

NRC Proposed Part 53 Preliminary Comments

NRC Workshop
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Industry Comments

- These comments are preliminary
 - Developed to support workshop discussion
 - Subject to change
 - Do not reflect NUREG -1860 Appendices issued by NRC in July
- Official industry comments will be provided by December 29



A. Plan

- **Question 2:** Are the objectives, as articulated above in the proposed plan section, understandable and achievable?
- **Response:** The objectives are understandable, and should be achievable if the risk-informed and performance based alternative to 10 CFR Part 50 is not prescriptive, and properly balances the content of the rule language with regulatory guidance.



A. Plan

Question 2 (cont)

- The Quantitative Health Objectives (QHOs) set an appropriate industry-wide level for safety performance expectations.
- Surrogate goals, and the specific approach to addressing margins and defense-in-depth are best addressed on a *design-specific* basis.
- Qualitative principles are more appropriate for inclusion in rule language.
- Surrogates to QHOs and guidance for implementing QHOs on a design-specific basis are more appropriate for guidance documents



A. Plan

- **Question 3:** Would the approach described above in the proposed plan section accomplish the objectives?
- **Response:** Before the technical basis can be completed, extensive testing is needed to confirm and/or modify, as appropriate, the technical bases.
- The approach would accomplish the objectives if Task 1 included the licensing of at least one new reactor that is not based on existing LWR technology because, until then, the generic versus reactor-specific requirements cannot be effectively determined.



A. Plan

- **Question 5:** Should the alternative regulations be technology-neutral (i.e., applicable to all reactor technologies, e.g., light water reactor or gas cooled reactor), or be technology-specific?
- **Response:** Areas where technology-specific design and operational features could significantly impact rule language (such as margins, DID, and confinement) would better be addressed in technology-specific rules or guidance.
- Before deciding on technology-neutral or technology-specific regulations, testing and modification of both the technical basis and draft rule language is appropriate.



B. Integration of Safety, Security, and Emergency Preparedness

- **Question 8:** In developing the requirements for this alternative regulatory framework, how should safety, security, and emergency preparedness be integrated?
- **Response:** We do not believe the overall approach does an adequate job at describing the integration of security and emergency planning.
- We believe that some security and EP requirements would need to be developed exclusive of the framework.

C. Level of Safety

- **Question 13:** Which of the options in SECY-05-0130 with respect to level of safety should be pursued and why? Are there alternative options? If so, please discuss the alternative options and their benefits.
- **Response:** The Quantitative Health Objectives set an appropriate industry-wide level for safety performance expectations.
 - The working draft report comments that the Level of Safety is anchored in the QHOs “embedded in the NRC’s safety goal (SG) policy statement.”



C. Level of Safety

- **Question 14:** Should the staff pursue developing subsidiary risk objectives? Why or why not?
- **Response:** Development of subsidiary objectives should be considered, as appropriate, when developing technology-specific guidance
- The development of technology neutral subsidiary objectives, other than perhaps development of a complementary cumulative distribution function (CCDF) representing frequency versus consequence, provides challenges which are better addressed on a technology-specific basis

C. Level of Safety

- **Question 15:** Are the subsidiary risk objectives specified above reasonable surrogates for the QHOs for all reactor designs?
- **Response:** The proposed non-LWR surrogates for accident prevention and mitigation of 10^{-5} /year and 10^{-6} /year respectively are not consistent with the NRC staff's 2003 proposals or the Commission's directives on level of safety.



D. Integrated Risk

- **Question 21:** Which of the options in SECY-05-0130 with respect to integrated risk should be pursued and why? Are there alternative options? If so, what are they?
- **Response:** Option 2, “Quantification of integrated risk at the site from new reactors”, should be pursued. NRC staff has typically considered risk on a per reactor basis, regardless of the number of reactors on a site, except for instances where a substantial number of common systems are associated with several reactors at a single site.



F. Containment Functional Performance Standards

- **Question 25:** How should containment be defined and what are its safety functions? Are the safety functions different for different designs? If so, how?
- **Response:** The industry believes that functional performance requirements and criteria for containment should be developed on a technology-neutral basis.
- The fission product barrier function should be viewed as a plant wide function and not necessarily limited to a pre-determined set of physical barriers or SSCs.
- The fission product barrier may not necessarily manifest itself as a pressure-retaining structure.



G. Technology-Neutral Framework

- **Question 32:** Do you agree that the framework should now be applied to a specific reactor design? If not, why not? Which reactor design concept would you recommend?
- **Response:** Yes, the framework should be tested using a design for which the calculated risk profile, margin, and DID characteristics are well established, or can be readily established.
- The testing should consider the full spectrum of potential initiating events and sequences. This includes normal operation, AOOs, DBEs, BDBEs, and severe accidents.



G. Technology-Neutral Framework

- **Question 38:** Are the DID principles discussed in the framework clearly stated? If not, how could they be better stated?
- **Response:** The approach lacks clarity. The discussion on DID, design criteria, and protective strategies are interdependent. We suggest NRC develop a simple tabulation demonstrating the inter-relationship of these three elements of the framework document
- NEI believes that additional dialogue is necessary before a practical, technology-neutral approach and description of DID requirements can be developed.



G. Technology-Neutral Framework

- **Question 43:** Is the approach used to select and to safety classify structures, systems, and components reasonable? If not, what would be a better approach?
- **Response:** Conceptually, the approach appears reasonable but is not clear. For example, it would appear that SSCs needed to maintain the frequency of a sequence below the corresponding value on the frequency consequence (F-C) curve would be classified as risk significant and therefore equivalent to “safety class”. This is expected to be more restrictive than the approaches used today.



G. Technology-Neutral Framework

- **Question 44:** Is the approach and basis to the construction of the proposed F-C curve reasonable? If not, why not?
- **Response:** The use of an F-C curve merits consideration.
 - Sections 3.2.2 and 6 do not provide a complete, understandable basis for the frequency or consequence values and the points which define the curve. Further, without a defined process for using the curve, we do not understand how a basis for establishing the function and the values for the function can be developed.
 - A CCDF could also be used as a surrogate, similar to the use of CDF and LERF as surrogates for the QHOs for existing LWRs.



I. Single Failure Criterion

- **Question 60:** Are the proposed options reasonable? If not, why not?
- **Response:** We support Alternative 1 in which the SFC is effectively eliminated and replaced by a more general approach in which the frequency and consequences of each LBE are taken into account and there are no arbitrary redundancy requirements.



Conclusion

- NRC effort to create framework is good start
 - Appropriate issues have been identified
- Need to test rule concepts
- Significant additional effort will be required by NRC and stakeholders to achieve final rule

