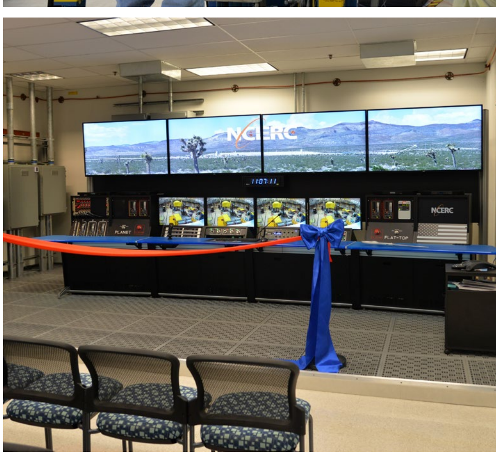
THE NEUTRON PULSE

3RD QUARTER 2025 EDITION





Los Alamos NATIONAL LABORATORY

LA-UR-25-31181

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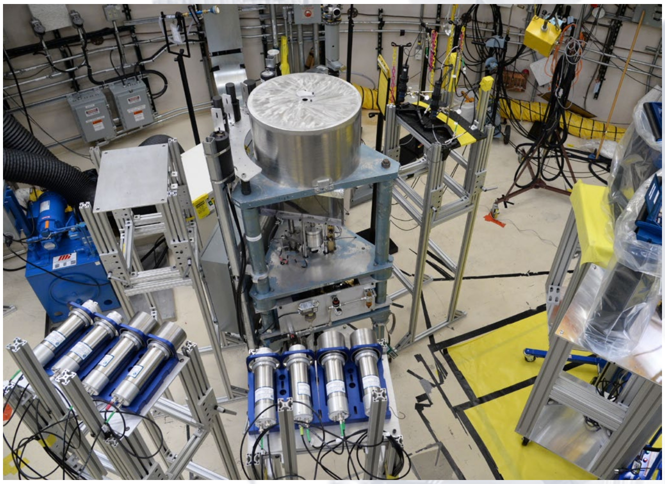
Operations Summary

During the third quarter of this year, three criticality experiments were successfully conducted at NCERC: BeRU, 1FRAME and TEX-Pu Hanford hand-stacks. In addition, NCERC hosted three hands-on Nuclear Criticality Safety training classes focused on different communities. A ribbon-cutting ceremony was also held to formally recognize and celebrate the dedication and hard work of those who contributed to the completion of the Control Room Upgrade project.

BeRU Measurements

In September, two configurations of the Beryllium Reflected Uranium (BeRU) experiment were conducted in collaboration with Naval Nuclear Labs (NNL). For this experiment bare HEU plates were loaded onto Planet, layered with Be plates and surrounded by beryllium reflectors. Initial approaches to critical were performed via 1/M plots. The assembly was taken critical by remote operation and excess reactivity was determined for each configuration. These values will be compared to calculations. Three more configurations are planned for next fiscal year, one of which will include additional diagnostic measurements via irradiation foils.

▲*Zach Lemke, NEN-2, loading a Be plate onto Planet.*



▲*1FRAME Godiva Measurements*

1FRAME and University Consortia Measurements

Two types of activities were combined into to one action-packed week! A Godiva burst was performed to irradiate a Georgia Tech Np sample as well as other fission and activation foils. 1FRAME collaborators who perform experiments at the STACY facility in Japan were able to observe the Godiva IV operations. In addition, visitors from UTK and BME (Hungary) participated in the experiments. Over the course of the week, operations continued with an abundance of detectors including new data acquisition methodologies to provide data at various level of subcriticality, simulating fuel debris removal. This data set will be used to test analysis methods, including real-time methods.

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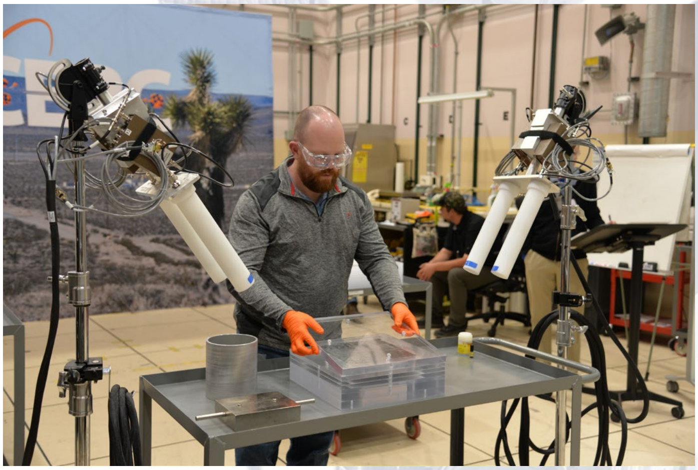
TEX-Pu-Hanford

The hand-stacking portion of TEX-Pu Hanford were conducted to prepare for the critical configurations to be performed on Planet. The Thermal/Epithermal eXperiments (TEX) were designed with iron (Fe) interstitial material as a neutron absorber to provide validation benchmarks for Hanford Tank Farms; three configurations are planned.

Ribbon Cutting Ceremony

A ribbon cutting ceremony celebrated the successful completion of the Control Room Upgrade project. The ceremony recognized those who made these upgrades possible. The multi-year effort was funded by Capability Based Investments and involved personnel from several LANL groups as well as MSTS personnel. Control Room 1, which is used to remotely operate Planet and Flattop was tested and returned to operational status in June in time for the next NCSP Criticality Safety Class. Control Room 2, for operating Comet and Godiva, was completed in 2024. Thank you again to those who made this possible!

▲Ryan LeCounte, Joetta Goda, Nancy Jo Nicholas (LANL), John Contardi, (MSTS) and Betty Huck (NFO).



▲Alex Clarke, PNNL, adding Lucite reflector during an NCSP Class.

Criticality Safety Classes

NCERC hosted an NCSP Criticality Safety Class in early August. This class provided the students with the opportunity to apply hand-stacking experimental methodology and experience, coupled with critical assembly demonstrations and lectures on criticality safety and reactor physics.

The NCSP Class was followed by two week-long classes targeted at PF-4 operations personnel and nuclear emergency responders.