Curriculum Development on Nuclear Quality Assurance, System Integrity Management, and Reactor Safety Analysis

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Program: [TA2- Curriculum Focused Training Program Development]

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ABSTRACT:

This proposal focuses on developing a novel academic curriculum on Nuclear Quality Assurance (NQA), system integrity management (SIM), and reactor safety analysis (RSA) for students and professionals. Beyond the existing well-established NE curricula, the proposed scope not only delivers the related fundamentals and hands-on practice in academic settings, but also promotes awareness of the regulatory/industrial standards and knowledge regarding nuclear reactor safety and NQA. The NQA entails an organized series of activities aimed at ensuring that a product, system, or component consistently fulfills the performance criteria. This curriculum will primarily focus on QA and safety analysis relevant to structures, systems, and components (SSCs) within the reactor coolant system boundary. The main objectives include: 1) Developing a curriculum on Non-Destructive Examination for pressure boundary components or metal containment for reactor coolant systems in all reactor types; 2) Developing or enhancing curriculum related to data science for SIM; 3) Enhancing curriculum related to RSA by including the role of fracture mechanics and fluid-structure interaction. Modality of instruction for this new curriculum will be online (synchronous and asynchronous), in-person, and hybrid to benefit students and professionals from diverse backgrounds. This proposed curriculum will be able to offer students or professionals three certificate programs in NQA, Data science for SIM, or RSA, each comprising 10 credit hour modules.