DOE-ID NEPA CX DETERMINATION
Idaho National Laboratory

CX Posting No.: DOE-ID-INL-20-116 R1

SECTION A. Project Title: Powerline Testing

SECTION B. Project Description and Purpose:

Revision 1:

This revision proposes an additional work area and identifies some temporary (in place for less than 6 months) test structures.

Figure 1-1 shows the IML Test Pad and area east of the pad. The area shown within the heavy black lines includes the pad itself (partial - left side of picture) and includes a temporary shelter, test trailers, and a steel tower. To the east of the IML, another area adjacent to the T-25 two track road is shown in a heavy black line and includes power lines and pole structures. Within the black boundary is shown several areas with black crosshatch lines as well as areas with yellow crosshatch lines. As the legend indicates, the areas within the black boundary are approved work areas in which vehicles can travel. Areas with black crosshatch lines allow vehicle access with prior approval. The areas with the yellow crosshatch lines are not approved for vehicle access. The blue outlined area is the new proposed Approved Work Area. The Environmental Assessment (EA) for the Power Grid Test Bed allowed for expansion of existing test pads in areas that had been previously disturbed. The new proposed Work Area has not been previously disturbed and is therefore outside of the coverage of the EAbut has been surveyed for cultural resources.

Figure 1-2 shows the IML Test Pad and area east of the pad including a temporary installation of power poles and conductors to support testing. These temporary structures will be located on the east side between the test pad and the steel tower. The plan is to surface mount the power poles and a mounting stand with concrete blocks on the base to stabilize the poles (approximately 12,000 lbs.). ACSR conductors would be strung between the poles and power would be provided via insulated cables connected to the 138kV INL line. The goal is to keep the temporary structure on the surface of the ground; however, it's possible that guy wires and anchors may be needed to stabilize the end poles to support the weight of the insulated cables. The area under the poles may be graveled to facilitate vehicle traffic for placing the pole structures and stabilizing blocks. The proposed area to be graveled will be approximately 50 ft by 800 ft by may not be constructed until a later date. If is decided to construct the gravel pad, the area will need to be prepped by grubbing the existing vegetation and possibly removing the top layer of soil. The structures and blocks will be placed using vehicles such as large forklifts, bucket trucks, manlifts, and light duty trucks. Removal of the structures will be performed in a similar manner.

