



Control Panel Modernization at the KSU TRIGA Reactor Facility

Applicant Name: University of Missouri

Project Director/Principal Investigator: Leslie P. Foyto

Major Participants: NA

This proposal requests \$213,632 from the DOE NEUP University Research Reactor Upgrades Infrastructure Support Program to acquire and upgrade three systems essential to MURR's operations: electron beam welding services for fabricating replacement control blades; the facility's physical and cyber security access control system; and reactor instrumentation. These systems provide the basis for critical aspects of the facility's normal and emergency operations, while simultaneously maintaining the infrastructure necessary for instruction and research activities for students and faculty investigators in nuclear science and engineering fields. The main objective of the requested funds from DOE is to support MURR's educational and research mission through the availability of modern security systems and operational equipment critical to student and faculty investigations in a wide range of areas, including nuclear engineering, health physics, reactor safety, detector design and optimization, radiochemistry, nuclear analytic methods, quality control, and data acquisition and analysis.

The replacement proximity card system is a high priority request for MURR's operations, as the current system has become obsolete and will no longer be maintained by the vendor. The new system will also allow MURR to respond to recent NRC recommendations for cyber security for non-power reactors, as well as Sandia National Lab's recommendations for biometric access to higher security areas of the facility. The availability of replacement control blades is critical to the facility in minimizing facility downtime for faculty and student researchers, in that facility engineers will have replacement blades readily available for installation, as needed, when a control blade fails or reaches its operational lifetime. The requested reactor instrumentation (RI) components are replacements for fundamental facility operations: the facility's 25-year old reverse osmosis unit; the rod position indication system (spare parts for which are no longer available from the manufacturer), and the existing primary coolant pressure monitoring system (to standardize safety response times within transient analyses).

Under direction of Mr. Foyto (Project Director), senior operations and engineering staff will conduct the upgrade project according to the unique needs and timelines of each of the three systems (as discussed further in the Project Narrative section). We anticipate that each of the projects will be completed within the one-year period of DOE support. The timelines will generally fall into two main phases: Phase 1: Specification and Procurement. The initial phase for the requested RI and proxy card hardware and computer interface will consist of final specification and procurement. The initial phase of the control blade project will be collaborating with a service provider in specifying MURR's exact needs and criteria. Phase 2: Installation / Contracting. For the RI and proxy card projects, phased installations will be scheduled according to reactor operational normal maintenance schedules and the academic research and educational calendar in order to minimize facility downtime. Contracting for control blade fabrication will be performed once final specification of welding processes and quality parameters are established with a vendor; after the finished blades are received at MURR, they will be available for use, as required.

With MURR's significance in relation to the nuclear science and engineering infrastructure in the United States, the requested funding under the DOE NEUP program is an excellent investment in our country's ability to respond to current and future nuclear workforce needs and further respond to an extensive academic research portfolio in Nuclear Engineering, Health Physics, Radiochemistry, and Reactor Safety.