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NUCLEAR REGULATORY COMMISSION
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MEMORANDUM FOR: Commissioner Curtiss

FROM: James M. Taylor, Acting Executive Director for Operations

SUBJECT: SECY-89-197--"ISSUANCE OF DRAFT SER FOR POWER REACTOR
INHERENTLY SAFE MODULE (PRISM)"

This memorandum is in response to your memorandum of July 13, 1989, to Samuel J. Chilk on the same subject. In summary, we do not believe that SECY-89-197 departs from earlier Commission direction to pursue generic resolution of the key policy issues associated with the DOE advanced reactor concepts. The staff still intends to pursue generic resolution of the key issues associated with the DOE-sponsored advanced designs prior to finalizing the SERs on those designs. However, such generic resolution is dependent upon additional information from DOE, and the staff has recommended (via SECY-89-021, dated January 25, 1988) issuing the SERs in draft form now to provide our insights gained to date in the review. The Commission concurred in this action in a memorandum from S. Chilk to V. Stello dated February 27, 1989. Therefore, in a manner similar to the issuance of NUREG-1338, "Draft Safety Evaluation Report for the Modular High Temperature Gas-Cooled Reactor," we believe the draft SER for PRISM can be issued prior to our planned revision of SECY-88-203 "Key Licensing Issues Associated with DOE Sponsored Advanced Reactor Designs."

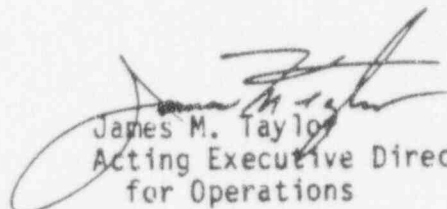
I believe this approach and action is appropriate, given the nature and magnitude of the issues involved. Design specific application, based on the generic resolution of these issues, would then be addressed in each final SER, which would be provided for Commission review prior to issuance. I also believe that this action is consistent with our intent to pursue resolution of LWR severe accident issues on a design specific basis, since the Commission has provided generic guidance in this area via the Severe Accident Policy Statement.

In the enclosure, we provide answers to the seven questions given in your memorandum which we hope will resolve your concerns. I should also note that we will shortly be submitting the draft SER for the Sodium Advanced Fast Reactor (SAFR) for Commission review. Chapter 3 of this SER also contains

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material based on SECY-88-203; however, since DOE has stopped work on that design, we do not plan to finalize our SER. The purpose of issuing the SAFR SER as a draft would be to document our work done to date.


James M. Taylor
Acting Executive Director
for Operations

Enclosure:
As stated

cc: Chairman Carr
Commissioner Roberts
~~Commissioner Rogers~~
OGC
ACRS
SECY

Enclosure

Answers to Questions Contained in July 13, 1989
Memorandum from James R. Curtiss to Samuel J. Chilk

Question 1. With SECY-88-203 now withdrawn from Commission consideration, how would the staff propose that the Commission proceed in establishing a generic Commission policy on safety issues for advanced reactors, in a manner consistent with the Commission's earlier directives on this subject?

Answer SECY-88-203 "Key Licensing Issues Associated with DOE Sponsored Advanced Reactor Designs" was not permanently withdrawn from Commission consideration. In accordance with Mr. Chilk's memorandum of November 14, 1988 to Mr. Stello, we plan to revise SECY-88-203 and resubmit it after we have received and reviewed new information from DOE on the MHTGR containment issue. After Commission action on the revised SECY-88-203, we plan to finalize the SERs to be consistent with this action. This plan for resolution of the containment and other policy issues associated with the DOE advanced concepts was described in SECY-89-021 "Issuance of Draft Safety Evaluation Report (SER) for the Modular High Temperature Gas-Cooled Reactor (MHTGR)" (January 25, 1989) and responded to via an SRM dated February 27, 1989. Consistent with the direction in this SRM, the MHTGR draft SER was issued as NUREG-1338 and the draft SER for PRISM was prepared for release in a similar fashion. This is also consistent with our original plan for review of the DOE designs (as described in SECY-86-368 dated December 10, 1986) which included receiving

Commission guidance on those items of a policy nature prior to finalizing the SERs.

The issues raised in SECY-88-203 resulted from our review of the three conceptual designs submitted by DOE for review under the Commission's Advanced Reactor Policy Statement. In SECY-88-203 we attempted to describe the general approach and criteria being used by the staff in the review of the DOE concepts as well as recommend for Commission consideration criteria applicable to those specific issues with policy implications (i.e. those issues resulting from fundamental differences in traditional approaches to reactor safety which are key to the viability of the designs). Specifically, these issues are the range of events which need to be considered in the design, the use of a mechanistic siting source term, containment and emergency planning. These issues result from the differences in the way safety is achieved in the DOE advanced designs versus current LWRs and addressing them. The preapplication conceptual stage is an integral part of DOE's objectives for the review. The approach and criteria discussed in SECY-88-203 were developed in a generic fashion for application to the DOE designs because the review approach and issues raised by these designs were sufficiently similar to warrant treatment generically. In addition, as described in SECY-88-203, the staff committed to provide (subsequent to completion of the SERs on the DOE concepts) a recommendation on the need to codify, via rulemaking, a general licensing approach

and framework for advanced reactors built upon the approach and criteria in SECY-88-203. In this way, a generic Commission policy applicable to the review of advanced reactors could be formalized and, if appropriate, could address the specific policy issues raised as a result of the review of the DOE concepts.

Question 2.

