Neutron Flux Monitoring Channels Upgrade for the University of Utah TRIGA Reactor

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ABSTRACT:

The objective of this proposal is to receive funding for two neutron flux monitoring channels, a wide-range logarithmic channel, and a wide-range linear channel to replace the aging and degraded flux monitoring channels in the University of Utah TRIGA reactor (UUTR). This foreseen upgrade of the UUTR neutron flux monitoring channels will assure safe and reliable operational capabilities and enhance sustaining exponential growth of the Utah Nuclear Engineering Program (UNEP). The UUTR is managed and maintained by the Director of the UNEP (PI of this proposal) and the UNEP dedicated and highly trained staff (led by the Co-PI of this proposal, the UUTR Reactor Supervisor).

The UUTR is a central point of UNEP's significant growth in number of students that are heavily attracted by available hands-on experience, research and experiential learning based on the operation of the UUTR and the associated state-of-the-art labs.

UNEP faculty and graduate students' R&D, class education and experiential reactor training will continue to greatly benefit from this award, in providing the sustainable and secured ground for new research and in expanding the research topics across the disciplines in science and engineering available for over 40 graduate students and 30 undergraduate students as of 2015. The State of Utah particularly is supportive of UNEP and is encouraging its continuous steady-growth. UNEP is supported by the College of Engineering and the University to maintain and operate the UUTR for the next 30 years. In doing so, operation and training are all in full compliance with the NRC regulations in assuring the safe and reliable, accurate and timely operation and usage of the UUTR. Therefore, the first priority in continuing these practices is a replacement of the neutron flux monitoring channels. With this, the operation of the UUTR will observe its improved quality, safety and efficiency.

The greatest impediment to continued operation of the UUTR is the age of its instrumentation and the inability to procure equipment to repair the components. Therefore, the replacement of the neutron flux monitoring channels can be expected to facilitate the use of the reactor for its role in supporting STEM outreach, teaching, experiments, and reactor operator training for decades. As a means of further increasing utilization and as a means to further leverage NEUP program funds, the UNEP facility is planning on participating in the NSUF program as an associated user facility on the completion of this project.