ENCLOSURE 3

NUCLEAR MANAGEMENT AND RESOURCES COUNCIL

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William H. Rasin
Vice President & Director
Technical Division

April 8, 1991

Mr. Frank J. Congel
Director, Radiation Protection
& Emergency Preparedness Division
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Congel:

Enclosed for your information is the draft NUMARC Severe Accident Management Issue Resolution Paper that was outlined in a senior management interaction between members of the NUMARC Severe Accident Working Group and senior NRC Staff management on February 14, 1991. We indicated at that time our willingness to share the draft paper with Staff in the near future.

As we emphasized during the February 14 meeting, the paper is a draft and, after being finalized, will be subject to revision. The reason for this is that the paper provides a current summary of industry's planned development activities and understandings relating to accident management which are still evolving like those of Staff. We appreciate the cooperative spirit demonstrated by Staff in working toward a resolution of the severe accident management issue. It is with that spirit in mind that we are providing this draft paper. We believe it will serve to make for a more constructive dialogue between the Staff and industry on specific accident management issues.

Should you have any questions, please do not hesitate to call either myself or Dave Modeen.

Sincerely,

William H. Rasin

DJM/KLS
Enclosure

cc: C. Reed, CECo
L Walsh, New Hampshire Yankee

SEVERE ACCIDENT MANAGEMENT ISSUE RESOLUTION PAPER

The Nuclear Management and Resources Council (NUMARC) serves as the United States nuclear power industry's principal mechanism for conveying industry views, concerns, and policies regarding industry-wide regulatory issues to the Nuclear Regulatory Commission (NRC) and other government agencies as appropriate. In particular, NUMARC is responsible for coordinating the combined efforts of utilities holding NRC operating licenses or construction permits for nuclear power plants on all regulatory aspects of operational and technical safety issues affecting the industry.

In July 1988 NUMARC established a Severe Accident Working Group (SAWG) to coordinate industry activities and serve as the focal point for industry-NRC interactions in attaining resolution and closure of the severe accident issue. Those activities include definition, development and implementation of severe accident management programs.

The purpose of this paper is to discuss the coordination activities occurring under the SAWG's auspices regarding severe accident management and the expected integration of the resulting products. That integrated package is intended to assist a utility in developing practical enhancements to the accident management capabilities at each of their nuclear plants in response to a forthcoming NRC generic letter currently scheduled for issuance in 1992.

SEVERE ACCIDENT MANAGEMENT ISSUE RESOLUTION PAPER

TABLE OF CONTENTS

NUMARC SEVERE ACCIDENT MANAGEMENT ISSUE RESOLUTION PAPER

MARCH 1991

NUCLEAR MANAGEMENT AND RESOURCES COUNCIL, INC.

1776 EYE STREET, N.W., SUITE 300

WASHINGTON, DC 20006

1. INTRODUCTION AND OVERVIEW

In its policy statement on severe reactor accidents, the U.S. Nuclear Regulatory Commission concluded that "operating nuclear power plants require no further regulatory action to deal with severe accident issues unless significant new safety information arises to question whether there is adequate assurance of no undue risk to the public health and safety." The value of each licensee conducting a limited-scope, accident safety analysis to discover instances (i.e., outliers) of particular vulnerability to core melt or to unusually poor containment performance, given core melt accidents," was also recognized.

In November of 1988, NRC Staff issued Generic Letter 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities - 10CFR50.54f." In that document, besides requesting each existing plant to perform a systematic examination to identify any plant-specific vulnerabilities to severe accidents, the NRC Staff stated its intent to request at a later date licensees develop a severe accident management program for each plant. The industry also recognized the importance of applying the insights gained from these analyses to enhance existing utility capabilities to prevent or mitigate severe accidents. Thus, NUMARC was tasked with coordinating an industry effort in severe accident management with the following objective:

> Provide for systematic, efficient and cost-effective implementation of certain insights and results from an Individual Plant Examination (IPE) and other relevant information regarding severe accidents for the purpose of enhancing a utility's capabilities during an accident to take preventive and mitigative actions.

In August 1989, NUMARC issued the EPRI-developed draft Guidelines for Evaluating Accident Management Capabilities, which provides a flexible framework for assessing the overall AM program for an individual site, to the NRC and utilities for comment. Recognizing the need for specific technical guidance in order to complete an evaluation process, a second phase to develop explicit technical accident management guidance, relying heavily upon several EPRI projects underway, was initiated.

In a series of meetings coordinated by NUMARC, representatives of the four NSSS Owners Groups met to review the state of development of technical accident management (AM) guidance and explore the role of the owners groups in developing technically based severe accident management guidance. As a result, in January 1990, a proposal to manage an integrated approach toward accident management guidance development was presented to, and subsequently endorsed by, the SAWG. Briefly, the approach consists of:

(1) EPRI developing a generic Severe Accident Management Guidance Technical Basis Report (SAMG TBR) by utilizing a NUMARC/Joint Owners Group forum to guide the EPRI technical work,

(2) Each owners group developing owners group-specific accident management guidance by taking advantage of the EPRI SAMG TBR, and

(3) Individual utilities developing and implementing an appropriately enhanced plant specific accident management capability, taking into account the IPE results, self-evaluation results (using for example the Guidelines), and the owners group-specific accident management guidance.