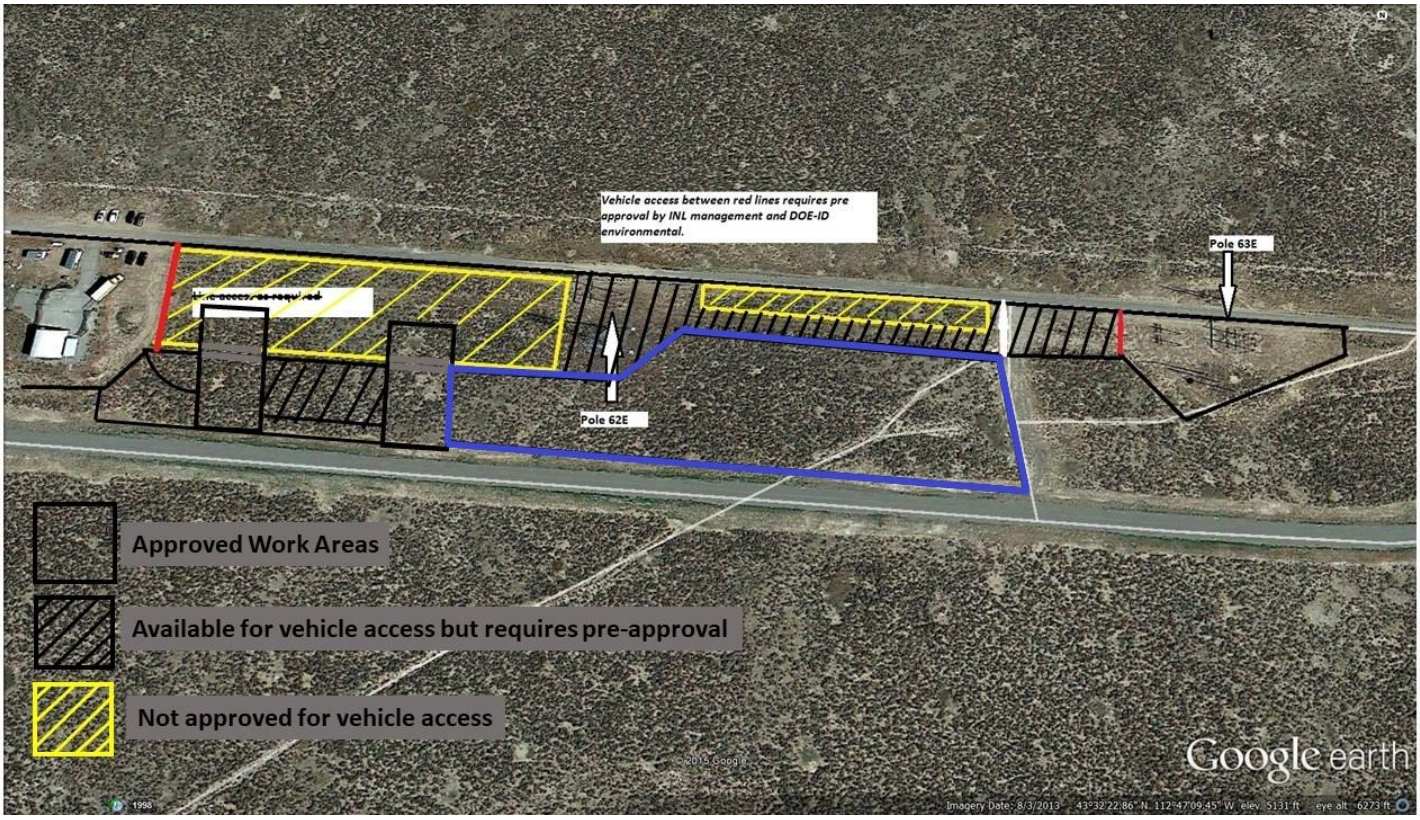

Figure 1-1: Intermediate Location (IML) Test Pad and area east

IML Detail

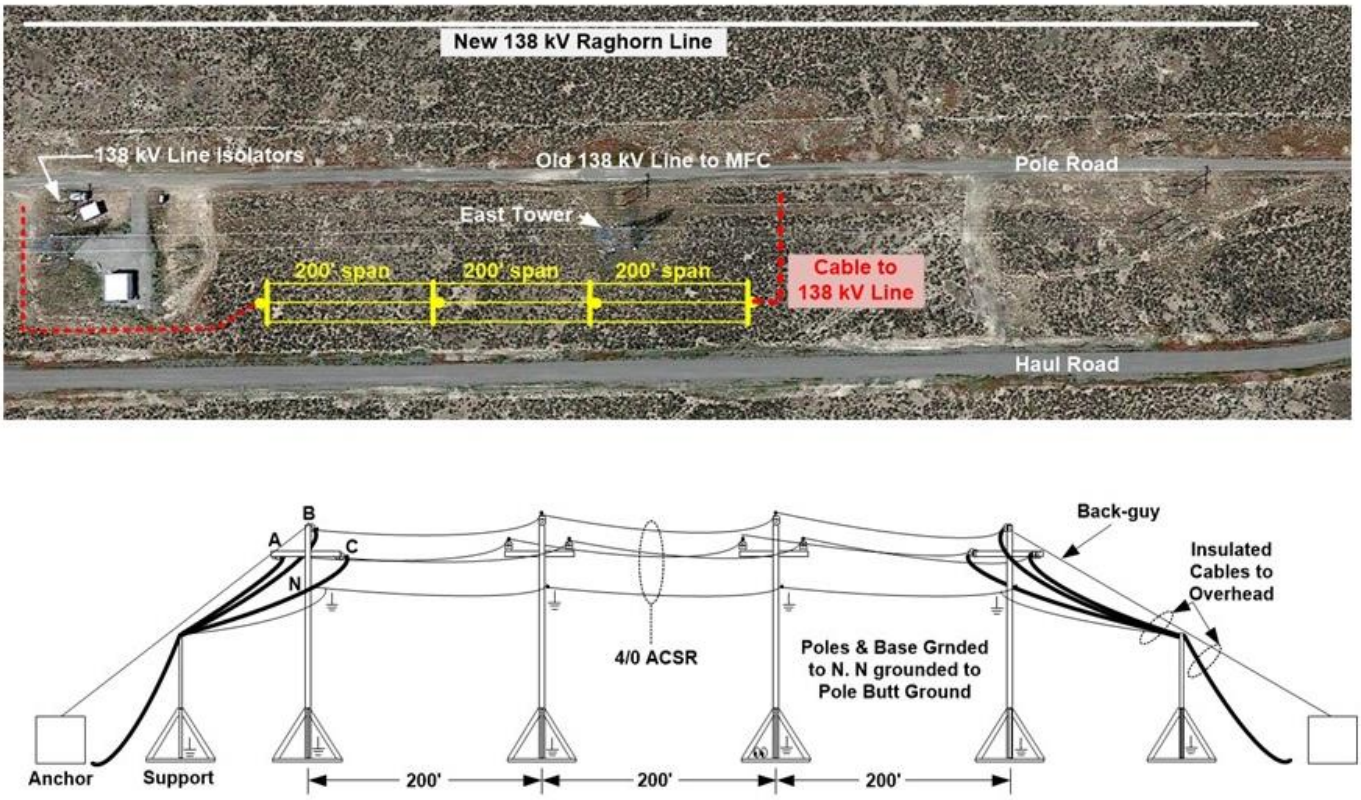

Figure 1-2: IML East - temporary power poles and conductors setup

Original ECP:

This environmental checklist (EC) supersedes INL-13-017 R6 and previous versions and incorporates testing requirements from the Final Environmental Assessment for Expanding Capabilities at the Power Grid Test Bed at Idaho National Laboratory (DOE/EA-2097) (July 2019). This EC also includes scope evaluated in EC INL-13-017 R6 and previous versions for clarity and consistency.
The proposed action supports electric power experiments performed by the National and Homeland Security (N&HS) Program. The project involves power generation, transmission, and distribution equipment and leverages power lines and systems between the Materials and Fuels Complex (MFC) and the Critical Test Range Complex (CITRC) substations and the CITRC distribution system. Test personnel typically perform power line work from 2-track roads under, or near, the power lines. Each location was selected based on minimizing disturbance to the surrounding landscape while still meeting project needs.

Experiments use power sources that include utility power (138kV) and generator power supplied at medium voltage (13.8kV or below) and electrical load equipment rated at 480 VAC and below. Testing activities place power generation, substation, transmission and related interface equipment within the 138kV power line easements between MFC and the CITRC substation (Outside the MFC boundary fence). Test locations include the CITRC Substation and Test Pad, the IML, MFC Test Pad, PBF-613, PBF-612, and circuit 56 between the CITRC Substation and the ARA Power Line Test Bed including the area underneath and adjacent to the power line. Three equipment test pads support this activity. The CITRC test pad is located near structure 28E (Figure 1).

The Intermediate Location (IML) pad is located near structure 61E (Figures 2-3), and the MFC test pad is located near structure 128E (Figure 4).

