



United States Nuclear Regulatory Commission

Protecting People and the Environment

Workshop on Probabilistic Flood Hazard Assessment

Panel 1: Federal Agencies' Interests and Needs in PFHA

Co-Chairs:

Nilesh Chokshi, NRC and Mark Blackburn, DOE

Rapporteurs:

Christopher Cook, NRC and Marie Pohida, NRC

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Panel 1: Objective

Panel 1 will be a forum to highlight the participating Federal agencies' interests and needs regarding Probabilistic Flood Hazard Assessments (PFHA). The presentations will include NRC staff's perspectives on the development of a PFHA approach within a risk context. Other presentations will focus on probabilistic approaches presently used or under development by the participating agencies, as well as ongoing efforts to develop consensus standards.

Panel 1 Presentations

- NRC Staff Needs in PFHAFernando Ferrante, NRC
- Probabilistic Hazard Assessment Approaches: Transferable Methods from Seismic hazard.....Annie Kammerer, NRC
- Reclamation Dam Safety PFHA Perspective...J.ohn England, BOR
- FERC Need for PFHA.....David Lord, FERC
- American Nuclear Society Standards Activities to Incorporate Probabilistic Approaches.....John Stevenson & Ray Schneider, W

Panel 1 Panelists and Rapporteurs

- **Panelists:**
 - **Charles Ader, NRC**
 - **Fernando Ferrante, NRC**
 - **Annie Kammerer, NRC**
 - **John England, BoR**
 - **David Lord, FERC**
 - **Patrick Regan, FERC**
 - **John Stevenson, ANS-2.31**
 - **Ray Schneider, Westinghouse**

- **Rapporteurs**
 - **Christopher Cook, NRC**
 - **Marie Pohida, NRC**

Panel 1 Questions for Discussion

- **What are the roles of deterministic and probabilistic hazard analysis in determining a design basis and conducting a risk assessment? How should they complement each other?**
- **What is the status of PFHA? For which flood causing mechanisms PFHAs can be conducted? What improvements are needed for their use in a risk assessment?**
- **Given the inherent large uncertainties, how should these be dealt with?**
- **What are the impediments, if any, for other flood causing mechanisms to develop PFHA approaches? How they can be overcome?**
- **What are your perceptions about the utility and usefulness of a PFHA for your agency missions?**
- **Is formal expert interaction approach like SSHAC a viable approach for PFHA? What PFHA specific consideration should be applied?**
- **Given the use of PFHA in the development of Design Basis Flooding determination, what is, or should be, the role of Beyond Design Basis Flooding in design and, if required how should it be determined?**

Key Observations and Messages

- **Risk-informed approaches are being used and are being incorporated in safety assessments and decision-making.**
- **It is not a question of deterministic vs. risk assessment. These are complementary processes.**
- **SSHAC type of approach is viable and has been used to systematically addresses issue of uncertainties considering the state-of-knowledge including lack of data for extreme events.**
- **What are the impediments to a PFHA? – Willingness to try, availability of experts, communication. (Technical challenges are being met).**
- **Need for multi-disciplinary teams for assessments and need for incorporating risk analysis in educational systems**

Path Forward

- **Establish understanding of commonality and differences in risk-informed approaches and decision criteria among the federal agencies.**
- **Collaborative and coordinated efforts with other federal agencies, industry, standard bodies, and other stakeholders.**
- **Consider implementation of SSHAC type of approaches for selected hazards.**