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RIC 2013 March 12–14

25TH ANNUAL REGULATORY INFORMATION CONFERENCE

Technical Session T9

**Probabilistic Flood Hazard Assessments
for Nuclear Facilities**

Session Chair: **Thomas J. Nicholson**[1]
Coordinators: **Michelle Bensi**[2] and **Fernando Ferrante**[3]

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Motivation:

Convene a panel of experts to review state-of-the-practice in extreme flood assessments at nuclear facilities within a risk context, and to discuss technology gaps (e.g. need for expert elicitation process; data augmentation and interpretation; and uncertainty assessments).

Objectives:

➢ Discuss Probabilistic Flood Hazard Assessment (PFHA) strategies and methods for use in probabilistic risk assessments (PRA) of nuclear facilities.
➢ Identify components of flood-causing mechanisms that lend themselves to PFHA methods and uncertainty assessments.
➢ Review applications of PFHA to a variety of site-specific scenarios.
➢ Share information on how to bridge current state-of-knowledge between extreme flood assessments and risk assessments of critical infrastructures.

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Focus:

Presenters will discuss the state-of-the practice in, and perspectives on PFHA and its applications to nuclear facilities.

Presenters will address questions on the development and application of PFHA based upon their practical experiences, including:

✓ observations and insights on how to proceed with PFHA strategies and methods for all flood-causing mechanisms in PRA studies, and

✓ suggestions on how to overcome technology gaps in applying PFHA to site-specific scenarios, and in determining uncertainties.

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Presenters:

➤ Dr. Christopher Cook, NRC/NRO – *NRC Perspective on Flood Hazard Evaluations in New Reactor Applications*

➤ Andrew Miller, ERIN Engineering & Research Inc., and Ken Huffman, EPRI – *Perspectives on Probabilistic Flood Hazard Assessment*

➤ Dr. Timothy Cohn, U.S. Geological Survey – *The State of Probabilistic Flood Hazard Assessment: Data; Physics; Statistics; and Uncertainty*

➤ Professor Gregory Baecher, University of Maryland – *Systems and Operational Issues in Flow Control for Dam Safety*

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Flood-causing mechanisms to be considered:

➤ State-of-the-practice in Identifying and Quantifying Extreme Flood Hazards
➤ Extreme Precipitation Events
➤ Flood-Induced Dam and Levee Failures
➤ Tsunamis Flooding
➤ Riverine Flooding
➤ Extreme Storm Surge for Coastal Areas
➤ Combined Events Flooding Analysis

Specific questions were formulated to explore these topics within a risk context.

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U.S. NRC Licensing and Risk Analysis Collaborators:

• Nilesh Chokshi, Deputy Director, Division of Site Safety & Environmental Analysis, NRO
• Christopher Cook, Branch Chief, Division of Site Safety & Environmental Analysis, NRO
• Marie Pohida, Senior Reliability and Risk Analyst, Division of Safety Systems & Risk Assessment, NRO
• Ken Karwoski, NRC Dam Safety Officer, Division of Engineering, NRR
• Jeff Mitman, Senior Reliability And Risk Analyst, Division of Risk Assessment, NRR
• Fernando Ferrante, Reliability And Risk Analyst, Division of Risk Assessment, NRR
• Nathan Siu, Senior Technical Advisor for PRA Analysis, RES
• Kevin Coyne, Branch Chief, Division Risk Analysis, RES
• Gary Demoss, Branch Chief, Division Risk Analysis, RES

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- Reports on the Probabilistic Seismic Hazard Assessment program are documented in NUREG-2117, Rev. 1 at:
  http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2117/

- Information on the PFHA Workshop is available at the Public Website:
  http://www.nrc.gov/public-involve/public-meetings/meeting-archives/research-wkshps.html

- the 3-day workshop can be viewed via archived video at:
  http://video.nrc.gov/ look for Webstreaming of 1/29 – 31/2013 meeting

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