Proposed activities are similar to past testing and include reconfiguring current equipment and infrastructure, and temporary installation of test devices under or near the 138kV transmission line to support power related resilience and reliability testing. Line work requires using a bucket truck. Travel on T-25 gives access to the IML. Test equipment may include load banks (1-2) and small generators (~30-50kW, 1-2 ea) at the MFC Test Pad, a small load bank and generator (~30kW) at the CITRC Test Pad, and a small generator at the IML. Personnel accessing the areas drive standard vehicles (e.g., sport utility vehicles (SUVs), pickups, etc.) on paved and two track roads. Activities may place a conex type storage container at the IML and MFC Test Pad that will be removed at the end of the test program.

At the MFC test pad, the project has placed 15kV cables adjacent to T-25 and near the existing 138kV transmission line (Figure 5). The cable extends about 250 meters from the MFC test pad, includes three circuits with three cables per circuit, and is configured in a loop for a total of 12 cables. The area is roped off and the prpject controls access to the area. The cables are be de-energized during non-working hours. During testing, a vehicle traveling T-25 lays out cable next to, but off, the road.

The proposed action also includes placing 480V cables along the area previously used as a temporary access road that runs between the test pad and the gravel access road as shown (Figure 6). This new cable extends about 150 meters from the MFC test pad, includes three circuits with three cables per circuit, and is configured in a loop for a total of 12 cables. The cable would be laid out from a vehicle and manually placed and de-energized during non-working hours.The project proposed to rope-off the area and control access.

In addition to the power source and utilization equipment, testing installs instrumentation at the MFC locations, the IML location, at the CITRC substation, and at various locations on the distribution lines to monitor, measure and control parameters affecting the equipment. Project scope includes installing step-up/down transformers and related line connections at the MFC location and at the CITRC substation outside the substation fence. Testing and monitoring will take place at the IML pad. Personnel will be stationed at MFC test pad, IML, and CITRC test pad throughout the testing. Personnel may also be stationed at PBF-612, PBF-613, and various locations within the CITRC area throughout the testing. Travel will take place on the T-25 power line road between CITRC and MFC test pad and other paved and gravel roads in the CITRC area.

Testing may be conducted inside or outside PER-608 (CITRC Substation) and under, or near, the 138kV Power Lines. Power Management will coordinate work near the 138kV power lines and perform connections to and alignment of the electrical grid.
The operation and testing of the load equipment will be conducted at the discretion of the Principal Investigator. The testing may include 4 or more test cycles (approximately 2-3 weeks in duration) annually. The total diesel generator maximum power rating will be about 3-4 MW and will operate during the proposed testing periods for approximately 5-10 days. The generator(s) will be operated at near 80% of the rated load. Up to six small (<10 KW) generators may be used to power portable equipment located at MFC, CITRC, or at one or more locations along the power line road. Each large diesel generator (about 1.5 MW each) will be mounted on wheels or skids. All portable/mobile generators will be removed within one year of installation.

Concrete may be required on the pads to support heavy equipment. Pads will be surrounded by mowed areas, approximately 30-ft wide, as fire defensible space; the MFC defensible space may be partially grubbed. Personnel working at the pad locations will park vehicles on established 2-track roads and established parking areas shown in the figures below. Vehicle parking will not take place in the 30-ft defensible space or by creation of unauthorized parking areas.

In addition to the three pads, wooden power poles (located at structure 60E and 63E) are installed near the IML to re-route power lines to the test equipment. Two metal lattice towers, each containing 4 legs, are installed near the IML (near structure 61E and 62E). The towers are set on concrete pads, or footers, and will be removed at the end of testing. The footers will also be removed. All poles and lattice towers are less than 100 ft above ground level in height.

There is potential need to install additional power poles or other power structures, or to reinforce, refurbish, or replace existing structures in the currently approved test areas to support evolving test requirements. The addition or replacement of power poles, outside of Power Management's normal maintenance EC, will require further NEPA review.

Test equipment may be utilized near, or under, poles at IML. These poles are identified as 63E and 60E. Access to the poles will be controlled as detailed in Figures 2 and 3, assuming a review by biological and cultural personnel concur with using these areas. Chemicals that may be used include gasoline, diesel fuel, solder, and cleaning solvents such as acetone and alcohols, and standard construction chemicals such as caulks, adhesives, etc.

