UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

Grant # 31310021M0005
Grantee: Oregon State University
Title of Grant: Dynamic Risk Assessment for Nuclear Cybersecurity
Period of Performance: 11/30/2020-11/29/2023 (FY2020 Notice of Funding Opportunity NOFO)

Executive Summary

Objective – This research effort seeks to formalize a collaboration between Oregon State University's (OSU) School of Nuclear Science and Engineering (NSE) and the Cybersecurity group in Electrical Engineering and Computer Science (EECS) to establish a dynamic risk approach for nuclear cybersecurity. The proposed project will integrate cyber expertise to assess vulnerabilities in digital instrumentation and control (I&C) systems that are applicable to sustaining light water reactors. The team will leverage existing tools such as Sandia's ADAPT Dynamic Event Tree (DET) methodology to link cybersecurity threat models with RELAP5-3D to investigate the cyber-physical impact on the system. The proposed research directly addresses the objectives of the NRC Research Program, namely, providing risk-informed security through understanding of cyber risks and vulnerabilities associated with nuclear plant I&C. It does this through an integration of I&C cyber risk modeling and analysis with physical plant simulation.

Principal Investigator: Camille Palmer, camille.palmer@oregonstate.edu

---

Presentations and Publications

The list of publications was submitted with the final report after grant expiration.

1. Gisondi, A., Palmer, C., Halaapiapi, L., Bobba, R., Risk-Informed Performance-Based Methods for Cyber-Attack on Nuclear Power Facilities. *Proceedings of the ANS Topical Meeting on Advances in Nuclear Nonproliferation Technology and Policy*, Nov 2023.

2. Wiltbank, N.E.; Palmer, C.J. Dynamic PRA Prospects for the Nuclear Industry*. Front. Energy Res.,* 11 November 2021 | https://doi.org/10.3389/fenrg.2021.750453

3. Ismail, M.; Quach, A.; Jelesnianski, C.; Jang, YJ.; Changwoo, M. Tightly Seal Your Sensitive Pointers with PACTight. *Proceeding of the 31st USENIX Security Symposium*. Boston, MA. August 10-12, 2022, https://arxiv.org/abs/2203.15121)

Patents

N/A