the NRC's research resources have been devoted to this area. While many of the questions of a decade or more ago have been answered, some important issues remain unresolved.

Integral Testing

Contrary to the NRC proposal, we believe that the planned follow-on program at the Multiloop Integral System Test (MIST) facility should be completed, even if it is necessary to stretch it out over a longer time to accommodate annual funding restrictions. The thermal-hydraulic behavior of the Nuclear Steam Supply System (NSSS) for Babcock and Wilcox (B&W) plants is more complex and not as well understood as that for other pressurized water reactors (PWRs). MIST and associated programs should be continued to raise the level of predictability of the B&W systems to the equivalent of the other PWRs.

The currently proposed research budget would provide funds for the foreign programs, 2D/3D and ROSA-IV, at the levels proposed in June 1985. We believe that, to the extent practical, proportional reductions should be made in the funding for these programs.

While plans for a new thermal hydraulic test facility have merit in assuring technical capability into the future, they should not be given precedence over the MIST Program effort. Since a consensus has not been reached on the form of a new facility, it is premature to commit major funding to it at this time. We agree with the proposed funding reduction.

Separate Effects

A viable program in separate-effects testing, especially at universities

and smaller laboratories, is in the best, long-term interest of the nuclear safety program. These programs, which can be conducted at a lower cost than any other activity, assure continuing development of the science and scientists necessary for understanding the basic nature of the cooling systems in nuclear power plants. In particular, we believe that visual studies of thermal-hydraulic phenomena, and studies to understand the complicating effects water hammer may have on thermal-hydraulic transients, should be funded.

Models and Codes

Development of useful and powerful analytical tools has been a significant accomplishment of the U.S. nuclear power industry -- especially of the AEC/NRC and their contractors. The present program of code validation, using foreign experimental data, appears to be a cost-effective means to keep these efforts continuing for the benefit of nuclear power plant safety. The development of more user-friendly tools, the nuclear plant analyzer and the data bank, to permit shorter turn-around times in analyzing problems that continue to arise, are useful for both the NRC and industry. Nevertheless, we believe that these latter activities can be assigned a lower priority.

ACCIDENT EVALUATION

The current activity in this Decision Unit is at a point where integration and thoughtful contemplation of previous work is needed to define further investigations. Under these circumstances, we consider the total amount allocated to be acceptable.

Because of the importance of a continuing exploration of the sequences of events that may lead to severe accident consequences, we recommend that the previously proposed Severe Accident Sequence Analysis program be continued. Necessary funds for this purpose should be reallocated from the source term work.

We do not foresee significant harm to the total program if the work on in-pile fuel behavior is delayed or eliminated.

Although the aerosol work might provide useful information, and might conceivably enable some relaxation of regulatory requirements, currently available information is adequate for regulatory needs.

We are pleased to observe that progress is being made toward a better understanding of containment system performance and toward the development of associated performance criteria. However, a careful evaluation of the performance of a number of the containment systems that exist in operating plants has still not been made. In view of the importance of the containment system performance as a last and extremely important barrier to the release of radioactive materials in case of a severe accident, we recommend that this work be given a continuing high priority.

REACTOR OPERATIONS AND RISK

In our June 11, 1985 report to the Commission, we agreed with the

proposed funding level for this Decision Unit but, as we had on several previous occasions, disagreed with the allocation of funding within this Decision Unit. Our reasons are discussed in some detail in our June 11, 1985 letter and in other previous reports on the NRC research program. The currently proposed funding for this Decision Unit is less than that proposed in June 1985. Although we agree with the NRC proposal to terminate and/or defer programs in the lowest priority areas to accommodate this reduction, our previous concerns regarding the specific assignment of priorities within this Decision Unit remain.

In our previous reports, we had identified important risk-related licensing problems that are not being addressed in the current and/or proposed research programs. We recommend that part of the funding now proposed for the work on the examination of Technical Specifications be reallocated to the investigation of these problems. The work on the examination of Technical Specifications is important, but is more appropriately done by industry. Of the licensing problems identified in previous reports, we recommend that the following three areas be emphasized:

A continued search for possible weaknesses in the current probabilistic analyses, e.g., accident paths either not currently evaluated or dismissed as insignificant, which may, on closer scrutiny, prove to be very important to risk.

An improved evaluation of the entire family of containment designs, including the effectiveness of possible design improvements.

The development of improved methods for factoring uncertainty into decision making.

We believe that probabilistic risk analysis (PRA) provides a powerful tool for the rational evaluation of both health and economic risk and its use in the regulatory process should be encouraged. Several utilities are aggressively learning to use this methodology in managing risk and assessing regulatory requirements. The NRC has proposed that funding for the Integrated Safety Assessment Program be eliminated and that funding for the Office of Nuclear Reactor Regulation's (NRR's) review of industry PRAs be sharply reduced in FY 1987. We believe that this is a serious mistake and would significantly impact on industry efforts to utilize PRA assessment techniques.

Human Factors

We note there is no research on human factors in the proposed program. While we believe such research is needed, we also believe it is appropriate to await the results of a recently funded study by the National Research Council of the National Academies of Science and Engineering before specific recommendations are made. A program for FY 1988 and future years should then be defined using the results of this study.

WASTE MANAGEMENT, EARTH SCIENCES AND HEALTH

Waste Management

The Low-Level Radioactive Waste Policy Amendments Act of 1985 requires that radioactive wastes containing radionuclide concentrations above Class C must be placed in a disposal site supervised by the Department of Energy. The NRC has been assigned the responsibility for licensing such facilities. This Act also requires that within 12 months the NRC must identify disposal methods other than shallow-land burial, and that within 24 months the NRC must provide technical information for states to proceed with alternate disposal practices. We believe that the increased funding proposed is the minimum needed to permit the NRC to perform the research necessary to meet these requirements.

For the program on high-level wastes, we endorse the increased attention being directed to tuff and salt as potential repository media. However, we also recommend that the NRC Research Staff develop a more rigorous approach and/or methods for determining the priorities assigned to individual research projects within the high-level waste area. To enable the NRC to conduct adequate research on these media and to meet the responsibilities specified in the Nuclear Waste Policy Act, we again encourage the Congress to consider providing the NRC with additional resources through the Nuclear Waste Management Fund.

Earth Sciences

In its original budget proposal, the NRC provided funding to transfer to the United States Geological Survey (USGS) the responsibility for operating that portion of the seismographic network in the Eastern United States now supported by the NRC. The agreement with the USGS provided for payment of $5 million over a 5-year period, beginning with $1 million in FY 1987. The NRC now proposes that this funding transfer be eliminated to conserve research funds. The NRC also proposes that all other NRC support for the operation of this network be discontinued after FY 1987. We believe that continued operation of the seismographic network would be useful, but agree that the NRC has higher priority research for its limited funds. It is our hope that the USGS will be able to continue the operation of this network without NRC support.

Radiation Protection and Health Effects

The NRC has proposed the elimination of funding to the National Academy of Science Committee on the Biological Effects of Ionizing Radiation, to the National Council on Radiation Protection and Measurements, and to the International Commission on Radiological Protection. Since these are the premier organizations that interpret and evaluate data on the health effects of radiation, we believe that such action is unwise. In our opinion, it is essential that the NRC maintain liaison with and keep abreast of the groups both in the U.S. and abroad who are active in the fields of radiation protection and health effects. We strongly urge that the NRC continue to provide funds to these organizations.

→