Portable toilets will be placed at remote locations and emptied by a private contactor at an off-site location or at the CFA STP. Bottled water will be provided for drinking.

Prior to setup and testing activities, the project will contact the Program Environmental Lead (PEL) to review the scope of the testing and any changes from the previous testing. In addition, the project will contact cultural and biological resources to conduct necessary surveys prior to beginning work.

Snow removal may be required prior to or during testing to allow vehicle and personnel access for test setup and operations. Areas that may be affected are the T-25 power line road between PBF and MFC, and the test pads at CITRC substation, IML, and MFC Test Pad. Prior to snow removal the project will contact cultural resources for evaluation of the areas to be cleared and the methods for clearing. Figure 1 shows the CITRC substation and adjoining area. The area included within the black boundary lines, but outside the CITRC substation and yard, is utilized by the project during testing for vehicle access and equipment setup and operation.

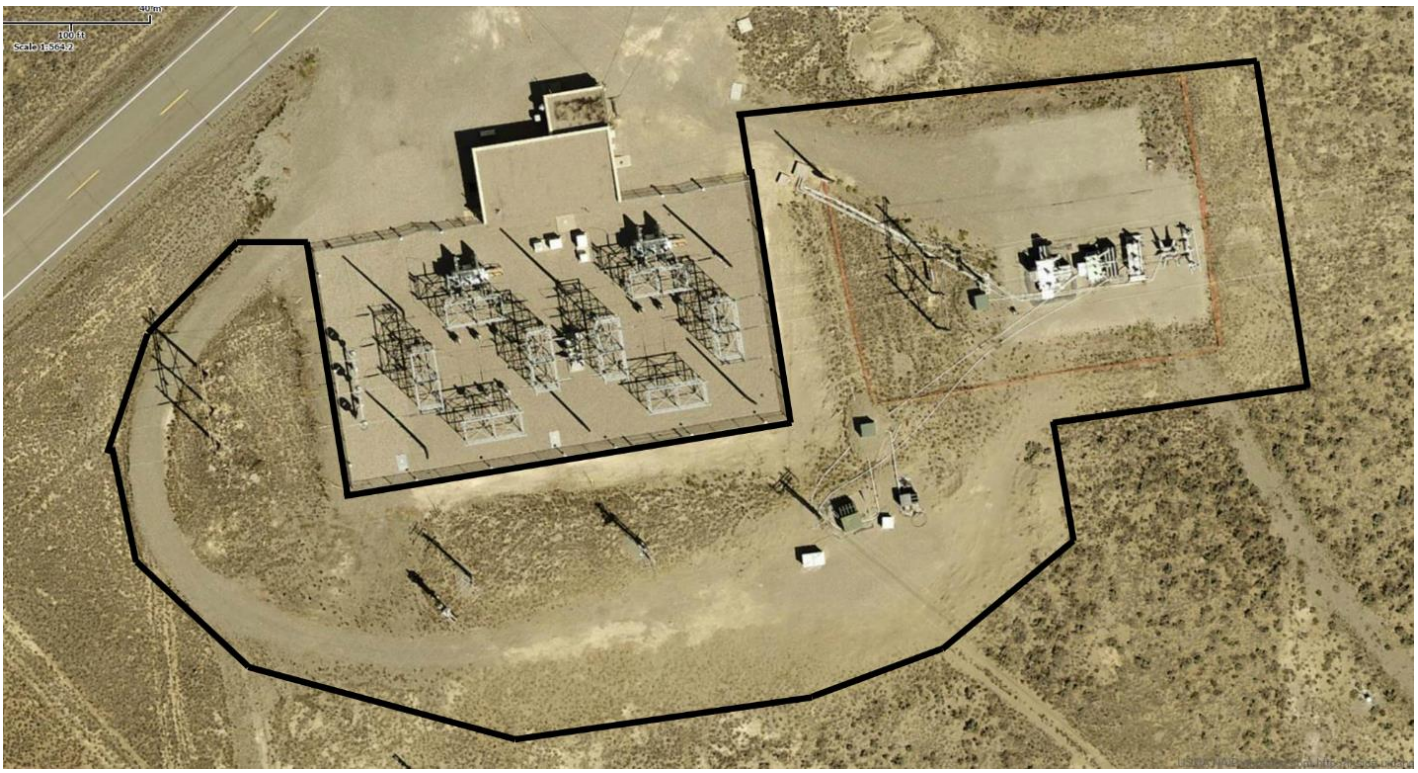

Figure 1: CITRC Substation and Test Pad Area

Figure 2 shows the IML Test Pad and area west of the pad. The area shown within the heavy black square is the pad itself and includes a temporary shelter, test trailers, and a steel tower. To the west of the IML, another area adjacent to the T-25 two track road is shown in a heavy black line and includes power lines and pole structures. Finally, within the black boundary is a yellow crosshatch mark area. As the legend indicates, the areas within the black boundary are approved work areas in which vehicles can travel. The area with the yellow crosshatch lines is currently not approved for vehicle access.

Figure 2: Intermediate Location (IML) Test Pad and area west

Figure 3 shows the IML Test Pad and area east of the pad. The area shown within the heavy black lines includes the pad itself (partial -

left side of picture) and includes a temporary shelter, test trailers, and a steel tower. To the east of the IML, another area adjacent to the T-25 two track road is shown in a heavy black line and includes power lines and pole structures. Within the black boundary is shown several areas with black crosshatch lines as well as areas with yellow crosshatch lines. As the legend indicates, the areas within the black boundary are approved work areas in which vehicles can travel. Areas with black crosshatch lines allow vehicle access with prior approval. The areas with the yellow crosshatch lines are not approved for vehicle access.

