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November 21, 1990

SECY-90-384

For: The Commissioners

From: James M. Taylor
Executive Director for Operations

Subject: STATUS OF IMPLEMENTATION PLAN FOR CLOSURE OF SEVERE ACCIDENT ISSUES AND STATUS OF THE INDIVIDUAL PLANT EXAMINATIONS (IPE)

Purpose: To inform the Commission of the status of the implementation of the integration plan for closure of severe accident issues and the status of the IPE program.

Summary: Significant progress on implementation of the plan for closure of severe accident issues has been made since the last update. The staff will continue to inform the Commission of any significant slippage in schedules due to technical or budget problems. Enclosure 3 shows the latest schedules for key elements of the plan. The staff plans to continue providing semiannual updates of progress in this area.

Background: On May 25, 1988, the staff presented to the Commission the "Integration Plan for Closure of Severe Accident Issues," SECY-88-147. There are six main elements of this plan which include: Individual Plant Examinations, Containment Performance Improvements, Severe Accident Research, External Events, Improved Plant Operations, and Accident Management. The Commission requested that the staff provide periodic updates of the status of the implementation plan in a Staff Requirements Memorandum, dated April 20, 1989.

The Commission was provided with previous updates on October 3, 1989, in SECY-89-308 and on May 18, 1990, in SECY-90-180. The Commission was also briefed on December 14, 1989, on this subject.

Discussion: Major progress since the last update involves issuing the final generic letter on the Containment Performance Improvement (CPI) Program, issuing 5 out of 12 reports documenting contractor analyses performed in support of the CPI Program, issuing for

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comment a draft generic letter and guidance document for licensees on the Individual Plant Examinations for External Events (IPEEE), conducting a workshop on the draft IPEEE generic letter and guidance document, and initiation of review of the first two IPE submittals, Yankee Rowe and Millstone 3. Updates of these and other elements of the plan are discussed below.

Containment Performance Improvement Program

All major elements of the CPI program have been completed. Generic letters (GL) have been issued to licensees addressing the hardened vent for all BWR Mark I containments (GL 89-16, dated 9/1/89) and requesting that other improvements be considered in the IPE (Supplement 1 to GL 88-20, dated 8/29/89 for BWR Mark I containments and Supplement 3 to GL 88-20, dated 7/6/90, for the other containment types). The only remaining activity under this program is to complete and issue for information a series of NUREG/CR technical reports which document the analyses and evaluations done by the staff and its contractors in assessing the various containment types. These reports address the potential vulnerabilities identified (characterization reports), the potential fixes evaluated (enhancement reports) and analyses of the effects of potential improvements (parametric reports). It is expected that these reports will provide licensees with information they may find useful in assessing their plants as part of the IPE. To date five out of the planned twelve reports have been issued with the remainder of the reports scheduled for issuance by December 1990. Enclosure 1 provides a complete listing of these reports.

Individual Plant Examinations for Internal Events

To date, two IPE submittals have been received and are under review by the staff. These are the Yankee Rowe and the Millstone 3 submittals. The staff review of the Yankee Rowe submittal has included a meeting with the licensee in May 1990 and a set of questions were sent to Yankee Rowe in July 1990. Currently, the staff is awaiting a response to the questions. The Millstone 3 submittal was received in late September 1990 and staff review has just begun. In addition, one licensee (Wisconsin Electric) has notified us that their IPE submittal for Point Beach Units 1 and 2 will be delayed from March 31, 1992 to December 31, 1992 due to the loss of their contractor who has filed for bankruptcy.

As part of the review of the Yankee Rowe submittal, the staff has updated our plans for data storage and retrieval and has reflected these changes in the draft staff review plan documents.

In a staff requirements memorandum dated May 10, 1990, the Commission requested that the staff explore innovative ways of using the IPEs to enhance our understanding of the adequacy of our

regulations through comparison with the Safety Goals. Staff discussion with licensees on this issue was suggested to secure their cooperative involvement. Accordingly, discussions were held with NUMARC and a formal request for industry participation was sent to NUMARC on September 21, 1990. We will keep the Commission informed of the industry response.

