

July 15, 1997

SECY-97-149

FOR: The Commissioners

FROM: L. Joseph Callan /s/
Executive Director for Operations

SUBJECT: NUCLEAR SAFETY RESEARCH REVIEW COMMITTEE (NSRRC)

PURPOSE:

Present options for the consideration by the Commission on the future of the NSRRC

SUMMARY:

Regulatory excellence demands that the USNRC pursue a high quality, well directed research program to provide the best available technical knowledge to support its regulations. The NSRRC was established in 1988 to provide independent advice to the Director of RES and the Commission on the content, quality, and management of the research program. Given the changes in the research program over the past decade and the budgetary pressures faced throughout the USNRC, it is timely and appropriate to reevaluate the role that the NSRRC serves and to select the best option to obtain the independent advice for which it was chartered.

BACKGROUND:

The NSRRC was formed in 1988 under the Federal Advisory Committee Act pursuant to a recommendation of the National Research Council in its report, "Revitalizing Nuclear Safety Research." The one-

year study that culminated with this report was requested by the USNRC to address the future role of USNRC's research program. USNRC's research budget in current dollars had peaked in FY 82 at a level of \$199 million and had declined to \$109 million

Contact: Ashok C. Thadani, RES
(301) 415-6641

in FY 86.¹ The National Research Council concluded that management problems within the USNRC made it unlikely that any detailed modification of the content of the research program would lead to significant improvement in the program. The National Research Council based this conclusion on its finding that the research program lacked direction and a coherent and effective set of principles for organizing an integrated program of research. The report of the National Research Council included a set of guiding principles of nuclear safety research, a list of elements of a future agenda for nuclear safety research, and recommendations of steps to eliminate barriers to an effective program of nuclear safety research. As a part of the steps to eliminate barriers to an effective research program, the National Research Council recommended that "the USNRC Director of Research must establish and maintain good, fundamental research practices, including... establishment of a strong advisory group that includes independent experts from industry and academia, along with representatives of organizations performing research."

¹ Two related reasons for the decline in the budget were identified in the report. First, the budgets of the federal agencies responsible for research on commercial nuclear reactors had been under attack partly due to the Administration's pressure to reduce federal deficits and federal spending in general. The budgets reflected the Administration's view that the private sector ought to be playing a much larger role in virtually all matters related to nuclear regulation. Second, the USNRC was having increasing difficulty in explaining the value of its research program to OMB and Congress, and US facilities for large-scale experimental research relating to current commercial reactors were being closed. While both of these reasons were true, the report did not mention that funds for research had grown rapidly from FY 75 to FY 82 due to the emphasis on emergency core cooling and severe accident testing to assure reactor safety and to the federal government's reaction to the Three Mile Island accident. The major test programs on these issues had been completed by the mid-1980s which also contributed to the decline in federal spending on nuclear safety research.

During the intervening years from 1986 to 1997, many changes have taken place within the USNRC, its research program, and the NSRRC. These changes have reduced the need for the kind of oversight addressed by the National Research Council. Management and management practices within RES have changed and have been strengthened. The research program has been aligned to respond to needs from the user offices, planning of research has become formalized with greater user office involvement, a new directive on the management of work being placed with the US Department of Energy and its contractors has been implemented, and priorities have been set to respond to the high-risk, essential regulatory and technical needs as the budget continues to decline. The NSRRC has been involved to varying degrees in the review and assessment of these changes. The issue to be addressed through this paper is what should the future role of the NSRRC be given that the changes have occurred in the USNRC and its research program and the issues the USNRC faces in the future.

Initially and for several succeeding years, there was high interest in the NSRRC, both within the USNRC and its stakeholders. Individuals with outstanding credentials from the industrial and academic communities with nuclear power reactor experience readily agreed to serve as members of the NSRRC. As the terms of appointment have expired, the membership of the NSRRC has continuously changed. During the past several years, it has become more difficult to attract candidates with comparable credentials for vacant NSRRC positions, mainly due to the availability of fewer candidates as a result of the reduction in nuclear power related research within the federal government and the industry in the US. At the present, the membership of the NSRRC is down to seven, and will decline to six in March of 1998. Without a full complement (9-12) of members, it is difficult for the NSRRC to have both the diversity of as well as depth of experience to advise the USNRC on the full scope and balance within the research program. As an example, the last assessment of USNRC's research strategy was made by the NSRRC in December 1990. Since that time, the NSRRC has addressed individual program areas primarily through its subcommittees. Often these program areas or issues within these program areas have also been assessed by the ACRS. This situation has led to a duplication of effort by RES staff to support the needs of both the NSRRC and the ACRS. Neither NSRRC nor ACRS has recently

addressed the broad scope and balance within USNRC's research program, an assessment that would be valuable to the management and direction of it.