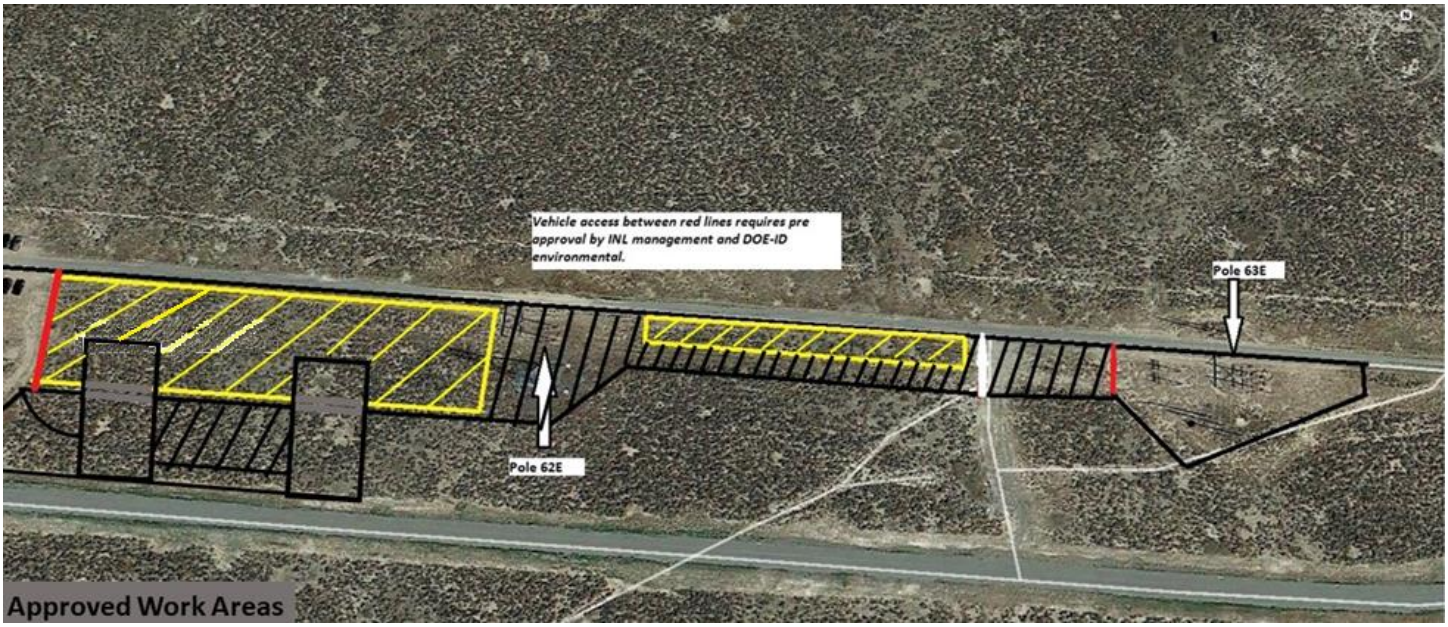

Figure 3: Intermediate Location (IML) Test Pad and area east

Figure 4 shows the MFC Test Pad. The area shown within the heavy black lines is previously disturbed and used for setup and testing with a variety of high and medium voltage equipment as well as instrumentation and test trailers. The specific configuration at the pad varies depending on the scope of the individual tests, thus the type and number of equipment routinely changes. The area within the black boundary is approved for setup and testing activities including vehicle traffic.

Figure 4: MFC Test Pad

Figure 5 shows the MFC Test Pad and the 15kV cable that is currently placed on the ground and running south of the test pad adjacent to the T-25 power line road. This cable is in place until the current iterations of testing are complete.

Figure 5: MFC Test Pad – 15kV cable layout

Figure 6 shows the MFC Test Pad and the proposed route for laying out 480V cable as part of potential test configuration. The cable is not currently in place, but is being considered during test planning.

