



Lawrence Livermore National Laboratory

NUCLEAR SYSTEMS SAFETY PROGRAM
RARE 85-008

January 17, 1985

Ms. Sarah M. Davis
Reliability and Risk Assessment Branch
Division of Safety Technology
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

RE: Options for Concluding the Review of the Seabrook Station Probabilistic Safety Assessment (SSPSA)

Dear Ms. Davis:

The draft report on the review of the SSPSA was completed in December 1984. Because of the lack of cooperation by Public Service of New Hampshire (PSNH) with our review effort, the unique characteristics of the SSPSA, and severe constraints on schedule and costs, the extent of the evaluations included in this report were not as extensive as they would have been in a more routine review project.

We have reviewed the SSPSA and our draft report in response to your request to consider if additional work of value to the NRC could be performed within the remaining funds in the contract - that is, within the approximately \$140,000 remaining of the original \$400,000 contract value. In our consideration of various alternatives, we have assumed that we obtain no cooperation from PSNH, i.e., no discussions with PSNH or their subcontractors, no new documentary information, and no answers to the questions we submitted to PSNH last year.

Several options exist to complete and close this contract. The first is simply to do nothing more than to take the draft report directly to final report status by incorporating NRC comments and performing a modest amount of technical editing to bring the draft up to minimum standards for a final report. A rough estimate for the cost of this option is \$40,000. The actual costs would be dependent on the extent of work necessary to incorporate the comments. The benefit to NRC is a final report completed at the minimum expenditure of funds.

A second option consists of performing a more complete evaluation of the SSPSA by doing the following things:

- a. Constructing new event trees on the basis of the many comments we made in the draft report.

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- b. Assessing in a qualitative way whether our comments have a quantitative effect on the dominant sequences in the SSPSA.

This "screening" would result in the identification of SSPSA dominant sequences that may be significantly affected by the comments resulting from our review, as well as those dominant sequences we believe to be unaffected.

- c. Assessing the general quantitative effect of each comment, taken one at a time, on the significantly affected sequences identified in (b) above.

These judgemental results would be presented in the following format: "a factor of three increase," or "an order of magnitude decrease" in the relevant result or parameter. It will not be possible to assess the effect of several comments taken at once, except for a few special cases, because of the complex nature of the relationships.

This effort would provide a rough quantitative assessment of the expected effects of incorporating our comments into the SSPSA analysis without actually incorporating the comments.

The benefits of the second option are that a number of insights can be developed with respect to the significance of the comments and differences we pointed out in the draft report. It would result in an identification, in a rough way, of the deficiencies in the SSPSA (defined by our comments) that would lead to incorrect conclusions regarding the relative importance to risk of various elements in the analysis, i.e., components, systems, accident sequences, and human actions. In addition, it may be possible to assess, for example, differences in the makeup of the accident sequences in our event trees that correspond to dominant accident sequences in the SSPSA, so that implicit differences in assumed accident phenomenology can be identified. This sequence comparison would also be useful in the sense of identifying sequences in our event trees having the potential to be dominant sequences that were not identified in the SSPSA.

The second option would also assess the effects of differences in the data for initiating events, system unavailabilities, support state conditional probabilities, and human factors.

This option would provide a reasonably comprehensive list of the things that are incorrect and/or unjustified in the SSPSA. An obvious example of the type of information that could be developed is provided by the station blackout scenario. In this SSPSA scenario, optimistic assumptions concerned with recovery, the time available for recovery, the leakage rate from failed reactor coolant pump seals, etc. have resulted in an extended sequence that is a small contributor to the core melt probability, even though it is a dominant accident sequence. We believe this sequence is very likely to be significantly more important than the SSPSA shows, and that this could be demonstrated, as least in a qualitative sense, with additional work.

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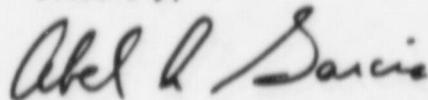
The estimated cost of this option, including incorporation of this material in the final report, is \$140,000.

It would of course also be possible to perform only parts of the effort described above as option 2, with an appropriate reduction in the total cost.

We have examined the options presented above as well as subsets of these, and also considered a more comprehensive complete reanalysis of the SSPSA, as I described in an earlier letter. Each of the options considered offers results that are beneficial in terms of better understanding of the plant, the makeup of various categories of accident sequences, and additional simplified quantitative results. Nevertheless, we believe that an NRC decision to perform this work must also consider uncertainties with respect to (a) the likelihood of NRC action being initiated on the basis of these results, and (b) the likelihood of completion of the Seabrook plants.

If you would like to discuss any of these items in more detail, please call me directly at (FTS) 423-3961.

Sincerely,



Abel A. Garcia
Principal Investigator

sr

cc: G. E. Cummings

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This "screening" would result in the identification of SSPSA dominant sequences that may be significantly affected by the comments resulting from our review, as well as those dominant sequences we believe to be unaffected.

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