More recently, the potential involvement of other industry organizations, such as INPO, to assist in defining guidance or practices regarding other aspects of accident management, as appropriate, has been suggested. However, at the point the nature and extent of involvement of such industry organizations has not yet been determined.

Finally, an example process that a utility might follow to identify and implement a plan to enhance accident management capabilities is discussed in Section 7 and depicted in Figure 1. The figure provides a utility task-oriented representation of the application and interface of generic and plant-specific information. This contrasts significantly with the organization-oriented tasks discussed in Sections 2 through 6 of this paper. As will be discussed in the following sections, there are several generic guidance documents under development to interface with plant-specific information. The activities and responsibilities to complete development of these documents, and ultimately achieve the tasks outlined above, are described in the text that follows.

2. NUMARC SEVERE ACCIDENT WORKING GROUP (SAWG) AND NUMARC STAFF RESPONSIBILITIES

Objective: To coordinate industry activities and serve as the focal point for industry-NRC interactions in attaining resolution and closure of the severe accident issue, which includes the definition, development and implementation of the associated generic aspects of severe accident management programs.

Background: The industry concurs with the NRC Staff view that enhancements to existing accident management programs to address prevention and mitigation of severe accidents at plants could be beneficial. Recognizing the close link between the clearer perspective regarding severe accidents that many utilities will achieve through performance of an Individual Plant Examination (IPE) and the capabilities of plant staff to respond to a severe accident, it seemed appropriate that the same NUMARC working group providing guidance on IPEs also have responsibility for defining, developing and the associated generic aspects of implementing accident management programs.

The SAWG is charged with advising NUMARC Staff in establishing an effort to bring the accident management issue to closure in a timely manner. In turn, the NUMARC staff is to coordinate its efforts with other related industry activities in order to avoid duplication of effort and to attain a unified industry approach. The SAWG is also responsible for maintaining an active dialogue with the appropriate regulatory staff to exchange information that will assist in bringing the issue to closure, stay abreast of the regulatory activities, and apprise them of the industry's status on the issue. Therefore, the SAWG provides policy guidance regarding the development of generic severe accident resource documents, NRC interfaces, and oversight of the JOG AMAC activities and progress toward resolution of the severe accident management issue.

Products: Severe Accident Management Issue Resolution Paper

Action Items and Schedule:

	Specific Item	Responsibility	Due By	Status
2.1	Review JOG positions on AM administrative scope & content issues	NUMARC SAWG	3Q90	Complete
2.2	Brief Senior NRC Staff Management on Status of AM Program	NUMARC Staff/ SAWG	1Q91	Complete
2.3	Incorporate approved admin scope & content positions in the AM Issue Resolution Paper	NUMARC Staff	1Q91	Draft Complete

	Specific Item	Responsibility	Due By	Status
2.4	Review and approve revised NUMARC "Process for Evaluating Accident Management Capabilities"	NUMARC SAWG	3Q91	
2.5	Brief ACRS on Industry AM Program	NUMARC Staff	as appropriate	
2.6	Brief Commissioners on Industry AM Program	NUMARC Staff/ SAWG	as appropriate	
2.7	Provide SAMG TBR to NRC Staff and have informal discussion	NUMARC Staff/ JOG AMAC	4Q91	
2.8	Provide SAMG TBR to OGs and Industry	NUMARC Staff	11/91	
2.9	Obtain NRC comments on the EPRI SAMG TBR	NUMARC Staff	1Q92	

3. JOINT OWNERS GROUP ACCIDENT MANAGEMENT ADVISORY COMMITTEE (JOG AMAC)

Objective: To develop quality generic technical AM guidance while minimizing the financial and manpower burden on individual utilities. Specific items to be addressed include:

(1) Development of generic technical bases for AM guidance.

(2) Development of positions as to what constitutes the appropriate scope and content of items addressed within the framework of an utility AM program.

(3) Share information on owners group activities in the AM area.

Background: The JOG AMAC was established to effectively utilize the industry's knowledge and expertise in developing strategies to address the severe accident management issue and provide a coordination mechanism for industry groups addressing the generic aspects of the issue. Through this common development approach, the effort necessary for plant-specific implementation by plant staff will be minimized. This in turn will facilitate resolution of any differences between industry and NRC on the generic aspects.

Enhancements to existing accident management capabilities are considered a beneficial activity, yet one with provisions that can easily extend beyond that which is warranted. The JOG AMAC program is intended to: (i) ensure continued support by the industry at large, (ii) define a level of consistency desired by the individual owners groups, and (iii) provide a level of emphasis in balance with other plant staff priorities.