Individual Plant Examinations for External Events

In May 1990 the staff completed work on a draft generic letter and draft guidance document (NUREG-1407) to be sent to licensees which describes the scope, acceptable methods and reporting requirements for the IPEEE. These draft documents were provided for Commission review in SECY-90-192, dated May 30, 1990, and approved for issuance for comment via a staff requirements memorandum, dated July 17, 1990. The draft documents were issued for public comment on July 25, 1990. In September 1990 the staff conducted a workshop on the draft generic letter and NUREG-1407 to solicit comments and answer questions concerning their content. Approximately 210 representatives from industry, state agencies and the public attended the workshop. Many questions, comments and concerns were expressed and Enclosure 2 summarizes the most significant of these. Of most concern to licensees was the cost of doing the IPEEE and the requested three year schedule for completion. The staff is currently revising the generic letter and NUREG-1407 to incorporate clarifications and changes resulting from feedback received at the workshop. As noted in my memorandum of August 16, 1990, the schedule for issuing the final generic letter and guidance document has slipped from November 1990 to March 1991 due to scheduling difficulties with the workshop and the request for further ACRS and Commission review. Accordingly, the proposed final documents are expected to be to the Commission for review in February 1991 and issued in March 1991.

After completion of the final IPEEE generic letter and NUREG-1407 the staff will develop a review plan for the IPEEE submittals. It is expected that the approach for review of the IPEEE will follow closely that developed for review of the internal events IPE submittals and will address, as necessary, those items related to the Systematic Evaluation Program discussed in SECY-90-343, dated October 4, 1990.

Accident Management

A Commission paper entitled, "Status of Accident Management Program and Plans for Implementation" (SECY-90-313) was issued on September 5, 1990. As described in that paper, industry has initiated a coordinated effort on accident management. That effort will involve the participation of NUMARC, EPRI, and each of the vendor owners groups. The involvement of these organizations should help ensure compatibility between accident management

enhancements and existing capabilities to deal with accidents, but will delay issuance of a generic letter until 1992. This schedule should still allow for the development and implementation of utility accident management plans in conjunction with other activities related to closure of severe accident issues. The staff is continuing its research program on accident management to develop a technical basis for evaluating the industry's activities.

Two workshops were held at UCLA to discuss uncertainties in the outcome of various accident management strategies in BWRs and PWRs. The discussions included phenomenological, equipment, systems, and operational (including human factors) uncertainties. Attendees included participants from industry, NRC contractors, academia, and foreign governments.

Severe Accident Research

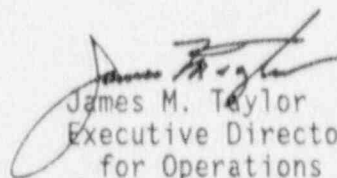
The staff has continued with severe accident research as described in the Severe Accident Research Program Plan (NUREG-1365).

One of the major recent accomplishments was the issuance of NUREG/CR-5423 as a draft for peer review. That report provided a comprehensive and integrated evaluation of the likelihood of liner meltthrough in MARK I containments. This evaluation could form the basis for the staff to develop a technical resolution to the Mark I containment melt-through issue. A large group of experts were requested to review the report and provide comments on the approach used and the quantification of the conditional probabilities. The peer reviewers' comments were reviewed by the NUREG/CR-5423 authors and their responses were provided in Appendix F to the draft report. A workshop was held on July 23-24, 1990, in Harpers Ferry, West Virginia, to discuss the peer reviewers' comments and the authors' responses to them and to determine what, if any, further comments they had. At the conclusion of the meeting, the general consensus was that the methodology was sound, but that additional research in a few selected areas was necessary to confirm Professor Theofanous' analysis conclusions. The staff is currently putting in place the necessary confirmatory research programs to address the residual issues associated with the BWR MARK I containment liner integrity and plans to further inform the Commission on the issues in the near future.

Another major accomplishment was the development of the proper scaling rationale for designing future direct containment heating (DCH) experiments. Based on the framework developed under the Severe Accident Scaling Methodology Program, Sandia National Laboratories performed detailed scaling analyses and has developed an experimental program that will assure that the experiments run

can be properly related to large plant performance. Hence, a DCH experimental program will be commenced in FY 1991.

Finally, in FY 1991, the staff will focus its review on the ongoing in-vessel core melt progression experimental and analytical programs to determine the practicality of further reducing uncertainties in this area, and then direct our research effort toward those items where a reduction in uncertainty is key to our regulatory decision making.


