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Dr. S. Lawroski, Acting Chairman
ACRS Subcommittee on Waste Management
Nuclear Regulatory Commission
Washington, D.C.

Attn: Peter Tam

Dear Dr. Lawroski:

POOR ORIGINAL

Subject: Comments on Research Program -- Presentation of
September 18 and 19, 1979

These comments are concerned with the adequacy of the subject research program to meet NRC needs and the relevance of the programs to the regulatory function of NRC. A significant part of the discussions focused on basic concepts and policies concerned with high level waste repositories and potential optimum waste forms. Certainly the resolution of such fundamental issues is prerequisite to the planning and prioritizing of focused research. However, if I correctly understand the task at hand for the Subcommittee, we should use the current policy positions of the NRC and DOE for reference and evaluate NRC's research programs accordingly. While it is tempting to espouse personal views on how a fully satisfactory repository-package system might be identified and developed under a rational time schedule and within affordable cost, I will refrain from doing that here.

In order to make a detailed review of the adequacy of the research program, we should have a written set of "needs" developed by the operating components for the near term and by some upper management group for the long term. The "Decision Unit Overviews" come close to meeting the need, but appear to be designed principally for budget levels. The briefings by NMSS on their current programs were good, but they were descriptive in nature, rather than on "problems needing solution." A structured method for anticipating future needs is ostensibly lacking (however, the formation of special groups to prepare for the licensing of repositories is a practical demonstration of preparing for future needs). In the absence of an NRC staff generated list of priority needs, the subcommittee and consultants must rely upon their personal knowledge of what is urgent. This may be quite adequate in many areas but is no guarantee of comprehensive coverage. The bottom line is that we lack a systematically developed reference base for determining the appropriateness of the research program.

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As deficiencies in technical information are identified by the staff, three options seem to be available for filling the voids: (1) the operating component can arrange for getting the data via a Technical Assistance Contract, pay for the work out of their own budget and administer the work with their staff, (2) have Research arrange for getting the information, paid for out of the RES budget and administered by RES staff, or (3) try to convince DOE that they should do it with DOE funds and staff. My impression is that very rarely is DOE asked to do the work; there are various reasons for this which include a lack of responsiveness by DOE and a desire to build an NRC capability that is entirely independent from DOE. The groundrules for distinguishing between technical assistance and research seem to be broadly established but subject to considerable variation dependent upon urgency and who has available funds to commit.

We have not yet heard about any established criteria (or a plan) for prioritizing the selection of research work. It seems probable that past prioritization has been associated with "squeaking wheels," contractor "track records," reaction to budget reduction and expansion into new areas. These are all quite valid factors to include in a recipe but it would be comforting to know that there is a recipe and that the relative significance of the squeaks to overall NRC needs is sorted out. It was evident that a very healthy working relationship has been developed between Research and NMSS for the identification and initiation of research on low level wastes and mill tailings. Based on the information provided and the presentations it appears that the research package is most responsive to the needs.

There is a major difference in the stage of development of the low level waste, the mill tailings and the high level waste technologies since tailings and burial grounds have existed for years and the specific problems associated with their operation and regulation are apparent. Identifying NRC's research needs of high level waste is by far the most difficult problem because of the unresolved major issues of where to build repositories, how to package the waste, and how to evaluate the long term risks. At this stage in the evolutionary process of the high level waste program at the national level, NRC Research has an unusual challenge because of the uncertainties associated with:

- Final policy decisions to be made by the president.
- The form and specifics of EPA standards.
- Whether or not WIPP is to be licensed by NRC.
- The nature and quality of research and development carried out by DOE.

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Research projects underway or planned in the high level waste area cover a very broad range of technology maturity: e.g., from the durability of waste forms still in the laboratory stage to the state-of-the-art for bore-hole plugging. Many of the projects that duplicate or overlap larger projects by DOE/ONWI are said to be necessary in order to assure NRC independence or to build capability of the NRC staff. There is no question that NRC independence is essential when key interpretations of data must be made and where value judgments are involved, but it is not clear that all of the NRC research projects are really necessary for regulatory independence. It would be advisable for the staff to set up some criteria to segregate what is really necessary for the staff to set up posture Vs. needless duplication or DOE research at the basic data level. Further, in building staff capability, care must be taken to assure that the product of the research is in a form that provides guidance to future staff and not just personal experience for incumbants who may change jobs or leave the NRC in a year or so.

Finally, I would recommend that some sort of criteria (or tests) be established that discourages the undertaking of research efforts that are necessarily very long term in nature but justified on the basis of very short-lived needs.

Relative to the adequacy of the research to meet needs, it appears to me that the most essential things are being studies in the mill tailing and low level waste areas. In the high level waste area I feel that more attention should be given to the risk of ground water flowing both into and out of repositories. Water transport is the dominant pathway being used to postulate re-entry of radioactive materials into the biosphere and much attention is focused on leaching of the waste and the transport rates through geologic media. In order for the transport to occur, there must be a flow of water out of the repository and to the biosphere. What are the hydrologic characteristics that are most or least favorable for a site? Is it practical to estimate the probabilities of water intrusion? Shouldn't the criteria being developed for repositories include hydrologic characteristics of the region, rather than just the dry area of the repository itself?

Sincerely yours,

A handwritten signature in cursive script, appearing to read "R. F. Foster".

R. F. Foster
Senior Staff Advisor

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