SECY-88-203 was withdrawn because of a concern over DOE's approach to containment for the NPR/MHTGR. If, as it appears, DOE should decide to require a containment on the NPR/MHTGR for policy reasons, what bearing does that decision have on the approach that the staff would recommend on the MHTGR containment issue for safety reasons? Are these two approaches irreconcilable from a safety standpoint, particularly in view of the fact that the approach in SECY-88-203 does not foreclose the possibility of requiring a conventional containment structure?

Answer

If DOE decides to require a containment on the NPR/MHTGR for policy reasons, the staff would carefully take into account the basis for the decision, and would attempt to sort out any technical and safety aspects involved in the policy from the non-technical and non-safety aspects. It is likely that any policy decision by DOE will, in fact, have some bases in technical and safety concerns. For example, defense-in-depth is in the final analysis a matter of policy, but it involves technical and safety considerations. A system could have a high degree of safety based on fault prevention, but have little or no provision for mitigation of the fault, i.e., defense-in-depth.

The question then would be if such a system was adequately safe. The answer to this question, we believe, involves technical and safety matters, but in the final analysis is a policy decision.

The question of public acceptance is in large part a matter of policy. In the case under discussion, the burden of justifying why it is acceptable to have a commercial plant without a containment structure when the DOE production reactor would have one will ultimately fall on NRC and the applicants. Whatever the final decision turns out to be, the staff believes that technical and policy considerations can not be totally separated, and that the basis in each consideration must be made very clear in the staff recommendation to the Commission.

Question 3.

What progress has been made in resolving the MHTGR containment issue with the Department of Energy? If this issue is not resolved, how would the staff propose that it be addressed by the Commission in a manner that can be applied generically to all advanced reactor designs?

Answer

No substantive progress toward resolving the MHTGR containment issue with DOE has been made to date. We have not received the additional information from DOE on the MHTGR containment, and it may not be received until as late as September 1989. Following our review of this material, we expect to revise and resubmit SECY-88-203 for Commission review and guidance. Following Commission action on the revised SECY-88-203, we would plan to

issue final SERs for the MHTGR and PRISM (since DOE has stopped work on SAFR no final SER is planned) which would reflect and be consistent with Commission guidance on the key policy issues. As stated previously, we believe this plan is consistent with the Commission's earlier directives on this subject. At the present time, the staff has addressed the containment and other policy issues in the draft SERs by application of the criteria described in SECY-88-203. However, appropriate caveats and disclaimers have been added in the draft SERs to indicate the status and limitations associated with the sections which address the policy issues. If resolution on the containment issue is not reached with DOE, the staff would still plan to submit a revised SECY-88-203 to the Commission addressing the containment and other policy issues, factoring in any insights gained from our expected interactions with DOE on this subject.

Question 4. Aside from the containment issue, the staff proposed generic criteria in SECY-88-203 to address a number of other issues, including accident selection, siting source term calculation and use, and adequacy of offsite emergency planning. Are these issues directly and inextricably related to the containment question or could the Commission proceed independently with the establishment of generic positions on these questions.

Answer While the other generic issues addressed in SECY-88-203 are not inextricably related to the containment issue, they have been addressed in SECY-88-203 as a related group and, we believe,

they are sufficiently interrelated that they should be resolved as a group. For example, the present containment and emergency planning proposals are directly dependent on acceptance of mechanistic siting source terms and agreement on the range of events which must be considered in the design.

Question 5.

Chapter 3 of the proposed draft PRISM SER, entitled "Review Approach and Criteria," sets forth the general and scientific licensing criteria employed by the staff in evaluating the PRISM design. How do these criteria differ from what was proposed in SECY-88-203?

Answer

The review criteria in Section 3.1 of the draft PRISM SER are identical to the criteria proposed in SECY 88-203, as are the criteria in Section 3.2 of the draft MHTGR SER. Plant specific application of these criteria are discussed in the draft SER and, in some cases, lead to differences in staff positions on certain aspects of the design (for example, the bounding events for accident analysis were developed using the approach described in SECY-88-203 but are design specific due to unique features and characteristics of the each of the advanced concepts).

Question 6.

Chapter 1 of the draft MHTGR SER, entitled "Conformance with Criteria and Policies," sets forth the general and specific licensing criteria employed by the staff in evaluating the MHTGR design. How do these criteria differ from what was proposed in SECY-88-203? How do they differ from the criteria used in evaluating the PRISM design?

Answer

The criteria given in SECY-88-203 were applied consistently in the review of all three DOE advanced concepts. The response to Question 5 also addresses this question.

Question 7.

In commenting on SECY-88-203, the Advisory Committee on Reactor Safeguards noted that the staff had very little to say on the issue of operation and staffing, observing that this was a "serious oversight." Is the issue of operation and staffing a matter that lends itself to generic resolution, in a manner similar to that proposed for other generic issues addressed in SECY-88-203?

Answer

SECY-88-203 does not substantially address operations and staffing, and we agree that certain aspects of this matter could lend itself to generic resolution; for example, in areas of operator responsibilities and protection. However, the issues selected for discussion in SECY-88-203 were those believed fundamental to establishing the viability of the DOE advanced concepts. Although important, the staff did not consider operations and staffing to be an issue whose resolution is key to the viability of the DOE designs. Therefore, operations and staffing issues, like many other important topics, are treated on a design specific basis in the SERs.

The generic aspects of operations and staffing for advanced reactors could be discussed in the forthcoming revision to SECY-88-203 if the Commission requests, but it is believed that its equivalent level of importance to the conceptual design

assessments is not as fundamental as the four key issues that have been proposed for policy evaluation by the Commission.

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