To accomplish the objective of providing constructive, yet practical and balanced recommendations for improving plant accident management capabilities, a key task of the JOG AMAC is to define the administrative scope and content of an AM program and communicate these to NRC Staff. Issues such as level of verification and validation, operator responsibility for AM information on requalification exams, level of detail, etc., are addressed in order to bound the scope of the AM guidance consistent with the intent of the Commission's Severe Accident Policy Statement. The JOG AMAC suggested scope and minimum recommended level of implementation in the areas encompassed by SAMG are provided in Appendix B to this paper. The general philosophy and these positions have been reviewed and accepted by the NUMARC SAWG, with the understanding that it is a evolving document.

The JOG AMAC will review the results of the SAMG technical bases developed by EPRI. This guidance will address issues from core melt and beyond, consistent with our current state of knowledge. The work product will be a resource document suitable for use in development of owners group-specific AM guidance.

Additionally, the understanding of severe accident phenomena relative to plant damage conditions and candidate accident management actions to be provided

in the EPRI SAMG TBR will allow the owners groups to develop specific strategies that should encompass the dominant severe accident challenges for each class of plants.

Prior to publishing final documents, it is important that the relationships between each of the generic accident management resource documents and the envisioned utility application process be well defined and tested. To assure the effective integration of the draft industry AM resource documents, the JOG AMAC will sponsor table-top application of a representative portion of these materials in conjunction with two members (preferably one PWR and BWR) IPE insights. The scope of such an effort will be deliberately small, yet sufficient to test the clarity and depth of the guidance being given. Such an application exercise will be conducted utilizing the candidate high level actions from the EPRI SAMG TBR in lieu of the owners group-specific guidance in order to support timely completion of the generic activities and interactions with NRC Staff.

Dialogue with NRC Staff on each of these items will be supported by the JOG AMAC, as necessary. Gaining NRC Staff understanding of each of these efforts is important, because an indication of NRC Staff acceptance of the generic guidance and framework is needed prior to the owners groups expending significant resources developing vendor specific materials.

Products: Appendix B to this document - Positions Relative to Administrative Scope and Content of Accident Management Guidance

Action Items and Schedule

	Specific Item	Responsibility	Due By	Status
3.1	Establish draft positions on admin. scope & content issues	per assignments	2Q90	Complete
3.2	Formulate and review the Admin. Scope and Content Positions	JOG AMAC/ NUMARC	1Q91	Draft Complete
3.3	Conduct table top applications of industry AM documents.	JOG AMAC	4Q91	
3.4	Review Design Review Committee recommendations on the EPRI SAMG TBR. Accept and issue for NRC review.	JOG AMAC	4Q91	
3.5	Provide SAMG TBR to NRC Staff and have informal discussion	NUMARC Staff/ JOG AMAC	4Q91	

4. EPRI RESPONSIBILITIES AND SUPPORTING PRODUCTS

Objective: Establish a systematic process within the context of an accident management framework for assessing the adequacy of a plant's existing accident management capabilities. Compile the generic technical basis from which each owners group can develop AM guidance addressing core melt and beyond. Included would be identification and description of the important physical phenomena during and after a core melt event.

Background: The industry recognizes the potential usefulness of SAMG structured to concentrate on the actions necessary for recovery from a severe accident state and mitigation of accident consequences beginning with core melt.

The fundamental nature of a melting core and limited options for mitigation should make it possible to identify a set of generic phenomena consistent with our current state of knowledge to be considered when developing SAMG. The description of the processes and important issues should document the tradeoffs, cautions and limitations involved in various recovery actions. The expected response to basic generic high level candidate actions (e.g., adding water to melted core debris after vessel failure) should be included. As much quantitative information as possible should be provided. Results should be presented in a form conducive to development of owners group-specific SAMG by the individual owners groups. To ensure quality and robustness, the work will be reviewed by the Engineering Design Review Committee (EDRC).

Products: EPRI Severe Accident Management Guidance Technical Basis Report

EPRI/NUMARC A Process for Evaluating Accident Management Capabilities

Action Items and Schedule:

	Action Item	Responsibility	Due By	Status
4.1	Review results of RP-3051 Proof-of-Concepts	EPRI (Oehlberg)	1Q90	Complete
4.2	Provide OGs an outline of draft RP-3051 Reports	EPRI (Oehlberg)	2Q90	Complete
4.3	Provide OGs and EDRC the draft SAMG Technical Basis Report (TBR)	EPRI (Oehlberg)	3Q90	Complete
4.4	Complete engineering design review of the first draft of the SAMG TBR	EPRI & OGs	1Q91	Complete
4.5	Revise the draft SAMG TBR in response to EDRC findings	EPRI (Oehlberg)	2Q91	
4.6	Complete engineering design review of SAMG TBR	EPRI & OGs	3Q91	

5. INDIVIDUAL OWNERS GROUP RESPONSIBILITIES

Objective: Development of owners group-specific SAMG based upon the EPRI SAMG TBR and within the recommendations of the accident management administrative scope and content positions (Appendix B).

