

March 13, 2002

MEMORANDUM TO: E. William Brach, Director, SFPO:NMSS
Donald A. Cool, Director, IMNS:NMSS
John T. Greeves, Director, DWM:NMSS
James E. Lyons, Director, NRLPO:NRR
Michael E. Mayfield, Director, DET:RES
Scott F. Newberry, Director, DRAA:RES
Michael F. Weber, Director, FCSS:NMSS

FROM: Farouk Eltawila, Director, DSARE:RES /RA/

SUBJECT: DRAFT ADVANCED REACTOR RESEARCH PLAN

As a follow-up to the staff's commitment to the Commission in the future licensing and inspection readiness assessment (FLIRA) report, SECY-01-0188, dated October 12, 2001, the Office of Nuclear Regulatory Research (RES) has developed a draft advanced reactor research plan. In developing this plan, the staff's focus was on determining the critical information that will be needed to establish the safety standards these new reactor designs must meet, to explore issues involving great uncertainties and to develop independent capabilities to enable the staff to review them. At this point, the plan does not delineate the research that will be conducted by the NRC. Rather, it identifies the information gap that exists at NRC in terms of the necessary tools and data and it encompasses activities that aim at either applying existing knowledge or creating new knowledge. It is also recognized that an applicant of a new reactor design has the primary responsibility to demonstrate the safety case of the proposed design.

Although, where possible, we have maintained a technology-neutral perspective, the plan discriminates between different technologies when design-specific safety issues are addressed, or future modifications to the existing analytical codes for specific applications are discussed. The key topics included in this research plan are (1) development of regulatory framework based on the risk-informed, performance-based principles; (2) accident analysis (PRA methods and assessments, human factors, and I&C); (3) reactor/plant analysis (thermal-fluid dynamics, nuclear analysis and fission product release and transport); (4) fuels analysis (fuel performance testing, and fuel qualification); (5) materials analysis (graphite behavior and high-temperature materials performance); (6) structural analysis (containment/confinement performance, external challenges); (7) consequence analysis (dose calculations, environmental impact studies); (8) nuclear materials safety and nuclear waste safety; and (9) nuclear safeguards and security.

CONTACT: John Flack (jhf), REAHFB:DSARE:RES
(301) 415-7488

It is recognized that not all of the work has to be done by NRC and that some of the information can be obtained through domestic and international cooperation as well as through work done by developers. Accordingly, the costs included in this preliminary draft, which is pre-decisional and for internal NRC use only, do not currently reflect the fact that some of this information can be obtained from others. We expect to maintain this plan as a living document, and will modify it to accommodate any new issues and technologies not previously considered. In addition, as more information becomes available, we will update these resources to reflect only these activities that will require NRC resources as presented in the FY2003-2005 budget projections.

Our objective is to get NRR and NMSS comments and feedback and submit the draft plan to the ACRS. The ACRS review is scheduled on April 12, 2002. We are specifically requesting comments on whether the plan is addressing the areas/activities where research is needed and whether there are areas/activities identified where there is sufficient knowledge that research is not needed. Please provide any comments to John Flack by March 31, 2002.

In parallel with completion of this plan, to ensure that the licensing offices needs are addressed in a timely fashion, I have designated Charles Ader to coordinate with NRR and Cheryl Trottier to coordinate with NMSS/SFPO the development of a general user need request for all activities under their respective purview.

Attachment: As stated

cc w/att.:

A. Thadani/R. Zimmerman

G. Holahan, NRR

J. Strosnider, NRR

B. Boger, NRR

J. Zwolinski, NRR

N. Gilles, NRR

A. Cubbage, NRR

M. Gameroni, NRR

L. Burkhart, NRR

J. Giitter, NMSS

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Multiple Addressees

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