NEUP Nuclear Energy University Program
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The Nuclear Industry Readiness Certification Program: Safety Excellence for the Next-Generation Nuclear Workforce

PI: Dr. Elia Merzari, The Pennsylvania State University

Program: Nuclear Reactor Safety Training and Workforce Development Program TA2

Collaborators: M. DeMarco (ASME), M. Zerphy (Penn State), J. Remington (Penn State), K. Hill (Penn State), M. Flaska (Penn State), A. Motta (Penn State), F.-B. Cheung (Penn State), J. Menold (Penn State), P. Dudas (Penn State), E. Jones (Penn State), Z. Fu (Penn State Harrisburg), R. Nathan (Penn State Berks), E. Kunkel (Penn State Berks), V. Miller (York County School of Technology)

Industrial partner: Constellation

ABSTRACT:

This proposal seeks to address a critical workforce gap in the nuclear industry by establishing a combined educational certificate program and corresponding independent certification. A significant challenge identified by our industrial partner is the lack of exposure among new and prospective nuclear professionals to foundational knowledge areas such as quality assurance (QA) principles and safety culture. These competencies are essential for ensuring operational safety and fostering long-term career success. This gap affects both trade workers and college graduates, particularly those without prior experience in nuclear environments. The proposed program aims to bridge this gap by equipping the next-generation of the nuclear workforce with the skills and knowledge necessary to meet the industry's rigorous standards. The initiative aligns directly with the goals of the Funding Opportunity Announcement (FOA) and the mission of DOE-NE to enhance workforce readiness and promote safety in nuclear operations.

Our unique consortium brings together a diverse set of complementary capabilities to deliver this program effectively. **The Pennsylvania State University (Penn State)**, with its well-established certificate and microcredentialing infrastructure, will develop and implement the educational components (Thrust 1). **ASME**, a globally recognized leader in professional certification, will design and oversee the independent certification process, ensuring its credibility and alignment with industry best practices (Thrust 2). **Constellation**, our committed industry partner, will provide critical insights into curriculum development, ensuring the program addresses current industry needs and equips professionals with practical, applicable skills. **York County School of Technology** will play a pivotal role in supporting these efforts, contributing to the development of education, certification, and outreach programs (Thrust 3) tailored specifically to skilled trades. Their involvement will ensure the program meets the unique needs of trade professionals, fostering pathways for their integration into the nuclear workforce. Together, these collaborative efforts aim to strengthen workforce pipelines, increase public engagement, and support the long-term success of the nuclear industry.

In addition to the educational and certification components, a **comprehensive outreach program** will be implemented to foster participation in the nuclear workforce and build widespread

support for the initiative. This outreach effort will be led by Penn State, with active involvement from its commonwealth campuses at Harrisburg, located near the Three Mile Island (TMI) nuclear power plant, and Berks, located close to the Limerick Generating Station. These campuses are uniquely positioned to engage local communities and stakeholders, leveraging their proximity to key nuclear facilities.

The outreach program will include targeted engagement with critical stakeholders, such as trade unions, industry organizations, and community groups, to raise awareness about opportunities in the nuclear sector and promote the program's benefits. An innovative aspect of the outreach effort involves the development of **augmented reality (AR) experiences** through Penn State's Center for Immersive Experiences. These AR tools will provide interactive and visually engaging demonstrations, enhancing public understanding of the nuclear industry and inspiring greater participation in nuclear workforce development.

The project has several key deliverables, including the development of a certificate program and an independent certification program, both designed to promote safety excellence within the next-generation nuclear workforce. These initiatives directly support the mission of DOE-NE by strengthening the operations of the existing reactor fleet and facilitating the deployment of new reactors. Through these efforts, the project addresses critical workforce needs while fostering a culture of safety, innovation, and operational excellence in the nuclear industry.