NUCLEAR ENERGY INSTITUTE

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VICE PRESIDENT,
TECHNICAL REGULATORY

November 21, 1994

Mr. William T. Russell, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Mr. Russell:

The purpose of this letter is to inform you of recent action taken by the industry, through the NEI Nuclear Strategic Issues Advisory Committee (NSIAC), with regard to severe accident management. On November 4, 1994, at its first meeting, the NSIAC approved the following formal industry position that each utility will follow:

> *Assess current capabilities to respond to severe accident conditions using Section 5 of NEI 91-04, Revision 1, "Severe Accident Issue Closure Guidelines."*
>
> *Implement appropriate improvements identified in the assessment, within the constraints of existing personnel and hardware, on a schedule to be determined by each licensee and communicated to the NRC, but in any event no later than December 31, 1998.*

The NSIAC is made up of the Chief Nuclear Officers from each of the 44 operating commercial nuclear power plant licensees plus equivalent level management from NSSS Vendors and major Architect-Engineers. This committee has been assigned the authority by the NEI Executive Committee to establish formal industry positions on technical/regulatory issues. Formal industry positions are binding on all members once adopted by the NSIAC.

A copy of the formal position and the associated implementing guidance is enclosed. We plan to document it in Revision 1 to NEI Report 91-04, "Severe Accident Issue Closure Guidelines" (formerly NUMARC 91-04). It reflects slight modifications to the draft previously provided to you in my letter of May 10, 1994, to accommodate a few suggestions from senior industry executives, the most significant of which is an extension in the implementation date of 18 months. There are several reasons for this.

Most importantly, the extended date allows utilities with multiple sites to accomplish this in series, if desired. We do not view it as a significant disruption. Throughout the IPE and IPEEE processes, the NRC staff has clearly recognized the need for flexibility in utility

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completion dates. Many IPEEEs will not be submitted until 1997. Considering relative priorities and the need to use existing resources and staff, more time is warranted for some utilities.

Secondly, several key components of the industry's generic severe accident management guidance materials are yet to be completed. For example, strategy changes for BWRs and training materials for BWRs and PWRs are still under development. Nonetheless, we are encouraging those licensees who have completed their IPEs and IPEEEs to proceed to implement the industry guidance to achieve closure of the severe accident issue.

The formal position and implementing guidance represent the culmination of a substantive NRC staff and industry effort. They provide a clear indication of the industry perspective and intentions. Consistent with the request made in Dr. Thadani's letter, we have asked each licensee to provide the cognizant NRC staff project manager a target date for implementing this industry position for each site, in writing, by March 31, 1995.

By this action, the industry has demonstrated its commitment to appropriately address the severe accident management topic as the final piece in an ambitious and thoughtful response by each licensee to the practical objectives outlined in the Commission's Policy Statement on Severe Reactor Accidents. However, it remains crucial that senior utility and NRC staff management provide the necessary leadership that will ensure the effort can be accomplished in an efficient and cost-effective manner.

While we believe NRR has a clear understanding regarding the industry's philosophy and approach toward severe accident management, a need exists for us to collectively communicate those intentions to the utility and NRC staff in the field. We anticipate further dialogue with your staff in the months ahead to do whatever is necessary to ensure smooth implementation and promptly resolve any issues that may arise.

We hope that the NRC staff finds this action by industry consistent with your plans for closure of the severe accident issue. Should you or the Commission desire further information, please don't hesitate to call me.

Sincerely,

William H. Rasin

WHR/rs/ec
Enclosure

c: James Taylor, NRC
Ashok Thadani, NRC

INDUSTRY POSITION ON SEVERE ACCIDENT MANAGEMENT

I. ADDITION TO NEI 91-04, REVISION 1 (formerly NUMARC 91-04) FOREWORD:

Section 5.0 of this document is intended for the use of Nuclear Energy Institute (NEI) utility members in association with the formal industry position to be approved by NEI Utility Members. The formal industry position is:

EACH LICENSEE WILL:

ASSESS CURRENT CAPABILITIES TO RESPOND TO SEVERE ACCIDENT CONDITIONS USING SECTION 5 OF NEI 91-04, REVISION 1, "SEVERE ACCIDENT ISSUE CLOSURE GUIDELINES."

