

March 26, 2003

MEMORANDUM TO: Mary T. Drouin  
Probabilistic Risk Analysis Branch  
Division of Risk Analysis and Applications  
Office of Nuclear Regulatory Research

FROM: John H. Flack, Chief */RA/*  
Regulatory Effectiveness Assessment and Human Factors Branch  
Division of Systems Analysis and Regulatory Effectiveness  
Office of Nuclear Regulatory Research

SUBJECT: COMMENTS ON PLAN FOR TECHNOLOGY-NEUTRAL  
REGULATORY STRUCTURE FOR ADVANCED REACTORS

On January 29, 2003, you provided an initial draft plan for a technology-neutral regulatory structure for advanced reactors. You requested a quick review of the document to ascertain whether a further meeting to discuss one or more aspects of the plan would be appropriate. Based on comments that were developed in REAHFB, a meeting was held on March 13, 2003. Our comments are provided below as a follow-on to that meeting. The tasks (1) and (3) referred to in the comments respectively relate to development of a technology neutral framework/guideline, and formulating guidance for applying the framework on a technology specific basis.

*High Level Comments:*

- Most of the work to accomplish tasks (1) and (3) has been completed and documented in NUREG/BR-0303, "Guidance for Performance-Based Regulation" and the follow-on draft research report currently being reviewed, "Application of Formal Decision Methods to Prioritization of Research to Support Review of Advanced Reactor Designs". The concepts described are part of developing an "Objectives Hierarchy," which is a structured approach to decomposing high level goals into their constituent lower level objectives. The follow-on report further develops some of the process-related aspects of the tasks, such as treatment of uncertainty and defense in depth. Hence, the tasks presented should be able to proceed much faster.
- One of the important concepts that should be addressed in such a plan should include defining a role for Design Basis Accidents (DBAs), or proposing an alternative approach. Although it may have been implicitly addressed in the plan, because of its significance to operating reactors, we believe that the issue of DBAs should be addressed explicitly.
- The association that is made between the top level goals of the Reactor Oversight Process (ROP) and the safety goals in the Safety Goals Policy Statement do not appear in NUREG-1649, "Reactor Oversight Process". Hence, there does not appear to be a link between the ROP and Quantitative Health Objectives (QHOs).

*A Partial List of more Detailed Comments:*

- The regulatory framework for Light Water Reactors (LWRs), in addition to being deterministic (hence benefitting from Probabilistic Risk Assessments) are highly prescriptive (hence benefitting from performance-based approaches). This could explain the lack of risk significance to many non-compliance findings with the use of the current framework.
- The Commission has found the ROP to be risk-informed and performance-based, but no mention is made of this.
- As an objective, the regulatory structure for advanced reactors should be consistent with the regulatory structure for current reactors.
- If the regulatory structure makes the QHOs the top level goals, the structure is risk-based and not risk-informed.

Based on our meeting, we believe the above comments will be reflected in the final draft. In general, we find your approach sound, but recommend that performance-based initiatives be addressed explicitly. Please contact me or Prasad Kadambi (x5896) should you have further questions.

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