James M. Taylor
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Enclosures:

1. CPI Program Technical Reports
2. Summary of IPEEE Workshop
3. Severe Accident Program - Master Plan

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CPI PROGRAM TECHNICAL REPORTS

<u>Plant Type</u>	<u>Characterization Reports</u>	<u>Enhancements Reports</u>	<u>Parametric Reports</u>
Mark I	NUREG/CR-5225 and Addendum 1	—————→	
Mark II	NUREG/CR-5528	—————→	NUREG/CR-5565 (Est. 11/90) NUREG/CR-TBD (Est. 12/90)
Mark III	NUREG/CR-5529 (Est. 11/90)	—————→	NUREG/CR-5571 (Est. 11/90)
ICE	NUREG/CR-5589		NUREG/CR-5586 (EST. 10/90)
DRY	NUREG/CR-5567	NUREG/CR-5575	NUREG/CR-5630 (EST. 11/90)

SUMMARY OF SEPTEMBER 11-13, 1990 NRC IPEEE WORKSHOP

The NRC held an IPEEE Workshop on September 11-13, 1990 at the Pittsburgh Hilton in Pittsburgh, PA. The objectives of the workshop were to discuss the IPE process and to solicit questions and comments on the draft guidance for performing the IPEEE and for reporting the results of the review.

Approximately 210 non-NRC individuals attended the workshop and represented licensees, states, vendors, consultants and the public. Over 70 workshop participants participated by asking questions or presenting comments on the draft generic letter and guidance document. The following is a summary of the most significant comments, concerns, and questions raised at the workshop:

- 1) Backfit analysis: NUMARC and NUBARG believe that a regulatory analysis of the proposed IPEEE effort should be performed prior to issuance of the final generic letter and guidance document on IPEEE.
- 2) Cost estimates and resource requirements: NUMARC, NUBARG, and a few individuals expressed concerns that the IPEEE may require expenditure of resources much more than those estimated by the staff. However, PLG and NE Utilities provided estimates comparable to the staff's estimate.
- 3) Schedule and resource availability: NUMARC and a few individuals expressed concerns that completion of the IPEEE program in three years may be impossible to meet for some utilities due to the limitation of available technical resources.
- 4) Response time: NUMARC and a few individuals expressed concerns that the 60 days response time to identify the methodologies for completing IPEEE is insufficient because of the bidding process and NUMARC's continuing work on the development of alternative evaluation methodologies.
- 5) High winds, floods, and transportation and nearby facility accident: NUMARC expressed concerns about the inclusion of (1) lightning issue, (2) volcanic activities, and (3) probable maximum precipitation (PMP). NUBARG had the same concern on PMP.
- 6) Internal fires: Clarification was requested on fire IPEEE procedures for treating specific items, e.g., cable tracing, fire database availability, separation criterion, fire barriers.
- 7) Seismic events:
LLNL and EPRI seismic hazard curves: NUMARC, NUBARG, and a few individuals expressed concern about the cost regarding the staff's request for the use of two hazard curves in seismic PRAs, if chosen for the seismic part of the IPEEE. A few individuals also expressed the opinion that some efforts are needed to resolve the difference between

these two curves because the backfit analysis will depend on these curves. A few individuals expressed the opinion that licensees should be allowed to choose hazard curves for their seismic PRA.

Site-specific seismic curve: A few individuals expressed the opinion that individual utilities should be allowed to develop and use their own seismic curves, in addition to LLNL's curves, in order to satisfy their seismic IPEEE if EPRI seismic hazard curves are not available.