IMPLEMENT APPROPRIATE IMPROVEMENTS IDENTIFIED IN THE ASSESSMENT, WITHIN THE CONSTRAINTS OF EXISTING PERSONNEL AND HARDWARE, ON A SCHEDULE TO BE DETERMINED BY EACH LICENSEE AND COMMUNICATED TO THE NRC, BUT IN ANY EVENT NO LATER THAN DECEMBER 31, 1998.

II. REVISION TO NEI 91-04, REVISION 1, SECTION 5:

5.0 SEVERE ACCIDENT MANAGEMENT CLOSURE

5.1 Scope of Severe Accident Management

Accident management consists of those actions taken during the course of an accident by the Emergency Response Organization (ERO); specifically plant operations, technical support and plant management staff, in order to:

- Prevent the accident from progressing to core damage;
- Terminate core damage progression once it begins;
- Maintain the capability of the containment as long as possible; and
- Minimize on-site and off-site releases and their effects.

The latter three actions constitute a subset of accident management referred to as severe accident management, or more specifically, severe accident mitigation. Post-TMI actions and IPE insights have already addressed most aspects of preventing core damage. The

focus of the industry effort is to provide guidance where Emergency Operating Procedures (EOPs) are no longer effective, or revise EOPs if appropriate.

The goal of severe accident management is to enhance the capabilities of the ERO to mitigate severe accidents and prevent or minimize any off-site releases. The objective is to establish core cooling and ensure that any current or immediate threats to the fission product barriers are being managed. To accomplish this the ERO should make full use of existing plant capabilities, including standard and non-standard uses of plant systems and equipment.

Significant interaction among utility, INPO, EPRI, vendor Owners Groups, NRC, and other recognized experts has produced the foundation of actions and plant response from which plant-specific severe accident management guidance can be developed (see References 11, 12 and 13). These actions can be categorically divided into elements similar to those described by the NRC in SECYs 88-147 and 89-012 (References 3 and 9).

5.2 Severe Accident Management Closure Process

The severe accident management closure process for a given licensee is recommended to consist of the following steps (illustrated in Figure 6):

- Evaluate industry-developed bases and Owners Group severe accident management guidance (SAMG) along with the plant IPE, IPEEE and current capabilities, to develop severe accident management guidance for accidents found to be important in your plant as screened with the criteria provided in Section 2.0. Consider other generic and plant-specific information (e.g., NRC and industry studies, PSA results, etc.) as appropriate;

- Interface SAMG with the plant's Emergency Plan;

- Incorporate severe accident material into appropriate training programs; and

- Establish a means to consider and possibly adopt new severe accident information from licensee self assessments, applicable NRC generic communications, PRA studies, etc.

Because this is an industry initiative, there are no specific regulatory criteria. Rather, industry has defined its goals and objectives by its actions relative to severe accident management. These include, but are not limited to, performance and submittal of IPE and

IPEEE, development of generic (Owners Group) SAMG, and numerous interactions at various levels among industry, NRC and vendor personnel. The following element descriptions provide a tool that may be used for focusing licensee efforts to enhance their capabilities.

5.3 Severe Accident Management Implementing Elements

5.3.1 Severe Accident Management Guidance/Strategies for Implementation

Guidance is to be provided for use by ERO personnel in assessing plant damage, planning and prioritizing response actions, and implementing strategies that delineate actions inside and outside the control room. Strategies and guidance will be interfaced with the utility EOPs and Emergency Plans.

The guidance should include: (1) an approach for evaluating plant conditions and challenges to plant safety functions; (2) operational and phenomenological conditions that may influence the decision to implement a strategy, and which will need to be assessed in the context of the actual event; and (3) a basis for prioritizing and selecting appropriate strategies, and approaches for evaluating the effectiveness of the selected actions.

