

DOE/NRC Natural Phenomena Hazards Meeting
October 23-24, 2018

Location: US NRC Headquarters, 11555 Rockville Pike, Rockville, Maryland, 20852

Tuesday, October 23 Two White Flint Auditorium

- 7:45 a.m. Registration, pick up name badges
- 8:00 a.m. Welcome and introductions
- 8:15 a.m. Update to ANS/ANSI 2.29 Probabilistic Seismic Hazard Analysis
Emily Gibson and Lisa Schleicher
- 8:40 a.m. Process for Ongoing Assessment of Natural Hazards Information at U.S. Nuclear Power Plants
Stephanie Devlin-Gill, Jon Ake, Laurel Bauer, Meredith Carr, Christopher Cook, Brad Harvey, Joseph Kanney, Michael Mazaika, Clifford Munson, Dogan Seber, Nebiyu Tiruneh, and Brett Titus
- 9:05 a.m. Towards a Risk-Based, Cost-Optimized Design of Safety-Related Nuclear Structures and Facilities
Chandrakanth Bolisetti, William Hoffman, Justin Coleman, and Andrew Slaughter
- 9:30 a.m. Interfacing Seismic Hazard Analysis with Structural Engineering Requirements
Jinsuo Nie, Jose Pires, and Dogan Seber
- 9:55 a.m. BREAK
- 10:15 a.m. Impact Loading Due to Seismic Excitation
Nicholas D. Catella
- 10:40 a.m. Walkdown Evaluations of Electrorefining Project at Y-12 National Security Complex
Michael W. Salmon and Glenn Cox
- 11:05 a.m. Consideration of Component Level vs. Element Level Stresses in Concrete Nuclear Safety-Related Structures Under High Seismic Loading
Lisa Anderson and Luis Moreschi
- 11:30 a.m. Numerical Modeling of Concrete Building Pounding During Seismic Events-A Case Study
Asad Bassam, Ben Kosbab, and Payman Tehrani
- 11:55 a.m.-1:15 p.m. LUNCH (on your own)

- 1:15 p.m. A Modern Computational Framework for the Nonlinear Seismic Analysis of Nuclear Facilities and Systems
David McCallen, Boris Jeremic, Patrick Laplace, Ian Buckle, Floriana Petrone, Denis Istrati, and Sherif Elfass
- 1:40 p.m. Modeling and Simulation of Earthquake Soil Structure Interaction for Nuclear Installations
Boris Jeremic, Yuan Feng, Han Yang, Hexiang Wang, Dragan Kovacevic, Floriana Petrone, Francis McKenna, and David McCallen
- 2:05 p.m. Site Response of the Atlantic Coastal Plain Strata Discerned From Horizontal-to-Vertical Spectral Ratios of Earthquake and Ambient Noise Ground Motions
Lisa S. Schleicher and Thomas L. Pratt
- 2:30 p.m. A Comparison of Surface- and Vertical Seismic-Derived Shear and *p*-wave Velocities
Peter J. Hutchinson, Jana M. Bridwell, and Alex Balog
- 2:55 p.m. BREAK
- 3:15 p.m. An Updated Approach for Seismic Vertical SSI Analysis
Farhang Ostadan and Nan Deng
- 3:40 p.m. Implementation of FIRS for Deeply Embedded Structures
Tom Houston, Andrew Maham, and Greg Mertz
- 4:05 p.m. Limitation of the RVT Approach for its Application to Seismic SSI Analysis of Nuclear Structures
D. M. Ghiocel
- 4:30 p.m. Idaho National Laboratory Nuclear Safety Research Program
Justin Coleman
- 4:55 p.m. Adjourn

Wednesday, October 24

Session on Site Response, SSI, and Structural Analysis: Two White Flint Auditorium

- 8:00 a.m. Selection of Time Histories for Use in Nonlinear Response History Analysis
Nathan Yost, Richard Lee, and Michael W. Salmon
- 8:25 a.m. Scaling Acceleration Response Spectra From One Damping to Another
Farhang Ostadan and James Marrone
- 8:50 a.m. Impact of Topographic Effects on Site Response at Nuclear Facility Sites
Swetha Veeraraghavan, Justin L. Coleman, and Jacobo Bielak
- 9:15 a.m. Three-dimensional Seismic Response of Large Embedded Structures
John Li, Kyungtae Kim, and Ahmed Elgamal
- 9:40 a.m. BREAK
- 10:00 a.m. Preliminary Investigation of Effects of Sliding and Gapping Phenomena in Soil-Structure Interaction Modeling
Efe G. Kurt and Justin L. Coleman
- 10:25 a.m. Free-field Displacements Calculated With Green's Functions Implemented in SC-SASSI
Julio Garcia, Benjamin Kosbab, and Huy Tran
- 10:50 a.m. ASCE 4-16 Standard-Based Probabilistic SSI Analysis. Part 1: Application for Design Basis Level (DBE)
D. M. Ghiocel
- 11:15 a.m. ASCE 4-16 Based Probabilistic Seismic SSI Analysis. Part 2: Application for Beyond Design Basis Level (BDBE)
D. M. Ghiocel
- 11:40 a.m.-1:00 p.m. LUNCH (on your own)
- 1:00 p.m. Seismic Fluid-Structure Interaction in Liquid Metal Nuclear Reactors
Chingching Yu, Faizan Ul Haq, Michael Cohen, Justin Coleman, Philippe Bardet and Andrew Whittaker
- 1:25 p.m. Improvements in Frequency-Domain SSI Capabilities
Isabel Cuesta
- 1:50 p.m. Probabilistic Simulation Procedure for Developing Site-Specific Plane-Wave Coherence Functions
D. M. Ghiocel

