

POOR ORIGINAL

MEMORANDUM FOR: T. E. Murley, Acting Director
Office of Nuclear Regulatory Research

FROM: Harold R. Denton, Director
Office of Nuclear Reactor Regulation

SUBJECT: REVIEW OF DOE RESEARCH PLAN ON LWR SAFETY

On June 20, 1980 RES transmitted for NRR review and comment a draft document prepared by Sandia National Laboratories for the Department of Energy entitled "LWR Safety Program Plan (FY's 1980-1985)." The aim of this five-year program as stated by RES is to develop cost-effective improvements in power reactor availability and safety. The document purports to be prepared in accordance with the December 28, 1979 DOE-NRC Interagency Programmatic Agreement in support of improved reactor safety. A central provision of this agreement is that DOE will budget for and provide the authorizations necessary for the initiation and execution of specific agreed upon tasks, subject to funding availability.

The draft program plan emphasizes improved safety systems, man-machine interface, risk based analysis methods, and safety-related data, including several unresolved safety issues. As requested by RES, the NRR review of this program has considered the technical content of the proposed projects and the relevance and timing of the proposed work with respect to current or anticipated NRC regulatory positions. We have also considered in our review NRC guidance to DOE as provided in a memorandum of February 6, 1980 from P. J. Budnitz, Director of RES to R. L. Ferguson, Acting Deputy Assistant Secretary for Nuclear Reactor Programs, DOE; the minutes of a meeting of the Joint Coordination Group held on April 16, 1980; and a meeting held with DOE on September 16, 1980 in which our comments were discussed in draft form. Present at the September 16 meeting with DOE were R. DiSalvo of RES, and G. Knighton and P. M. Williams of NRR/RSCB. DOE personnel present were H. Feinroth, J. Yevick, and J. Carleson.

Our principal comments concern the six NRC recommended programs as described in the February 6, 1980 memorandum. These programs in order of decreasing priority are: Add-on Decay Heat Removal System, Vented Filtered Containment System, Hydrogen Control Techniques, Improvements in Operator-Machine Interface, Advanced Seismic Design, and Improvements in Simulator Capabilities. Our comments are provided in the table of Enclosure 1. It should be noted that there are no DOE programs planned for FY 81 for the first three NRC recommended programs. At the September 16 meeting DOE informed us that funds have been provided in FY 81 for a reference design characterization study in four areas: (1) risk

8010290331

RO-10-1B
x PD-10-1

analysis, (2) constructability, (3) fuel utilization and (4) operational reliability and maintainability. These studies will be performed on the most advanced designs of the LWR manufacturers and will not be linked to backfitting considerations. A program brief will be available for NRC review about October 1, 1980.

Our consideration of the impact on NRC plans for severe accident mitigation research as a result of DOE's funding decision for FY 81 will be made after our review of the October program brief. It is apparent, however, that any specific information that DOE may develop on the engineering feasibility of severe accident mitigation devices will be delayed about a year.

We also have provided additional comments in Enclosure 2 which, if incorporated, would improve the general utility of the Sandia document to the NRC, and presumably to DOE also.

We appreciate the opportunity to review and comment on the DOE research plan on LWR Safety Technology. We anticipate our continued participation in this manner as the program develops.

Original Signed by
H. R. Denton

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosures

1. Status of NRC Recommendations for DOE LWR Safety Programs
2. Additional Comments On DOE Research Plan

DISTRIBUTIONS

NRR READING FILE # 4145
SUBJECT FILE (RSCB)
CENTRAL FILE
TERA
PDR
SCAVANAUGH #4145
JMULLIN
TSCHULTZE
FSCHROEDER

RDISALVO
RMEBERNERO
CKELBER
VSTELLO
RMINOGUE
GWKNIGHTON
PWILLIAMS
HRDENTON
ECASE

OFFICE ▶	DST:RSCB	DST:RSCB	DST:GP/A-DIR	ONRR	ONRR
SURNAME ▶	<i>PWilliams</i> PWilliams;jd	<i>GW</i> GWknighton	<i>FS</i> FSchroeder	<i>EC</i> ECase	<i>HR</i> HRDenton
DATE ▶	10/2/80	10/3/80	10/6/80	10/7/80	10/8/80