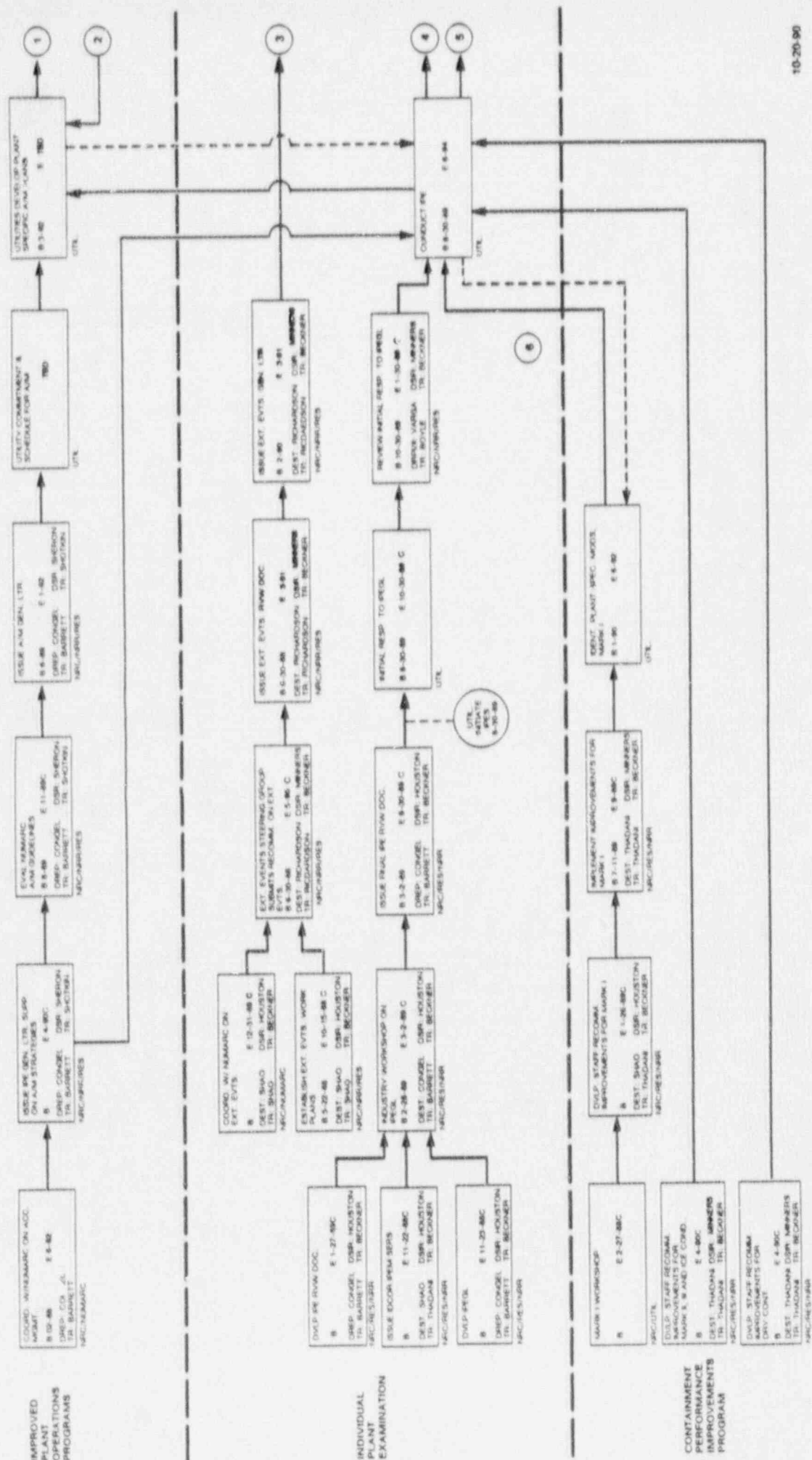
Seismic binning: NUMARC and a few individuals suggested that the plant design bases should be used in the seismic binning process.

Relay chatter: NUMARC and a few individuals expressed concerns that the relay chatter evaluation may be very costly if all relay chatter effects are to be assessed. They recommended that a minimum relay chatter evaluation, consisting of identification of vulnerable relays, be performed for plants with the highest probability of exceeding the seismic design basis.

