

PROFESSIONAL EXPERIENCE SUMMARY



Thomas (T. Jay) Harrison

Advanced Reactor Systems and Safety
Reactor and Nuclear Systems Division
Oak Ridge National Laboratory
harrisonjt1@ornl.gov

Biography

Thomas (T. Jay) Harrison has been at Oak Ridge National Laboratory (ORNL) since May 2010. At ORNL, he has worked in a variety of roles in multiple diverse projects.

He is the project manager for ORNL's work in the Department of Energy's Nuclear Hybrid Energy System (NHES) program. This goal of this program is to combine nuclear power generation and industrial customers into an integrated system that provides greater economic benefit than independent construction and operation.

He is also currently the co-chair of the Generation IV International Forum (GIF) Economic Modeling Working Group (EMWG). In this role, he acts as the United States representative to this working group. He also acts as the custodian and developer of G4ECONS, a fuel cycle economics analysis computation tool developed by the EMWG.

Other current work and previous work includes fuel cycle systems and economic analysis in support of the DOE's Fuel Cycle Research and Development program, international fuel cycle analyses, and nonproliferation activities.

Among his previous duties, he served as the Technical Area Lead for the Economic Analysis tasks within the Department of Energy's Advanced Small Modular Reactor program. In that role, he coordinated the economic analysis activities at multiple national labs, as well as led the analysis activity at ORNL. He has also previously worked on ORNL's nuclear rocket fuel development and space power reactor activities, and advanced fuel cycle physics and economics analyses. This work is in support of NASA's nuclear rocket propulsion program.

Dr. Harrison holds BS, MS, and PhD degrees in nuclear engineering from the University of Tennessee. He is a registered professional engineer (nuclear) in the state of Tennessee.

Dr. Harrison's previous experience includes nuclear criticality safety engineering at Nuclear Fuel Services (NFS) in Erwin, TN, for more than 3 years. There he was responsible for the preparation of nuclear criticality safety evaluations based on analysis of current process systems and proposed process design changes. These evaluations were performed in accordance with the site license (SNM-124) and applicable NRC regulations governing the handling of SNM. He also performed the validation and verification for the nuclear criticality safety codes used in the evaluations.

Prior to working at NFS, Dr. Harrison worked as a nuclear reactor design and analysis engineer at the Bettis Atomic Power Laboratory in West Mifflin, PA, for 2 years. There he was responsible for core design and analysis for the Naval Nuclear Propulsion Program (NNPP). He also developed tools, algorithms, and methods to streamline and simplify core design while increasing the accuracy of the analysis.

In his PhD dissertation, Dr. Harrison developed a methodology to simplify neutron cross section data for space radiation shielding calculations. This methodology decreased the shielding calculation runtime while conserving the accuracy relative to the original neutron cross section data without requiring an *a priori* flux spectrum.

In his MS thesis, Dr. Harrison applied statistical tests to radiation detector data sequences from an SNM storage facility. This work was performed to identify system faults to help ensure overall system safety and reliability by decreasing false alarms and providing more helpful problem identification for troubleshooting.

While completing his BS degree, Dr. Harrison worked as an intern in site licensing at the TVA Sequoyah Nuclear Plant in Soddy-Daisy, TN, and as an intern in maintenance engineering at the Westinghouse Columbia Site in Columbia, SC.