OPTIONS:

The charter of the NSRRC identified five activities for assessment and recommendation. These activities, which are still appropriate, are:

- Conformance of the USNRC nuclear safety research program to the USNRC Philosophy of Nuclear Regulatory Research as stated in the Commission's Strategic Plan, and to specific Commission directions;
- Likelihood of the program meeting the needs of the users of research;
- Appropriateness of the longer range research programs and the correctness of their direction;
- Whether the best people are doing the work at the best places; whether there are other options, including cooperative programs, that would yield higher quality work, or otherwise improve program efficiency; and
- Whether the program is free of obvious bias, and whether the research products have been given adequate, unbiased peer review.

The NSRRC is the only USNRC advisory committee that has the specific responsibility to advise the Director of RES on the scope and balance of the reactor safety research program. There are three options that should be considered to achieve the desired objective of providing advice to the Director of the Office of Nuclear Regulatory Research and, through him the Commission, on matters of overall management importance in the direction of the USNRC's program of nuclear safety research.

Option 1. Continue NSRRC

NSRRC could continue to provide advice to the Director of RES as it has since its inception. This option has the advantage that all of the current members who have served for at least two years are now familiar with USNRC's research program. Past experience with the NSRRC has shown that a period of about two years is needed for a new member to become familiar with the scope of the research program and its regulatory context, both of which are necessary to provide sound advice to the Director. If the NSRRC is to become fully effective, a concerted effort must be made to bring the committee to full membership. Given the difficulty of the recent past in attracting members with experience in nuclear technologies, it may be desirable to cast the net more broadly and seek experts from other relevant areas of research and development. Such new members could expand USNRC's knowledge of developments in related fields and could help to eliminate any parochial approaches to current and emerging issues. Addition of several more members who have a background in corporate R&D management (e.g., current or recently retired VPs of R&D) would strengthen the ability of the NSRRC to address management issues.

The disadvantages of this option are that it does not eliminate the duplication and overlap of activities with the ACRS which has imposed some burden on the staff and it will take about a year to bring the Committee to full strength due to the administrative burdens associated with recruiting members as special federal employees.

Option 2. Transfer the research advisory function to the ACRS

As the licensing workload has decreased, ACRS has been able to spend more of its time on broader issues that are directly relevant to the research program. RES staff frequently participate in subcommittee and full committee meetings with the ACRS as specific topics are addressed. The attention that ACRS paid to the thermal hydraulic issues associated with the AP600 and the PRA implementation plan are good examples of the depth of its involvement in USNRC's research program. Such involvement has provided beneficial advice to RES and to the direction and quality of its research projects. Section 29 of the Atomic

Energy Act of 1954, as amended by Section 5 of Public Law 95-209, requires the ACRS to report to Congress each year on the USNRC's safety research program. Given the current general familiarity of the ACRS with the safety research program as a result of this charge and the specific topics it addresses, it would be possible to expand its role and to assume the advisory oversight that NSRRC now provides.

This option would give additional responsibility to the ACRS to review and assess the whole research program, whereas, the Committee presently tends to deal with specific issues. The ACRS would require additional funds for member travel to additional Committee/Subcommittee meetings devoted solely to research issues and resources for member time at these meetings. Beginning in FY 1998, the resources in RES that support the NSRRC (\$45K and 1 FTE) for staff support, member time and travel would be transferred to ACRS for

additional meetings. Within these resources, the ACRS will be able to perform the intended functions of the NSRRC in providing advice to the Commission and Director of RES.

Option 3. New National Research Council Study

The study referenced earlier, "Revitalizing Nuclear Safety Research," was the last comprehensive examination of USNRC's research program by the Nation's scientific and engineering elite. An independent assessment of USNRC's research program would be valuable in light of the current issues facing the agency such as power plant aging and license renewal, human and organizational performance, fuel management, and decommissioning. As a part of such an assessment, the National Research Council could be tasked to examine alternative means to achieve the desired review of USNRC's research program on a continuing basis. Such means could include independent peer reviews of selected program elements, recasting the NSRRC, and/or the periodic (e.g, every two-three years) review of USNRC's research program by the National Research Council. The results of a current assessment by the National Research Council would add credibility to the path that USNRC would follow.

The disadvantages of this option are the time and costs involved in the assessment which would delay any decision by USNRC for at least two years.

COORDINATION:

The Chief Financial Officer agrees with the resource transfers discussed in Option 2 above. The Office of the General Counsel has no legal objection to this paper.

RECOMMENDATION:

The staff recommends Option 2. It would provide the desired oversight functions within the existing budget.

L. Joseph Callan
Executive Director
for Operations