Background: There are two discrete areas in which the OGs need to assess and/or develop owners group-specific guidance:

(1) Enhancement of the existing EPGs (up to the point of core damage), as appropriate, and

(2) From core damage through achievement, if possible within existing resources, of a stable condition (based on the EPRI SAMG TBR).

The first area covers the actions of plant staff up to the onset of core damage, which are generally associated with the procedural tasks identified in plant-specific EOPs. Although there are differences in structure and nomenclature among the owners group-specific guidelines (EPGs, ERGs, or GEOGs), the major objective of each remains the same: prevent inadequate core cooling. Nonetheless, variations do exist in vendor designs and the development of AM guidance will also vary. Each owners group has assessed the treatment by their particular EPGs of the accident management strategies outlined in Generic Letter 88-20, Supplement 2, "Accident Management Strategies for Consideration in the Individual Plant Examination Process." It is expected that any further work will draw heavily from IPE insights and NSSS-specific designs and analyses. Owners groups will consider changes to EPGs, ERGs, or EOP Technical Basis Documents, as a result of issues identified through the OG-specific EPG Maintenance Feedback programs (IPE insights) or as a result of the assessment of interfaces between the EPGs and proposed SAMGs.

For the second area, onset of core damage and beyond, the technical basis for the AM guidance will be available, with the main effort focusing on the translation of the EPRI technical basis information into owners group-specific guidance. Although a level of consistency among owners groups is a likely byproduct of the industry approach to resolution of the accident management issue, there is no attempt to impose consistency or uniformity. As noted above, each owners group is embarking in the severe accident management area with preexisting conditions, such as EOPs and training programs. Further detail on the industry approach toward development of guidance pertinent to responding to degraded core conditions is the subject of Sections 2, 3 and 4.

Product: Owners group-specific SAMG

Action Items and Schedule:

	Specific Item	Responsibility	Due By	Status
5.1	NUMARC coordinate NRC Staff review of owners group (OG) & JOG AMAC work products	NUMARC Staff	Varies	
5.2	Support Engineering Design Review of the draft EPRI SAMG TBR	EDRC/OGs	3Q91	
5.3	Preliminary plans for OG-specific SAMG	OGs	4Q91	
5.4	OG-specific SAMG (with specific technical information)	OGs	**	
5.5	Submit OG-specific SAMG to NRC Staff for information	OGs	**	

** Approximately one year after issuance of the EPRI SAMG TBR.

6. REGULATORY INTERFACES INTENDED TO SUPPORT ACCEPTANCE OF THE INDUSTRY'S ACCIDENT MANAGEMENT ISSUE RESOLUTION

Objective: Achieve NRC Staff acceptance, by reference in a generic letter, of the industry approach toward enhancement of utility accident management capabilities.

Background: In November 1988, NRC Staff issued Generic Letter 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities." Included in the generic letter was a statement by NRC Staff of their intent to request each licensee to develop enhanced accident management capabilities at a later date for the specific purpose of reducing severe accident risks at each plant. Additionally, in April 1990, the NRC Staff issued Generic Letter 88-20, Supplement 2, encouraging utilities to evaluate as part of the IPE process a set of strategies intended to reduce the likelihood of plant transients or accidents developing into core melt events. Finally, another generic letter supplement containing overall guidance on the scope and content of accident management programs is scheduled for mid 1992. This latter supplement is presently intended to endorse, if found acceptable by Staff, the guidance being developed by industry and coordinated by NUMARC.

NUMARC will act on behalf the industry to bring closure to the accident management issue. Periodic meetings with NRC Staff will be scheduled by NUMARC to permit discussion of draft materials as they are being developed by industry as well as allow NRC Staff to provide feedback on industry's products as well as their own research.

NUMARC, with support of the JOG AMAC or SAWG, as appropriate, will be the point of contact for resolving higher level concerns with the NRC on the SAMG TBR and facilitating consistency in desirable areas. Individual Owners Groups are responsible for leading what, if any, interactions with NRC Staff on the owners group-specific SAMG.

Action Items:

6.1 Staff issues Generic Letter Supplement on "A" Strategies

6.2 Staff feedback on industry products:

NUMARC A Process for Evaluating AM Capabilities
EPRI Severe Accident Management Guidance Technical Bases Report
Owners Group-specific SAMG

6.3 Staff issues Generic Letter Supplement on AM Framework

7. EXAMPLE UTILITY INTEGRATION AND APPLICATION OF GENERIC AND PLANT-SPECIFIC ACCIDENT MANAGEMENT INFORMATION

Objective: To support efficient utility integration and implementation of the generic industry accident management guidance being developed with plant-specific information in order to identify appropriate enhancements to existing accident management capabilities.

