

# DOE-ID NEPA CX DETERMINATION

## Idaho National Laboratory

### SECTION A. Project Title: LANL Super Cell Test

### SECTION B. Project Description and Purpose:

This scope of work describes the activities Idaho National Laboratory (INL) will perform with Los Alamos National Laboratory (LANL). LANL will provide the Super Cell test article to INL. The Super Cell test article will be loaded into the Broad Use Specimen Transient Experiment Rig (BUSTER) for the transient test. The Super Cell test article will be subjected to transients using a maximum pulse energy through irradiation in INL's Transient Reactor Test (TREAT) facility.

The objective of the LANL Super Cell test will be to assess the effect of acute high radiation dose on electronic device performance. TREAT will provide the neutron source for this exposure.

This effort will result in neutronic characterization and process demonstration in order to set a foundation for future irradiations in TREAT, the object of which is to improve understanding how acute high radiation dose effects electronic device performance.

#### Tasks:

1. LANL will fabricate and deliver the Super Cell test article along with desired instrumentation and flux dosimetry. LANL will provide hanging/fastening hardware and lead routing cable as advised by INL staff.
2. LANL will deliver material certifications and drawings of the test hardware sufficient to enable TREAT reactor engineering staff to perform worth calculations. It is assumed no hazardous materials that would require containment and experiment safety package will be present in this hardware.
3. INL QA will review and accept the above hardware.
4. INL staff will create necessary process documentation to permit irradiation (e.g. data package, installation drawing, test plan).
5. INL staff will assemble the Super Cell test article into the irradiation assembly using existing hardware.
6. LANL staff will deliver any special purpose signal processing and data acquisition equipment for desired instrumentation and be present to help set up and operate this equipment.
7. INL will perform the irradiation in TREAT using a maximum pulse energy in the MARCH full slotted core. Note that a couple lower power pulses may be performed to characterize core response prior to the max pulse.
8. INL will remove and store the test article for short lived isotope decay, and then ship to LANL in an appropriate container.
9. INL will provide transient power data from plant instrumentation and flux data from relevant in-core neutron detectors present as concurrent irradiations. Prepare a final report documenting the results.
10. INL will characterize dosimetry using existing gamma spectroscopy equipment.

LANL will complete design and fabrication of test article and all hardware, except the Resonant Ultrasonic Spectroscopy – Laser (RUSL) flange. INL will assemble the test article into the BUSTER and conduct transient testing.

### SECTION C. Environmental Aspects or Potential Sources of Impact:

#### Air Emissions

Particulate and gaseous emissions at TREAT are not expected to increase due to this experiment. Project personnel will work with the PEL to determine the need for an Air Permitting Applicability Determination (APAD). Stack sample filters are pulled monthly at TREAT and the radioactive activity for particulates from the stack filters is analyzed and reported by the MFC Analytical Laboratory. All radionuclide release data (isotope specific in curies) directly associated with this proposal will be calculated and provided to the Environmental Support organization.

#### Discharging to Surface-, Storm-, or Ground Water

N/A

#### Disturbing Cultural or Biological Resources

TREAT (MFC-720) is eligible for nomination to the National Register of Historic Places. Project activities have the potential to impact TREAT.

In accordance with Section 106 of the National Historic Preservation Act (NHPA), the CRMO has conducted an assessment of the proposed activities in order to determine potential effects to historic properties. As described, the activities do not require additional review, and findings are described in the CRR (BEA\_20\_H089). If you have additional questions or concerns regarding potential effects of these actions on any property associated with the project scope (TREAT), please contact the CRMO at [grp-crmo@inl.gov](mailto:grp-crmo@inl.gov).

#### Generating and Managing Waste

Potential waste streams include industrial waste such as PPE, packaging material; and low-level radioactive waste (LLW). Design and irradiation of the experiment would not result in generation of new waste streams. The super cell will be returned to LANL following irradiation.

#### Releasing Contaminants

# DOE-ID NEPA CX DETERMINATION

## Idaho National Laboratory

Although not anticipated, there is a potential for spills when using chemicals or fueling equipment. In the event of a spill, notify facility environmental staff. If environmental staff cannot be contacted, report the release to the Spill Notification Team (208-241-6400). Clean up the spill and turn over spill cleanup materials to WGS.

### Using, Reusing, and Conserving Natural Resources

All applicable waste will be diverted from disposal in the landfill when possible. Project personnel will use every opportunity to recycle, reuse, and recover materials and divert waste from the landfill when possible. The project will practice sustainable acquisition, as appropriate and practicable, by procuring construction materials that are energy efficient, water efficient, are bio-based in content, environmentally preferable, non-ozone depleting, have recycled content, and are non-toxic or less-toxic alternatives. New equipment will meet either the Energy Star or SNAP requirements as appropriate (see <http://www.sftool.gov/GreenProcurement/ProductCategory/14>).

**SECTION D. Determine Recommended Level of Environmental Review, Identify Reference(s), and State Justification:** Identify the applicable categorical exclusion from 10 Code of Federal Regulation (CFR) 1021, Appendix B, give the appropriate justification, and the approval date.

For Categorical Exclusions (CXs), the proposed action must not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, or similar requirements of Department of Energy (DOE) or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment or facilities; (3) disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources (see 10 CFR 1021). In addition, no extraordinary circumstances related to the proposal exist that would affect the significance of the action. In addition, the action is not "connected" to other action actions (40 CFR 1508.25(a)(1) and is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1608.27(b)(7)).

**References:** 10 CFR 1021, Appendix B to subpart D, items B3.6, "Small-scale research and development, laboratory operations, and pilot projects"

**Justification:** The proposed R&D activities are consistent with CX B3.6 "Siting, construction, modification, operation, and decommissioning of facilities for small-scale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); smallscale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment;"

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act)  Yes  No

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on: 4/29/2020