

## **A NEUP Reactor Upgrade Request for Replacement and Enhancement of the Control-Rod Drive System for The Ohio State University Research Reactor**

**PI:** Thomas E. Blue, The  
Ohio State University

**Collaborators:** N/A

**Program:** Reactor Upgrades

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### **ABSTRACT:**

The OSURR is a unique and important resource for The Ohio State University and the State of Ohio that is utilized for a wide range of research and educational endeavors. We are proposing University Research Reactor Upgrades Infrastructure Support to replace the existing 50+ year old reactor CRDM system of the OSURR with a modern system that will help maximize long-term reactor availability and improve safety. The existing drives, which are based on the drives of the Oak Ridge National Laboratory's Bulk Shielding Reactor Facility, use 120 VAC to power nearly everything, and are tall and heavy, making them difficult to handle. Likewise, the four CRDM control modules and the master switch (the interlock for selecting which control rod or fission chamber drive can be moved) run on 120 VAC and use components that are no longer available. Because this legacy electro-mechanical system is very old and bulky, creates RF noise, and has no spares, it would be prudent to update the CRDMs to new equipment that is smaller, uses lower operating voltages, incorporates more precise positioning, and is comprised of available parts. This would result in a system that not only helps ensure the reactor's long-term viability, but also would make working at the reactor pool top safer electrically and would make handling the drives much less awkward. The total project funding requested is \$230,000.

The NRL supports DOE research interests in both advanced reactor technologies and radioisotope power systems. Likewise, the NRL plays an important role in the recruitment and preparation of high-quality students for the nuclear industry. The proposed upgrade will help ensure the long-term viability of the reactor so that it can continue and expand these activities. It is prudent to replace a system this old before a major failure befalls it, as the laboratory might not be able to financially weather an extended outage from irreparable failure of such a crucial system.