Background: Each utility is responsible for determining the extent it will apply the generic guidance documents at each of its nuclear power plants. Although it is the objective of the generic industry effort to provide an effective and efficient accident management enhancement implementation process, application of all or any part of the products is voluntary. Therefore, the discussion provided herein is an example of how these guidance documents may be utilized, but it in no way obligates utilities to any particular course of action.

Many utilities will probably adopt the SAMG developed by their owners groups. For a utility adopting the owners group SAMG, the steps might be:

(1) Evaluate the owners group AM guidance against current capabilities and decide how much of it to implement;

(2) Review the owners group SAMG against plant-specific severe accident considerations (e.g., as identified in the IPE) to ensure that unique scenarios or conditions are properly addressed. This will also include a review of plant features critical to the strategies to ensure that the generic guidance would apply to the specific plant;

(3) Identify the specific plant features and support (as outlined above) that can be used to make use of the guidance in the event of a severe accident. This will include organizational aspects such as responsibilities and communications;

(4) Identify any additional steps that could be taken to make better use of equipment, support decision making, support staff augmentation, etc. This might include a review of prevention;

(5) Make technical/management decisions concerning the feasibility of implementing these additional steps;

(6) Establish a mechanism for ensuring the accident management program reflects plant changes and new information about severe accidents, as appropriate; and

(7) Document and maintain utility files to support the subsequent considerations related to accident management.

The role of the draft EPRI/NUMARC A Process for Evaluating Accident Management Capabilities (currently available in draft form as Guidelines for

The role of the draft EPRI/NUMARC A Process for Evaluating Accident Management Capabilities (currently available in draft form as Guidelines for Evaluating Accident Management Capabilities), is to serve as an acceptable method for integrating the available information. Figure 1 provides a graphic illustration of the items possibly needing integration. The process will help the utility integrate the other available products, including the owners group accident management guidance, plant specific information, and any other technical information that is developed in support of this effort. Central to the plant-specific assessment is an evaluation of existing capabilities within the context of severe accident response. This process is not unique and we believe there are other approaches that would lead to implementation of an appropriate AM program. It is anticipated that an utility interdisciplinary team, with representation from engineering, IPE, training, operations, and emergency planning activities would perform the evaluation of their plant's current capabilities and the need for any additional capabilities.

For the utility choosing to maximize its use of the generic AM resource documents discussed in this paper, NUMARC, with the assistance of the JOG AMAC, plans to illustrate how they may be integrated when developing a plant-specific accident management program. It should include a discussion of the purpose and content of each report prepared in support of accident management issue resolution and the interfaces among them. In addition, any insights derived from the test applications (See Section 3) of the accident management products discussed in this paper would be incorporated into the approach discussion.

Products: Example approach for utilizing the generic industry AM documents and IPE results.

Action Items and Schedule:

	Action Items	Responsibility	Due By	Status
7.1	Define the relationships between the generic AM resource documents.	NUMARC Staff/ JOG AMAC	2Q91	
7.2	Provide an approach for utilizing the generic documents and IPE results.	NUMARC Staff	1Q92	