The strategies should make maximum use of existing plant equipment and capabilities, including equipment and alignments that may not be part of the typical "safety-related" systems. Critical resources and procedures, if necessary, to implement strategies will be identified and reasonably available, but need not be prestaged. Rather, what is important is a clear delineation of the flow of information, identification of the decisions that have to be made, and some up front consideration of the viability of implementing the more significant strategies (e.g., not detailed procedures, but a small number of lists that include a description of system lineups, benefits and negative impacts, interlocks to be overridden, special equipment required, etc.).

5.3.2 Training in Severe Accidents

Severe accident training should be provided for ERO personnel commensurate with their responsibilities defined in the Emergency Plan. In particular, training is recommended for those specific personnel with the following severe accident assessment and mitigation responsibilities:

- evaluators responsible for assessing plant symptoms in order to determine the plant damage condition(s) of interest and potential strategies that may be utilized to mitigate an event

- decision makers in the ERO designated to assess and select the strategies to be implemented

- implementers responsible for performing those steps necessary to accomplish the objectives of the strategies (e.g., hands-on control of valves, breakers, controllers, and special equipment)

Existing training programs already address most of the tasks associated with strategy implementation by implementers (e.g., licensed and non-licensed operators, maintenance personnel, radiation protection specialists, etc.). Thus, it is expected that severe accident considerations should be a minor addition to the scope of their training, commensurate with the frequency, importance and difficulty of the potential tasks. The areas of emphasis and level of detail in the implementers training will be different than that provided to the evaluators or decision makers.

Suggested learning objectives and related training materials will be developed using a systematic approach to training and include training techniques proven successful with similar materials.

5.3.3 Computational Aids for Technical Support

ERO personnel should be provided computational aids, as appropriate, in estimating key plant parameters and plant response relative to accident management decisions. The aids should be easy to use and need not be computer based.

5.3.4 Information Needed to Respond to a Spectrum of Severe Accidents

Provide an awareness, and encourage use, of instrumentation that is reasonably expected to be available for assessing plant status. The availability and survivability of the information source and the ability of these sources to provide indication of sufficient accuracy for the intended use should be considered. Alternative, indirect means for providing necessary information should also be considered.

5.3.5 Delineation of Decision-Making Responsibilities

Ensure responsibilities for authorizing and implementing accident management strategies are delineated as part of the Emergency Plan. The ERO personnel task descriptions should be modified to specify responsibilities. Nonetheless, the decision-making process needs to be flexible enough to accommodate situations beyond the scope of currently recognized situations.

5.3.6 Utility Self-Evaluation

Self-evaluation of the licensee's severe accident response capability is recommended to ensure its feasibility and usefulness. Upon creation of the plant-specific SAMG, an initial evaluation should be performed to ensure the material has been integrated into the licensee's emergency response capability without adversely affecting emergency response.

Subsequently, periodic table-top and/or inter-facility mini-drills should be utilized to ensure that ERO personnel are familiar with the use of the SAMGs and with the interfaces and delineation of responsibilities between EROs during SAMGs use. The objective of the table-top and/or inter-facility mini-drills should be training, evaluating and improving the in-plant, severe accident management response capability. These activities should include exercising of preventive or mitigative measures as well as appropriate critiques immediately following the drill to capture lessons learned (e.g., assess performance and perform a technical assessment of any useful preventive or mitigative measures identified during drills).

There is no need for such mini-drills to be part of the graded Emergency Plan exercises; in any case, evaluations of severe accident strategy use should be separate from these formal exercises.

