

U.S. Department of Energy-Idaho Operations Office  
National Environmental Policy Act  
Categorical Exclusion Determination

**Project Title:** Wildfire Grid Event Signature Library Rev 1

**Project Description and Purpose:**

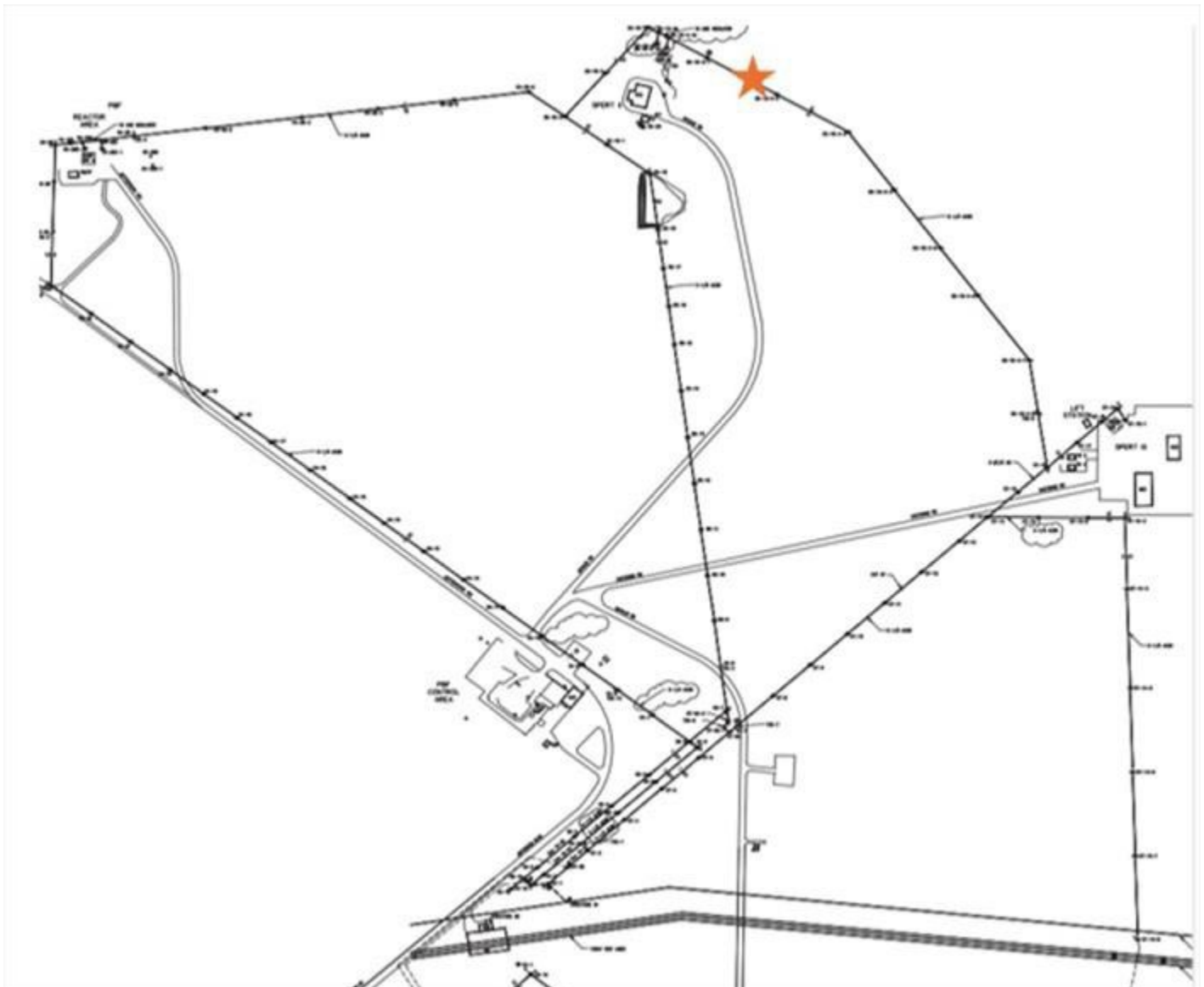
**Revision 1:**

This project will enable future wildfire prevention algorithms by adding data to the Grid Event Signature Library that is specifically targeted towards potential wildfire ignition events such as faults, downed conductors, arcing, and conductor slap. INL's primary role in the project is to conduct controlled, full-scale electrical fault testing at its Critical Infrastructure Test Range Complex (CITRC). INL will aid in expertise by generating and collecting the datapoints needed for the fault library. INL will also contribute to back labeling of existing faults using AI tools. The goal of this project at INL is to gather and publish wildfire-relevant fault signatures from intentionally initiated faults, which includes drone-drops of birds, branches, and other short length conductors onto live electrical lines.