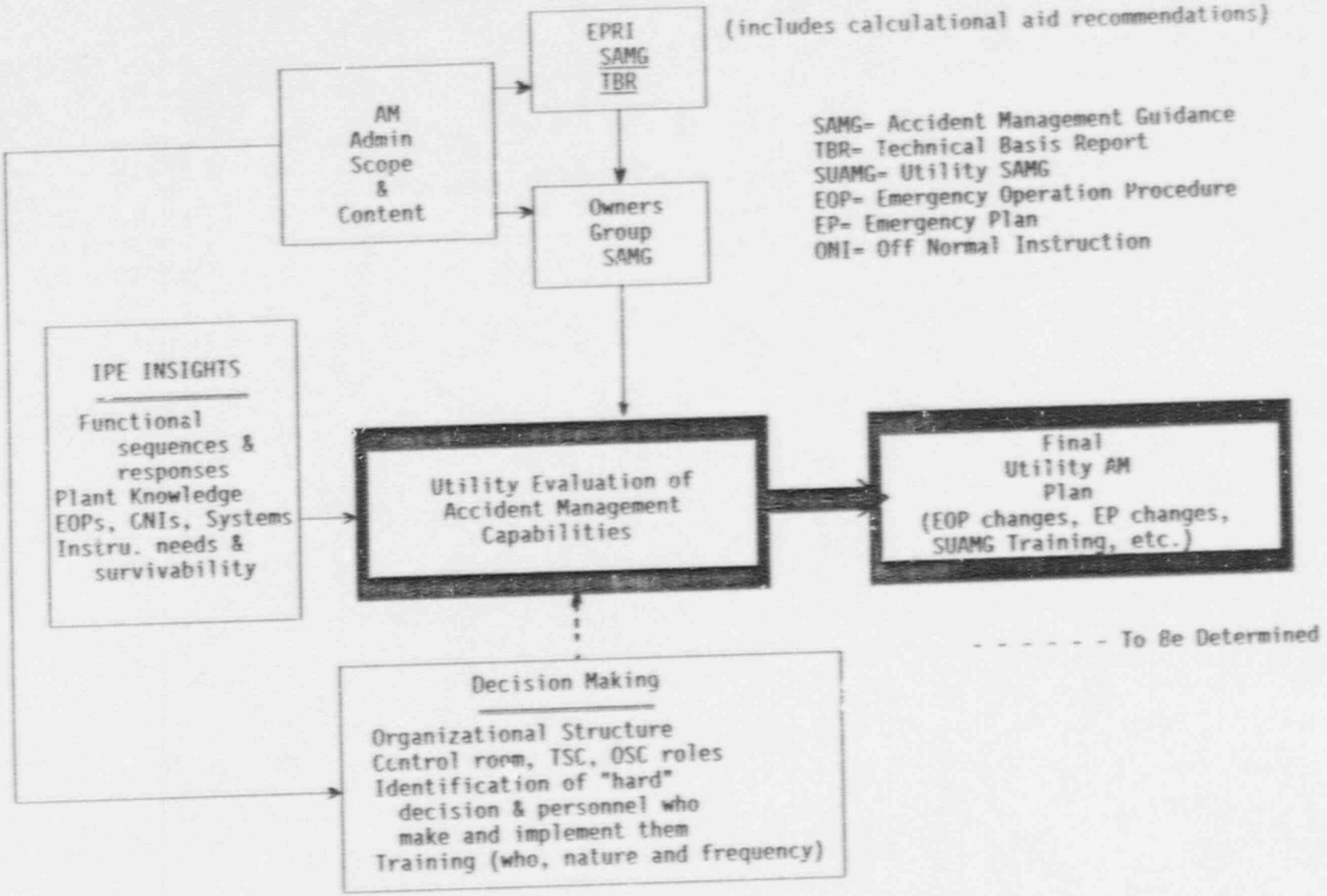

Figure 1. Process of Accident Management Plan Development for a Utility Using Guidance Developed by Industry Organizations

APPENDIX A

SEVERE ACCIDENT DEFINITIONS

Severe Accidents are those that result in catastrophic fuel rod failure, core degradation and fission product release into the reactor vessel, containment or the environment.

Accident Management refers to actions taken during the course of an event by the plant operating and technical staff to: (1) prevent the event from progressing to core damage; (2) terminate core damage if it begins; (3) maintain containment integrity for as long as possible; and (4) minimize offsite releases.

The EPRI/NUMARC A Process for Evaluating Accident Management Capabilities provides utilities a candidate approach for identifying plant-specific enhancements to a particular plant's existing accident management capabilities.

Utility Accident Management Plan outlines the actions to be pursued by the utility to enhance its existing accident management capabilities and is comprised of:

- A schedule for the development and implementation of the AM enhancements.
- A delineation of responsibilities within the utility organization for developing and implementing the AM enhancements.

Severe Accident Management Guidance Technical Basis Report (SAMG TBR) will be developed by EPRI for the NUMARC JOG AMAC to generically define the technical bases of AM guidance. This will serve as a consistent technical basis from which each NSSS owners' group can develop Severe Accident Management Guidance for use by individual utilities.

Severe Accident Management Guidance (SAMG) is to be developed by each NSSS owners group to facilitate diagnosing and arriving at a safe stable state following a severe accident including the mitigation of possible radioactivity releases. These guidelines may be used by individual utilities to develop plant specific Severe Utility SAMG.

Severe Utility Accident Management Guidance (SUAMG) is the plant-specific guidance developed to assist the plant operating and technical staff in implementing strategies for the best use of the existing plant capabilities to diagnose, respond to, and recover from a severe accident.

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APPENDIX B (3/26/91)

POSITIONS RELATIVE TO ADMINISTRATIVE SCOPE & CONTENT OF ACCIDENT MANAGEMENT GUIDANCE

The NUMARC JOGAMAC has developed the following positions in order to define the administrative scope and content of accident management guidance.

PROGRAMMATIC ISSUES:

1. Flexibility - Although the generic accident management guidance technical bases report will strive to have universal applicability, different formats for the owners group-specific SAMG are permissible (and expected).

   Owners group-specific guidance should be developed for use by either or both of the following groups of plant staff: (1) Operations (Control Room and Operation Support Center [OSC] personnel), and (2) Technical and/or Engineering Support Center (TSC/ESC) personnel.

