

Application Title: Furthering Oregon State University to Meet Nuclear Science and Engineering Research Challenges Through Reactor Upgrade Investment – Ensuring Continued Operational Capacity

Applicant Name: Oregon State University

Project Director/Principal Investigator: Steve Reese

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Program: Scientific Infrastructure Support for Consolidated Innovative Nuclear Research – University Research Reactor Upgrades Infrastructure Support

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ABSTRACT:

The Oregon State University Mk II Oregon State TRIGA® Reactor (OSTR) at the Oregon State University Radiation Center is a well-utilized facility with a high capacity factor. During the 2019-2020 school year, the reactor operated for over 1200 hours in support of the TRIGA mission statement: Training (of student operators), Research (various projects from researchers from around the world, as well as departments throughout OSU) and Isotopes (various isotope productions for research as well as commercial applications). The objective of this proposal is to maintain this capacity factor by purchasing necessary spare items to ensure sustained operation without lengthy unplanned outages.

The OSTR achieved initial criticality in 1967. There are items that are still original to the facility, such as the control rod drives. Spare power channels and their respective detectors are also needed in case of a power channel or detector failure. All of these items often have a long lead time and having available spares can prevent lengthy outages. The manufacturer of the power channels (Thermo Fisher) is exiting the market, making acquiring spare parts essential to continued operation.

The Radiation Center also houses an instrumental neutron activation analysis (INAA) lab. The INAA Lab offers a full-service program for the irradiation, trace-element determination, and statistical analysis of mineral and biological materials, serving the academic and research community at a local and national level. Annually, the INAA Lab analyses thousands of samples representing multiple scientific and technical disciplines. The INAA work uses a significant amount of polyethylene sample tubes, which are notoriously expensive to procure due to the methods of production. OSU has created a 3D printed tube design and would like to produce tubes in-house with the use of two redundant 3D printers. OSU would be willing to share this equipment and design with the research reactor community. The INAA lab also has a significant amount of germanium detectors that need to be refurbished in order to maintain counting capacity.

These requested items will provide for continued safe and reliable use of the reactor to continue the mission of Training, Research, and Isotope Production. The successful realization of this effort will enable OSU to continue providing reliable and consistent service to the world.