

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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OCT 21 1983

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MEMORANDUM FOR: L. G. Hulman, Chief
Accident Evaluation Branch
Division of Systems Integration

FROM: A. C. Thadani, Chief
Reliability and Risk Assessment Branch
Division of Safety Technology

SUBJECT: MEMORANDUM FROM L. G. HULMAN TO A. C. THADANI, "WAPR,
SHOREHAM, MIDLAND, AND SEABROOK PRA REVIEWS",
SEPTEMBER 20, 1983

Based on your above referenced memorandum, it appears there is a misunderstanding with regard to PRAs and their use. The following remarks are meant to clarify this matter.

Probabilistic Risk Assessments are only required from construction permit applicants and for new standard designs and for Limerick and Millstone Unit 3. Individual actions requesting PRAs were initiated for Limerick and Millstone Unit 3 because they are high population density sites and, at the time of the action, it appeared that construction schedules would allow for meaningful modifications if indicated by the PRA results. The other PRAs (Shoreham, Midland, Seabrook) noted in your memorandum, were performed voluntarily by the utilities. The Shoreham PRA was introduced in the ASLB hearing by the applicant to support his testimony on equipment important to safety. The recent board finding on the Shoreham PRA noted that it was not required for licensing. More recently, the draft commission paper on the Integrated Safety Assessment Program included a requirement for plant specific probabilistic assessments for operating reactors; however, comments on ISAP suggested that the PRA be voluntary. This issue has yet to be resolved.

The scope of the PRAs varies. The NRR request for a Limerick PRA was limited to internal events only. The applicant subsequently included an external event analysis. The NRR request for a Millstone Unit 3 PRA included consideration of external events. The requirements for PRAs associated with CPs and standard designs have included consideration of external events. The Shoreham PRA does not include external events, while the Midland and Seabrook studies will include them.

The issue of external events is highly controversial because of the immaturity of the technology. The probabilistic assessment of external events is prone to much more subjective judgment than internally initiated events because of the absence of a relevant data base and concern for

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component/structure failure beyond the design point. As a result, the potential conclusions that can be drawn from external event PRAs are not as robust as those obtained for internal events. The uncertainties in both types of studies may be similar; however, the point estimate values do not have the same inherent quality (confidence). In spite of the shortcomings of the external event methodologies, we believe it is important to include them in the PRAs because they provide insights into potential vulnerabilities. The hedging associated with external events only highlights the unreliability of the bottom line numbers. BT

The PRAs have many uses both in the regulatory process and in the management of plant operations and some of these uses are listed below.

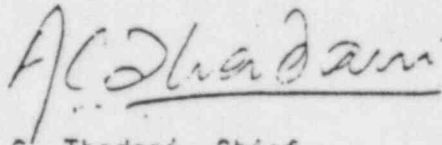
1. They provide a broader and more realistic inquiry into plant vulnerability to severe accidents than that required in licensing safety analysis.
2. They identify design and operational features that may warrant consideration.
3. They provide a plant-specific evaluation tool with which to estimate the risk reduction value and the attendant risks of alterations in design or operation.
4. They provide a basis for prioritizing plant modifications to improve safety.
5. They can be used as a safety-management tool by the utilities for training operators, reviewing procedures, and evaluating the lessons of experience.
6. Provide plant-specific input for Draft Environmental Statements.

Most of the uses rely on relative importance measures obtained from the PRA. The point estimate core-damage likelihoods obtained in PRAs are now beginning to be used, where available, in the DES. Though not required by the Commission policy statement on ERs, such use does support the case by using best available evidence. Nonetheless, the uncertainties are so large that we cannot lay claim to precision or completeness with or without the coverage of external events.

We understand your desire to strengthen the case for the defense in hearings of the ES. However, the ASLB panel at Shoreham concluded that PRAs were not necessary for licensing. Given the limited objectives and requirements of the Commission's policy statement, the limited authority of the staff to require

OCT 21 1980

PRAs or require modifications to PRAs voluntarily submitted by applicants, and the large uncertainties present in any event, we cannot endorse your suggestion that external events PRAs be required in cases such as Shoreham.



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