- 2:15 p.m. Fluid-Soil-Structure Interaction Analysis of Tank for Seismic Evaluation of Nozzle Subjected to Differential Movement
Natalie Doulgerakis, Michael Salmon, Benjamin Kosbab, and Payman Tehrani
- 2:40 p.m. BREAK
- 3:00 p.m. Blind Prediction of the Capacity of Unreinforced Concrete Column Capitals
Michael Salmon, Eric MacFarlane, and Lawrence Goen
- 3:25 p.m. Evaluation of Cast Iron Fittings in a Hazard Category 2 Nuclear Facility
Michael W. Salmon, Eric MacFarlane, Maia Menefee, and Rick Augustine
- 3:50 p.m. An Optically-Based Sensor System for Critical Facilities Post-Event Seismic Structural Assessment
Floriana Petrone and David McCallen
- 4:15 p.m. High Performance Simulations for Regional Scale Seismic Hazard and Risk Assessments
David McCallen, Arthur Rodgers, Anders Petersson, Mamun Miah, and Hans Johansen
- 4:50 p.m. Reconvene as a single group for wrap-up
- 5:00 p.m. Adjourn

Wednesday, October 24

Session on Broad Natural Hazard Topics: Bethesda North Marriott Hotel, Room TBA

- 8:00 a.m. The Role of Engineers in Society
Lawrence A. Salomone
- 8:25 a.m. Periodic Review and Update of NPH Assessments
Sharon Jasim-Hanif
- 8:50 a.m. Opportunities to Improve NPH Evaluations
Greg Mertz
- 9:15 a.m. Defense Nuclear Facilities Safety Board GIS Natural Phenomena Hazard Database
Yong Li and Lisa Schleicher
- 9:40 a.m. BREAK
- 10:00 a.m. Overview of NRC's Probabilistic Flood Hazard Assessment Research Program
Joseph Kanney, Meredith Carr, Elena Yegorova, Mark Fuhrmann, Thomas Aird, and Jacob Philip
- 10:25 a.m. NUREG-2213: Updates to SSHAC Guidance
Miriam Juckett, John Stamatakos, Jon Ake, Cliff Munson, Kevin Coppersmith, and Julian Bommer
- 10:50 a.m. Next Generation Liquefaction Case History Database
P. Zimmaro, D. Y. Kwak, J. P. Stewart, Scott Brandenburg, John Stamatakos, Miriam Juckett, Thomas Weaver, and S. L. Kramer
- 11:15 a.m. Wind-Borne Missile Impact on Exterior Walls and Slabs in Nuclear Power Plants
Brian Terranova, Len Schwer, and Andrew Whittaker
- 11:40 a.m.-1:00 p.m. LUNCH (on your own)
- 1:00 p.m. Using a Graded Approach to the DOE-STD-1020-2012 Tornado Missile Criteria
Adeola Adediran, Jay Amin, and Brent Gutierrez
- 1:25 p.m. Comparison of Deterministic and Probabilistic Estimates of Liquefaction
Tom Houston, Andrew Maham, and Greg Mertz
- 1:50 p.m. Determination of the Magnitude and Source Location of Paleoearthquakes from Paleoliquefaction Evidence
Russell A. Green

- 2:15 p.m. Oroville Dam Spillway - Engineering Geology Support Activities for Response and Recovery
Frank Syms
- 2:40 p.m. BREAK
- 3:00 p.m. Assessment of Potential Hazard from Tectonic Surface Deformation at New Nuclear Power Facilities by the U.S. Nuclear Regulatory Commission – A Case History
Gerry L. Stirewalt
- 3:25 p.m. Updating On-Site Ground Motion Reporting and Simulation of Ground Motions from Nearby Earthquakes at Lawrence Livermore National Laboratory
Arthur Rodgers
- 3:50 p.m. Technical Basis for Updating Seismic Hazard Analysis Guidance in NUREG-1520, Standard Review Plan for Fuel Cycle Facility License Applications
John Stamatakos, Jonathan Marcano, Cliff Munson, Jon Ake, Patrick Koch, and Miriam Juckett
- 4:15 p.m. Integration of Risk-informed Performance-based Approach to Seismic Safety of Nuclear Power Plants
Jose A. Pires, Jon P. Ake, J. Xu, H. Li, and R. Gascot-Lozada
- 4:50 p.m. Reconvene as a single group for wrap-up
- 5:00 p.m. Adjourn