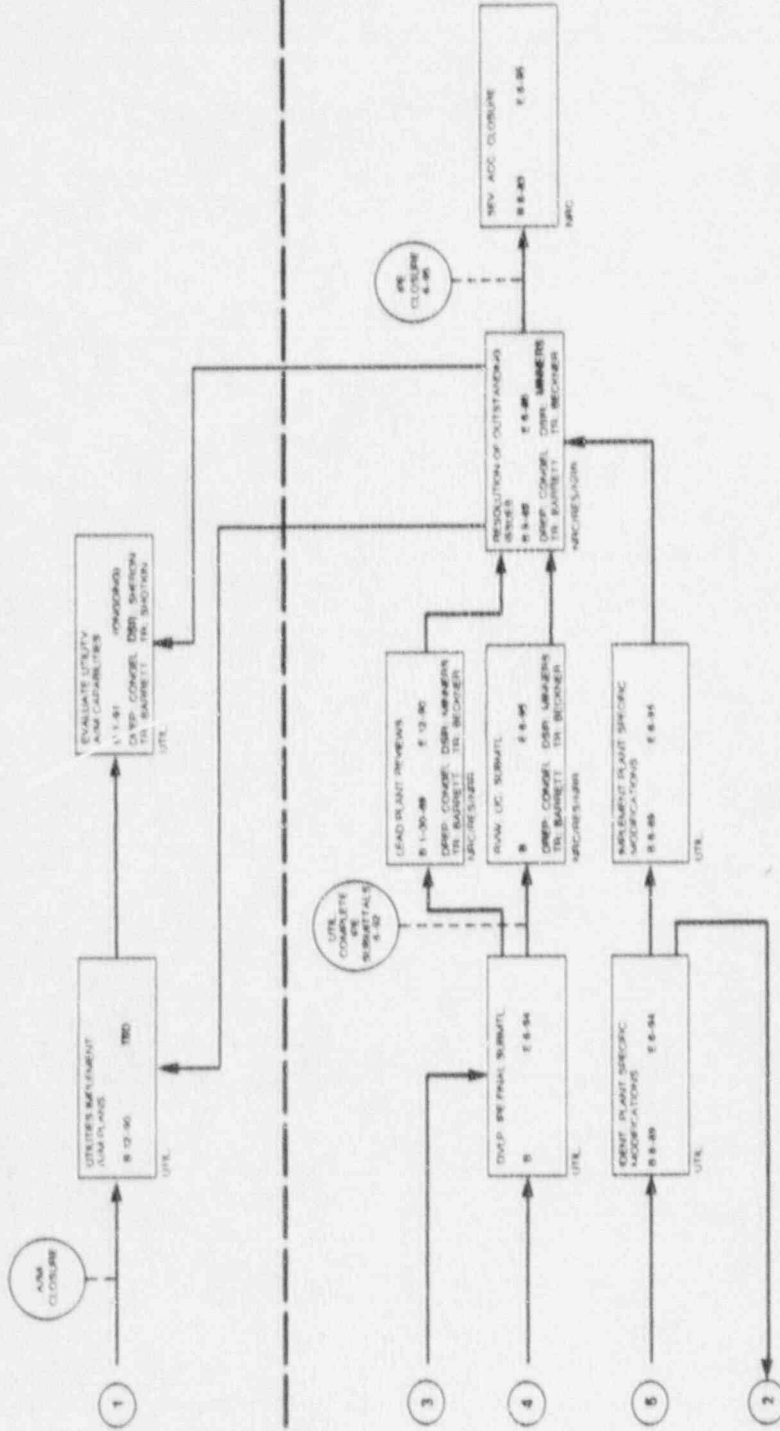
- 8) Subsumption of generic issues: NUMARC expressed its opinion that GI-131 and the Charleston Earthquake issue should not be subsumed in the IPEEE.
- 9) Reporting requirements for HCLPFs with and without non-seismic failure: A few individuals questioned the need for reporting the HCLPFs both with and without non-seismic failures.
- 10) Containment performance: NUMARC expressed its opinion that any containment performance review should be limited to isolation, structural integrity, and prevention of bypass, but no containment spray or fan cooler evaluation should be required.
- 11) IPE and IPEEE results: A few individuals provided their views that the results of IPE and IPEEE should be maintained current and used by licensees over the life of their plants.
- 12) Peer review: A few individuals stated that more guidance is needed on the requirements for peer review.

The staff provided verbal responses to many of the questions, comments, and concerns raised at the workshop. The staff is planning to treat all of the questions, comments, and concerns as public comments, which will be addressed in the process of finalizing the IPEEE generic letter and the guidance document, NUREG-1407.

SEVERE ACCIDENT PROGRAM - MASTER PLAN



SEVERE ACCIDENT PROGRAM - MASTER PLAN



IMPROVED PLANT OPERATIONS PROGRAMS

INDIVIDUAL PLANT EXAMINATION

CONTAINMENT PERFORMANCE IMPROVEMENTS PROGRAM