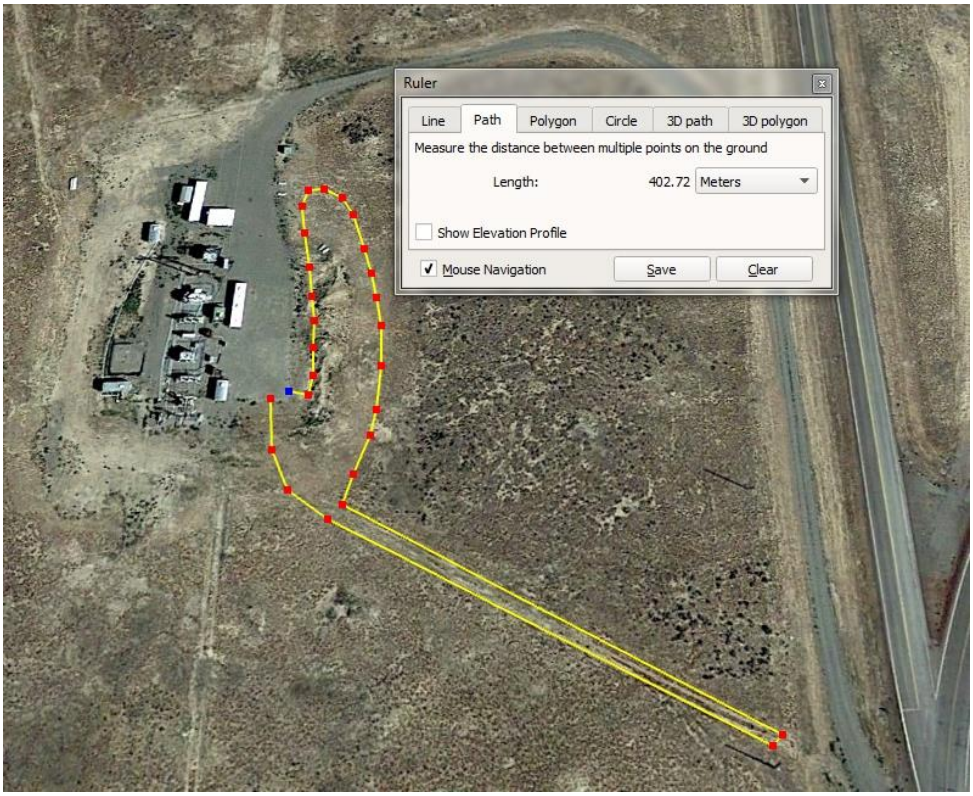

Figure 6: MFC Test Pad – 480V cable layout

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

Some air pollutant emissions are expected from operation of mobile non-road engines, but are exempt from permitting per State of Idaho Air Regulations (IDAPA 58.01.01.222). These engines will remain on site no longer than one year and do not require preparation of an Air Permitting Applicability Determination (APAD).

Project activities have a potential to disturb soil resulting in fugitive dust. If generation of fugitive dust is expected from project operations, reasonable precautions will be taken to prevent the particulate from becoming airborne (IDAPA 58.01.01.650-651). All dust suppression activities will be documented in accordance with requirements in the Permit to Construct No. P-2015.0023. The date, location, time, and the type and amount of dust suppressant used will be documented in project files.

Discharging to Surface-, Storm-, or Ground Water

N/A

Disturbing Cultural or Biological Resources

All ground disturbances near CITRC must be monitored by an INL archaeologist with the authority to redirect work in the event of a discovery of sensitive items. Project personnel will work with the Cultural Resource Management Office (CRMO) to avoid impacts to known resources and complete the requisite surveys and monitoring. The CRMO will also be contacted immediately and work will temporarily halt if any evidence of cultural/historical artifacts is discovered during project implementation. See Specific Conditions, Items #1 and #3.

Project activities involving placement of temporary equipment may disturb wildlife or wildlife habitat. A review of areas impacted by the project will be requested from Monitoring and Natural Resources. See Specific Conditions, Items #2 through #4. Any areas where vegetation is disturbed or destroyed will be subject to weed control and/or revegetation requirements. PLN-611 addresses control only of noxious weeds. Project personnel remain responsible for on-going control of invasive weeds, such