ENCLOSURE 1

STATUS OF NRC RECOMMENDATIONS FOR DOE LWR SAFETY PROGRAMS

<u>NRC RECOMMENDATIONS</u> (2/6/80)	<u>NRC-DOE Meeting on</u> <u>Improved Reactor</u> (4/16/80)	<u>DOE/Sandia Program</u> <u>Plan 6/30/80)</u>	<u>NRC-DOE Meeting</u> (9/16/80)	<u>COMMENTS</u>
Add-on Decay Heat Removal System	DOE highly interested in program, trying to locate FY 80 funds, recommended FY 81 funds	Section 2.3.3.14 Scoping Study initiated at Sandia leading to eventual testing and licensing of a prototype system	Scoping study in the Sandia plan withdrawn. A new program will be developed based on DOE's reference design study.	This represents an alteration in DOE planning from our earlier understanding. Revised program should consider NPC research at Sandia which suggested design bases. Should address BHR's as well as PWR's.
Vented Filtered Containment System	DOE does not plan to fund program in this area but is keeping abreast of developments	No program Plan	DOE program, if any, will be based on DOE's reference design study.	Impact of DOE's position in this area is under review.
Hydrogen Control Techniques	Sandia will recommend DOE action for FY 81	No Program Plan	DOE program will be based on a forthcoming recommendation from Sandia. Will not proceed without discussions with NRC.	DOE should supply relevant information to NPC at earliest possible date.
Improvements in Operator-Machine Interface	NRC judges that DOE's program is responsive to NRC recommendations	Section 3.0 Research is planned in essentially all areas DHFS has identified as important	No Change	DHFS notes that program lacks (1) detailed description of relationship to NRC needs and research program and (2) specific plans for coordination with NRC.
Advanced Seismic Design	Sandia will recommend future DOE action	Section 2.3.3.15 Program begins with scoping studies of alternate concepts proceeds through selection of most promising concepts to verification.	No Change	Program in close agreement with NRC recommendations. More detail should be added if available.
Improvements in Simulator Capabilities	No Comments	Section 3.3.3.4 Problem stated and program being studied	This is a major portion of DOE's FY 81 budget. Sandia is assessing program to determine if it is complementary to industry program	DOE program satisfactorily reflects NRC recommendations but lacks detail on how specific goals will be accomplished.

POOR ORIGINAL

ENCLOSURE 2

ADDITIONAL COMMENTS ON DOE RESEARCH PLAN
FOR LWR SAFETY TECHNOLOGY

- (1) The program plan lacks, for the most part, specific identification and correlation of the DOE programs with NRC's regulatory needs and research activities. Three NRC unresolved safety issues (A-11, A-43, and A-17) are identified in the Safety Data Program Area, but elsewhere direct correlation with other NRC planning documentation is not provided. Three NRC documents which would be useful in this regard are "TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations" (NUREG-0578, July 1979), "Generic Task Program Descriptions" (NUREG-0171, June 1978) and "NRC Action Plan Developed as a Result of the TMI-2 Accident" (NUREG 0660, May 1980). In addition, DOE should be advised to review the ACRS prepared document "Comments on the NRC Safety Research Program Budget for Fiscal Year 1982" (NUREG-0699, July 1980).
- (2) Many of the work plans do not acknowledge the status of information already available on a given topic, or research programs currently underway developing related information. As a result, a number of program plans raised doubts as to whether Sandia is fully acquainted with the state-of-the-art, and whether the research to be performed is unnecessarily duplicative of other previous or current activities. We recommend that additional background information be provided for each major subtask which would include a brief review of related past and current work, together with citation of pertinent references from available supporting documentation.
- (3) The type and amount of formal coordination planned with the NRC is not evident in the program plan. We believe the Sandia document should speak, both generally and specifically to coordination needs and methods. For example we suggest that certain milestones be identified in each program schedule which would serve as points for formal interim NRC review of the program progress. At present the program appears to be only loosely coordinated with NRC and a potential exists for the interagency programmatic agreement to be poorly implemented.
- (4) The Introduction should be expanded to further discuss the differences between DOE's approaches to reactor safety objectives and NRC's. For instance DOE should identify criteria it will use to obtain reliable cost estimates for safety improvements in its program to reduce the impact of safety on costs. Further, DOE should be more explicit regarding its plans to coordinate with industry and foreign programs.

(5) In some cases it appears that DOE will be duplicating work to be performed either by the NRC, industry or foreign agencies. Although we do not believe it is necessary for DOE to justify every potential duplication effort (other than by the expansion of background information as requested in our first comment above), DOE should provide in the introduction a brief discussion of the circumstances under which it believes duplication, or near duplication, is justified.

(6) In Figure 1, "Department of Energy Safety Technology Program," provision should be made for NRC input.

(7) Program Area 2, "Improved Safety Systems" encompasses a very wide range of topics. We believe the organization and efficacy of the overall program plan would be enhanced if an additional program area entitled, "Degraded Core Safety Systems" were established to manage all of the program tasks pertaining to topics in that area.

(8) In Figure 4.3, "Program Areas, Interactions and Objectives of Risk Methods Utilization" the words "NRC Recognition" appear in the Methods Demonstration-Methods Implement blocks. Sandia should clarify what is meant by NRC recognition and state how it plans to achieve it.

(9) We request that the distribution of reports generated under this program be made available to the Office and Division Directors within NRR, RES, SD, and IE.