   During the owners group assessment of candidate high level actions from the EPRI SAMG TBR, the information developed for inclusion in the SAMG should be evaluated for its time dependency and its usefulness in unambiguously identifying plant damage conditions. This does not mean one should attempt to key plant utilization of any given strategy during an actual event to time. Rather, the structure and content of the guidance should be consistent with the resources available to utilize that guidance. For example, for many nuclear power plants one hour is a reasonable upper bound of the time necessary from the declaration of an Alert condition (in accordance with the Emergency Plan) until activation of the TSC. Thus, events or plant damage conditions that could exist prior to that one hour expiring and are expected to demand human action, should have associated strategies described in sufficient detail to formulate a procedure-type response; possibly even included in Emergency Operating Procedures (EOPs).

   Alternately, when the time dependency is shown to be more than one hour before any event or plant damage condition is likely to exist following declaration of an Alert condition, the information may be presented in a more general form, as would normally exist in the TSC and/or ESC. Such an approach is permissible, because it: (1) Delegates some of the burden of responding to severe accidents from the Operations to the Technical Support Staff, and (2) Maintains the TSC and/or ESC guidance in a structure that permits creativity in the face of uncertain conditions and may require more involved decision making that is not likely to be easily proceduralized.

2. Updating of Reference Documents - It is not intended that this appendix reflecting generic positions across the owners groups be updated

(maintained) once the development of the industry AM resource documents is completed. Since the joint owners are basically covering only scope and content, a future program change will not be necessary for JOG guidance.

Appropriate technical information from the SAMG TBR will be referenced in the OG-specific SAMG report. EPRI intends to regularly reassess the robustness of the information contained in the SAMG TBR, and will keep the owners groups appropriately informed.

Each NSSS owners group presently has a system for review and update of their EPGs/ERGs. Owners group-specific and utility-specific SAMG should have some process for triggering reviews/updates, because of the SAMG interface with EOPs and intent to provide guidance from the point where the EOPs leave off. The method or program for future changes will be specific to the new style and content.

The following are the suggested areas for changes and the disposition of the changes:

category	criteria	disposition period
Technical Error	Change is necessary to correct a technical error to permit correct implementation.	Expedite revision.
New technical Information	Change will provide clarification to, or improve, guidance description.	Implementation on a case by case basis.
Editorial Errors	Change is of obvious editorial nature such that disposition is not necessary to correct proper implementation of the guidance.	Determined on a case by case basis

3. Utility AM Program Configuration Control - Maintaining long term those AM enhancements identified and implemented as part of the evaluation process is a utility- or plant-specific responsibility, as it is for many other design and operations issues. Although there is no need to develop generic administrative or configuration control mechanisms that would be unique to this issue, it is expected that utility- or plant-specific programs will be maintained in the same manner as present plant-specific documentation/configuration control.

4. Quality Assurance / Quality Control - The approach should be consistent with that employed in performing the IPE. Engineering judgement is appropriate. With respect to equipment survivability, some degree of confidence that it works under the service environment, etc. should exist. The level of assurance would be consistent with that described in Generic Letter 88-20. Application of a formal QA program will occur if the SAMG

makes changes to current procedures and designs already subject to formal QA requirements.

5. Verification and Validation - The objective of verification will be to ensure the usefulness of the technical guidance provided - both generic industry and owners group-specific guidance. Thus, the EPRI SAMG TBR will have a technical review independent of the contractor. This review is being accomplished by an EPRI sponsored Engineering Design Review Committee consisting of members from academia, consulting companies and each of the four owners groups. It is intended that the owners groups adopt the generic document and make exceptions where necessary. Each utility would review the owners group-specific guidance to ensure the applicability of the guidance to its plants. Verification of this guidance should not be comparable to the level provided during EUP development.

   Validation is difficult due to limited capability of existing simulators to model severe accident response. Other techniques such as walk-throughs are possible.

6. Interface with NRC - NUMARC will manage the interactions with NRC with assistance from JOG AMAC members on the issues generic to the four owners groups. Discussions with Staff concerning the owners group-specific SAMG will be managed by the respective owners group with assistance from NUMARC. Further review by NRC Staff of utility application of the guidance is not necessary if not significantly deviated from the owners group effort. Ultimately, each utility will make a commitment to NRC Staff as to the degree of implementation.

   The type of NRC Staff acceptance should be clearly specified. In this arena, the industry desires an endorsement of the scope and depth of the guidance being developed, rather than specific Staff approval. Endorsement as used in this Appendix is meant as NRC Staff acceptance of the guidance provided as being adequate, without the need for further embellishment by Staff reviewers or inspectors. For example, the net affect of any severe accident phenomena is generally agreed upon and the plant response is accepted as an action that will, on balance, better the plant's position.

STRATEGIES, PROCEDURES AND ACCIDENT MANAGEMENT GUIDANCE:

1. Interface between SAMG and Emergency Plan (EP) - A relationship will exist between the SAMG and EP. However, the current EP structure is satisfactory and SAMG should be viewed as an additional resource for use by emergency personnel. Consequently, to the extent SAMG is implemented in the control room, OSC, TSC or ESC, further delineation of responsibilities and associated training will occur.