as cheat-grass. Contact the Monitoring and Natural Resources at (208-526-9085) for revegetation requirements. Project personnel have overall responsibility for weed control and/or revegetation (if needed); revegetation and weed control may require several years of effort. See Project-specific Instructions, Item # 2.

Generating and Managing Waste

Generation of hazardous waste is not anticipated, but is possible. Waste Generator Services (WGS) would characterize and manage all hazardous waste. Industrial waste, in the form of trash, scrap metal from construction, solder, wipes, rags, failed parts, will be characterized by the generator and managed for disposal by WGS. All scrap material will be recycled or excessed to the extent practicable.

Releasing Contaminants

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

Using, Reusing, and Conserving Natural Resources

Project description indicates materials will need to be purchased or used that require sourcing materials from the environment. Being conscientious about the types of materials used could reduce the impact to our natural resources.

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, B4.11 "Electric power substations and interconnection facilities" and Final Environmental Assessment for Expanding Capabilities at the Power Grid Test Bed at Idaho National Laboratory (DOE/EA-2097) (July 2019)

Justification: Activities proposed are consistent with 10 CFR 1021, Appendix B, B4.11 "Construction or modification of electric power substations or interconnection facilities (including, but not limited to, switching stations and support facilities).", and

DOE evaluated the environmental impacts of performing research, development, and demonstration activities as described in this EC using the INL Site power grid were evaluated in the Final Environmental Assessment for Expanding Capabilities at the Power Grid Test Bed at Idaho National Laboratory (DOE/EA-2097) (July 2019).

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

Approved by Jason L. Anderson, DOE-ID NEPA Compliance Officer on: 09/07/2021