AEG Annual Meeting Abstract Submission

Thompson, Jenise, Nuclear Regulatory Commission, Jenise.Thompson@nrc.gov

Submission: 5/1/24

Adapting Successful Hazard Analysis Approaches to New Hazards at the Nuclear Regulatory Commission

The US Nuclear Regulatory Commission has the statutory role to regulate civilian use of nuclear materials in the US, including the safety review of geologic, hydrologic, meteorological, seismic, and volcanic hazards, as well as geotechnical engineering factors, that have the potential to adversely impact the safe operation of the proposed facility. With advances in nuclear technology, the NRC recognizes that some advanced reactor designs may be capable of assuring that safety-related functions are maintained under external hazard conditions and is actively engaged in adapting the review process to adequately perform external hazards safety reviews commensurate with the radiological risk of the proposed facility while ensuring applicable regulations are met. One approach is to consider whether the methods used to assess one hazard may be applicable to other hazards within the regulatory framework. The NRC has a long successful history of using the Senior Seismic Hazard Analysis Committee (SSHAC) process to inform the regulatory review of seismic hazards at proposed nuclear sites. Based on this history, the SSHAC approach was endorsed for use in volcanic hazards assessments in Regulatory Guide 4.26. Additionally, RG 4.26 proposed the use of engineering judgment to demonstrate acceptable performance of safety-related structures, systems, or components (SSCs) under a maximum magnitude volcanic hazard to which a nuclear site may be exposed. This consideration of engineering judgement is proposed to assess flooding hazards for advanced reactor technologies in Appendix K to a draft revision of Regulatory Guide 1.59, Revision 3, published for public comment as DG-1290. Considering how to adapt successful hazard assessment approaches from one hazard to another allows the NRC to focus safety reviews on hazards with a direct nexus to safety, ensure adequate protection of public health and safety, and adapt to the changing nuclear technologies as a modern, risk-informed regulator. *(298/300 words)*

Author Biography

Nuclear Regulatory Commission since 2007. Ms. Thompson was the technical lead on the development of RG 4.26, worked closely with the team writing the draft update to RG 1.59, and is the lead geology reviewer for all new nuclear reactor applications. Ms. Thompson also represents the external hazards team in agency projects looking to gain efficiencies in the application review process for advanced reactor and micro-reactor designs.