6.0 REFERENCES (additions to existing list in NUMARC 91-04)

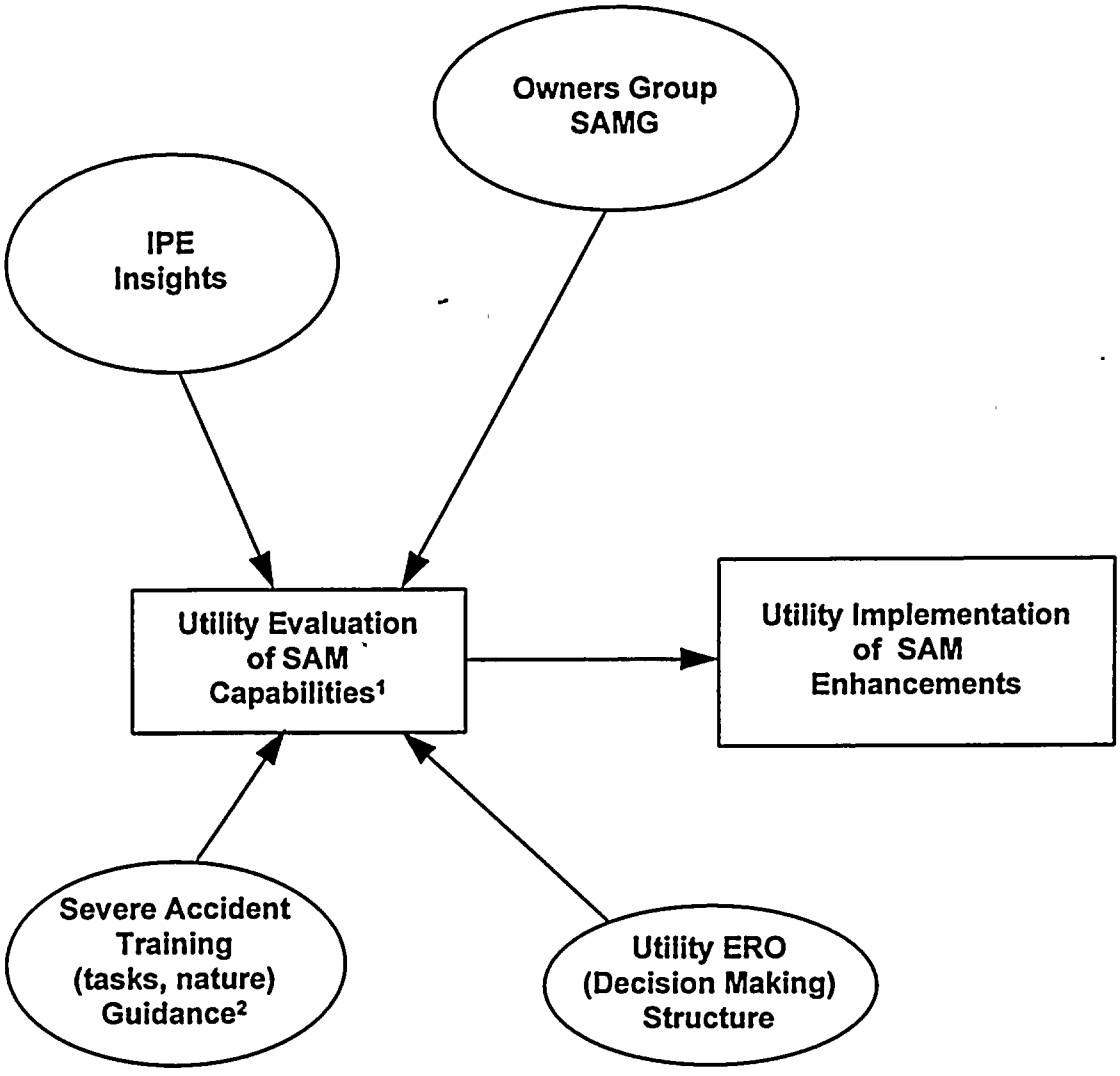
11) NUMARC 92-01, A Process for Evaluating Accident Management Capabilities, April 1992.

12) EPRI Report TR-101869, Severe Accident Management Guidance Technical Basis Report, December 1992.

13) NSSS Owners Group-Specific Accident Management Guidance Reports, to be published.

Figure 6

Severe Accident Management Closure Process



Key:

SAM = Severe Accident Management
SAMG = Severe Accident Management Guidance
ERO = Emergency Response Organization
IPE = Individual Plant Examination

1. Utilize NEI Report 91-04 Revision 1 (formerly NUMARC Report 91-04) section 2 screening criteria to assist in determining amount of effort warranted. NUMARC Report 92-01 offers insights as to appropriate attributes for given accident management elements.

2. Generic industry task analysis, learning objectives and activities and lesson plans will be available.