The changes covered in this revision are the following:

- The test location is now along/over the pole line road directly off of Test Pad B and shown in Figure 1.
- The pole line road is overgrown, but should not require maintenance to access/drive. If mandated by the fire department, mowing of the center strip may be necessary.
- Power management will be planting a non-load bearing wooden distribution pole with a tie to the existing ground grid.

**Figure 1:** The CITRC power grid with the new location marked with an orange star.



**Figure 2:** Aerial image showing the section of line, in red, where testing will occur.



**Original ECP:**

Idaho National Laboratory (INL) is leading a multi-laboratory project to better understand how electrical grid events can start wildfires. The project supports wildfire prevention by creating and improving a national data library of electrical fault events that are known to cause or increase wildfire risk. These events include downed power lines, electrical arcing, and conductors coming into contact with each other or nearby objects.

INL's primary role in the project is to conduct controlled, full-scale electrical fault testing at its Critical Infrastructure Test Range Complex (CITRC). The INL will intentionally create realistic fault scenarios on test power lines (13.8kV primarily and possibly 34.5kV), such as downed conductors and temporary faults. These tests are designed to safely reproduce conditions that may lead to wildfire ignition in real-world electric power systems. Existing test distribution lines will be used, and no new construction or ground disturbance is required. During testing, INL will use existing and newly installed electrical sensors and metering equipment to measure and record fault behavior located at Pad B at CITRC. In some tests, drones operated by trained INL personnel will be used to drop materials onto power lines to initiate faults in a controlled manner in the areas of Pad C. In addition to physical testing, INL will support project management and computer-based data activities, including helping to label and organize historical electrical fault data using data analysis and artificial intelligence tools. Data collected at INL will be processed and shared with partner national laboratories for inclusion in a national database. No generator power will be needed.

Other U.S. national laboratories are supporting the project primarily through data collection, analysis, and coordination activities. Oak Ridge National Laboratory (ORNL) hosts and maintains the Grid Event Signature Library, the online database where fault data from this project will be stored and made publicly available. ORNL will assist with organizing, reviewing, and publishing new data and ensuring it meets data quality standards. Pacific Northwest National Laboratory (PNNL) will help consolidate and validate large historical datasets and use data analysis techniques to identify and better label past electrical events that may not have been fully documented. Sandia National Laboratories (SNL) and Lawrence Livermore National Laboratory (LLNL) will contribute existing electrical fault data from previous testing, simulations, and utility partnerships. Some additional laboratory testing related to lightning and electrical arcing will occur at Sandia facilities under separate

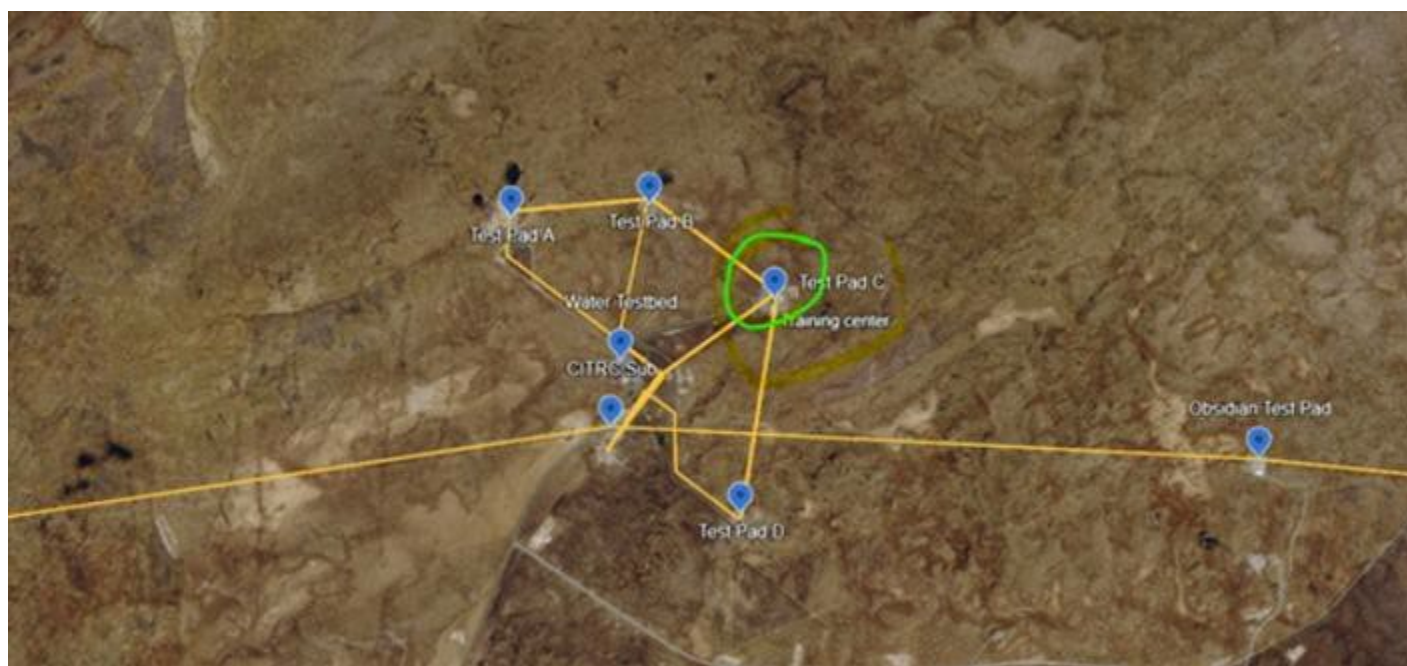
environmental approvals, with no responsibility for execution by INL. The Electric Power Research Institute (EPRI) will provide technical expertise on electrical fault types and monitoring approaches and may contribute data from its own test facilities.