   There is no need to reflect specific severe accident sequence conditions in the range of initiating conditions and Emergency Action Levels used to determine the proper event classification. The existing classification scheme and criteria already envelope severe accidents.

2. Utility Adoption of SAMG - Each plant must assess whether the particular issue of concern is applicable to them. Each of the owners group should assist in this effort by identifying the key design differences that impact the use of a given SAMG strategy. As much as practical, provide generic and owners group-specific technical bases to avoid construction of similar reference material by utilities.

   Deviations from the owners group-specific SAMG need not be documented. Such deviations can be based upon engineering judgement and need not be defended with the rigor expected for deviations from the ERGs/EPGs.

3. Definition of SAMG Format - It need not, and probably will not, be uniform across the owners groups. The objective should be to have similar content in the guidance, not format. The format should be compatible with the owners group-specific EPGs/ERGs and, if necessary, facilitate any transition from one form to another.

4. EOP Cutoff and Transition from EOPs - It is premature to identify the specific method, or in some cases even the need, for transitioning from EOPs to SAMG. However, several pertinent items should be considered.

   An abrupt transition from EOPs to SAMG should be avoided unless the EOPs are no longer applicable. More appropriate is the response in which possible strategies (SAMG) to be employed will be assessed well before any are selected for implementation. This would imply performance of actions in EOPs in parallel with monitoring information in the SAMG. On the other hand, an owners group may elect to place strategies directly within the existing EOP structure, if appropriate. The degree of overlap may be owners group-, scenario- and strategy-specific.

   Specific criteria as to when to implement SAMG would be helpful and should attempt to ensure that such actions do not occur prematurely. For example:

   a. As long as an event is proceeding within the scope of the EOPs, stay with the EOP for plant operation. The TSC can use the SAMG for monitoring.

   b. When the plant conditions go beyond the scope of the EOP, the TSC can then provide plant operation guidance using the SAMG.

DECISION MAKING AND TRAINING ISSUES:

1. Organizational Structure - The Emergency Plan is presently structured to support decision making in response to severe accident conditions. Many of the tougher decisions which may be identified in the SAMG are probably already called out in the Emergency Plan. Five examples of situations to consider providing more explicit guidance, as part of the SAMG, with respect to decisions are:

   a. Departure from EOPs and SAMG (or other procedures).

   b. Determination of actions beyond EOPs, if appropriate, or the interface between EOPs and SAMG.

   c. Selection (prioritization) of recovery options when more than one option exists.

   d. Provide guidance for venting or other actions that could result in offsite releases.

   e. Conflicting priorities of public health and safety versus the plant/employee safety.

2. Training - Although there is general acknowledgement that it is premature to identify specific training criteria, it is also recognized that the systematic approach to training utilized in accredited utility training programs provides a structured, consistent process for identifying training needs. In order to ensure the training burden imposed by the added scope of severe accident management, it is important that the training be focused on, but not confined to, risk-significant areas identified by the IPE and owners group-specific SAMG. Once given more details on the accident management guidance, it will be possible to identify appropriate areas and levels of training. Still, the following points are worthy of note:

   a. Personnel To Be Trained - To be determined by the tasks identified in the SAMG. The focus should be on personnel responsible for plant damage condition assessment and SAMG strategy determination and implementation, regardless of whether such responsibilities are delegated to control room, OSC, TSC or ESC personnel.

   b. Nature and Frequency of Training - To be determined by the tasks identified in the SAMG. The effort to be expended by utilities in conducting the training must be commensurate with the risk and the personnel skills and knowledge necessary to perform the actions.

   c. Licensed Operator Training and Exams - The impact of training licensed operators in accident management functions and the subsequent inclusion of such material in the knowledge base requirements for qualification and requalification examinations should be carefully assessed. Current training requirements already pose a significant burden on the operating crews and training staff.

INFORMATION NEEDS:

The actions to be taken in the SAMG should dictate the direct or indirect information needs. Computational aids and instrumentation availability review information should be geared toward the specific symptoms or information requirements identified for the given situation. An assessment of how best to provide that information should then be made. Such an approach should be in step with the philosophy espoused by NRC Staff and the NUMARC SAWG of minimizing hardware changes.

FORMAT AND CONTENT OF AM GUIDANCE:

The following types of information should be considered, regardless of the form, for inclusion in the owners group-specific AM guidance:

1. Plant symptoms.

2. Plant damage condition interpretation.

3. Strategies

   3.1 Purpose (i.e., specific task to be accomplished and reason)

   3.2 Implementation Requirements (criteria for performing the strategy, information and equipment needs)

   3.3 Expected plant response (i.e., feedback to gauge plant response to strategy implementation)

   3.4 Cautions (potential downside risks or specific dangers)

4. Basis (give examples and summary of technical justification)

   Note: The basis may be separate from the actual SAMG, but will be available for TSC/ESC personnel.

The form of the guidance is owners group and situation dependent and beyond the scope of the JOG AMAC effort.