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 **DOE/NRC Collaboration on Criticality Safety Support for
Commercial-Scale HALEU Fuel Cycles (DNCSH) Workshop #1**

**A Collaboration between the U.S. Department of Energy
and the U.S. Nuclear Regulatory Commission**

**When: Thursday, February 29, 2024**

**Where: Webinar (Details on registration available soon)**

**Abstract:** Demand for a fuel enrichment range known as high-assay, low-enriched uranium (HALEU) is rapidly increasing driven by potential new, advanced power reactors and performance enhancements to existing commercial power reactors. The HALEU Availability Program is addressing existing challenges to the U.S. infrastructure necessary for a commercial-scale enrichment operation that supplies this demand. However, there is an additional important parallel consideration for a timely transition to HALEU-based fuel cycles, in that the U.S. Nuclear Regulatory Commission (NRC) must have the data necessary to perform safety evaluations to confirm the performance of industry designs. A significant component of that data is criticality benchmarks that are relevant for the specific proposed fuel forms, geometries, neutron absorbers, moderators for facility operations, and transportation at commercial scale. The commercial scale component is important, as it is currently possible to produce and transport fissile material at any enrichment in any fuel form in small quantities. The economic viability of HALEU-based fuel cycles is sensitive on being able to safely scale-up the quantity for these specific types of fuel.

Congress has recognized this need, and as part of the Inflation Reduction Act, has allocated $100M to the U.S. Department of Energy (DOE) to develop criticality safety data and support the industry with transportation challenges, where the latter is a separate activity. This project, through the development of publicly available data, will support the NRC in initiating, executing, and completing activities which will reduce the uncertainty associated with approving commercial-scale facility and transportation operations for the HALEU fuel cycle.

This webinar - the first of a series that will cover several anticipated fuel cycle needs - will briefly summarize the goals of the DNCSH project and then present status on evaluating nuclear data and validation gaps for criticality safety analyses for application in 10CFR70 and 10CFR71. The main goal of this first DNCSH webinar is to discuss front-end transportation of TRISO-based fuel forms with graphite moderation, presenting recently developed application models and initial thoughts on nuclear data and validation gaps. The webinar will then proceed to breakout sessions intended to help inform the DNCSH team on additional relevant considerations for application models and future measurement needs. The information collected will be summarized in the first DNCSH FOA for new measurements which will address the gaps identified by the DNCSH team, estimated to distribute a total of $10M.

**For additional information, please reach out to the National Technical Director for this effort, Dr. William Wieselquist, at** **wieselquiswa@ornl.gov****.**