The overall benefit of the project is improved understanding of how electrical equipment failures can contribute to wildfires. The results will help researchers, utilities, and technology developers improve detection of dangerous electrical conditions and reduce wildfire risk, benefiting public safety and the reliability of the electric grid.

The waste that will be generated during this project will consist of about 100lbs of industrial waste that will consist of metal wires, burned tree branches, and plant/organic materials that will be dropped from drones. The waste will be managed and handled with the support of WGS. Since these activities may induce arcing faults, which do pose a fire safety risk, the INL fire department and fire marshal have been engaged to make sure they can attend the testing for safety reasons. Work is being performed over a concrete pad to avoid native vegetation to further mitigate fire potential. In the event of a native vegetation fire, the project would comply with compensatory mitigation efforts and pay for sagebrush planting if needed. Additionally, this is going to occur in winter for the sake of avoiding a fire with a current target for February 2027, but adjustable to December 2026 or January 2027 as needed.

The INL will potentially buy a new electric system metering equipment to complete this project and it will be stored for after future projects use.

**Figure 1:** Shows the CTRIC power grid and the preference for testing at Pad C, green circle.



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

#### Air Emissions

Potentially minor amounts of combustion emissions may be produced from the less than 100 lbs of organic material used to induce arcing.

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

NA

#### Disturbing Cultural or Biological Resources

There is the potential for this work to impact vegetation and for project personnel to interact with various wildlife species. A Biological Resource Review will be arranged within two weeks prior to the initiation of any activities that might disturb soil or vegetation and again following completion of project activities. A nesting bird survey is included with the Biological Resource Review for actions occurring between April 1 - October 1 per compliance with the Migratory Bird Treaty Act. Bat surveys are also included with the Biological Resource Review in accordance with the INL Bat Protection Plan.

CULTURAL: A Section 106 review was completed under CRMO project number (BEA-26-045) and resulted in No Historic Properties Affected. Please refer to Holds Points and Project Specific Instructions.

#### Generating and Managing Waste

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When wastes are generated, how they are disposed can adversely affect the environment. Managing wastes appropriately and responsibly and implementing recycling or reuse practices, where feasible, during project activities can reduce the potential impact on the environment.

**Releasing Contaminants**

When chemicals are used during the project there is the potential for spills that could impact the environment (air, water, soil).

**Using, Reusing, and Conserving Natural Resources**

Project activities have the opportunity to reduce the impact on our natural resources by recycling or diverting materials from disposal in the landfill.

<b>Determination:</b>
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**References:** B3.6 "Small-scale research and development, laboratory operations, and pilot projects"

B3.6 Small-scale research and development, laboratory operations, and pilot projects. 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); and small-scale 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 or developed 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.

The proposal fits within the classes of actions listed in Appendix B to 10 CFR Part 1021 or Appendix B and C of DOE's NEPA Implementing Procedures and satisfies the conditions that are integral elements of the classes of actions therein. The proposal does not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Appendix B.

There is no extraordinary circumstance related to the proposal that is likely to cause a reasonably foreseeable significant adverse effect or for which DOE does not know the environmental effect. Extraordinary circumstances are unique situations presented by specific proposals, including, but not limited to, scientific controversy about the environmental effects of the proposal; uncertain effects or effects involving unique or unknown risks; and unresolved conflicts concerning alternative uses of available resources.

The proposal has not been segmented to meet the definition of a categorical exclusion. Segmentation can occur when a proposal is broken down into small parts in order to avoid the appearance of significance of the total action. However, segmentation does not include proposals that are developed and potentially implemented over multiple phases where each phase results in a decision whether to proceed to the subsequent phase.

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Approved by Robert Douglas Herzog, DOE-ID NEPA Compliance Officer on: 4/30/2026