Experiment Planning Statement

The Experiment Planning Statement (EPS) is a key element in the SURF Experiment Implementation Program: https://www.sanfordlab.org/researchers/proposal-guidelines. Below is a template to follow when completing the Experiment Planning Statement. Include figures and tables as appropriate.

1. Project Summary

1.1 **Title:** Provide a name for the project

1.2 **Purpose and Scope:** Describe the project, including relevant citations or references as appropriate (especially based on work performed at the Laboratory).

1.3 **Personnel:** List of collaborators (including postdocs and students) and institutions; also list any subcontractors. Indicate which personnel will perform activities at SURF.

1.4 **Funding Sources:** List funding sources, including relevant pending proposals.

2. Equipment

2.1 **General Description:** Provide a description of processes and systems that will be used during the project.

2.2 **Equipment Description:** List all items to be used onsite, including dimensions and masses.

2.2.1 **Electrical Equipment and Cables:** Pay special attention to listing electrical equipment and cables as well as associated certifications (e.g., UL, CSA, etc). Note that all electrical equipment must be inspected prior to use. Plenum-rated cables are preferred (low smoke, no halogen). An inventory of electrical equipment will need to be maintained.

3. Experiment Area and Infrastructure Needs

3.1 **Location:** Preferred level and location if known, minimum depth overburden.

3.2 **Space:** Footprint of setup, including any height considerations.

3.3 **Power:** Voltage requirements, kW, peak and steady-state power; number of outlets and separate circuits required; requirements for conditioned power or UPS backup to be provided by the experiment.

3.4 **Environment:** Dust, heating/cooling and humidity requirements (special precautions may be necessary when bringing equipment to certain levels), and sensitivity to radioactive backgrounds including radon. Sensitivity to pressure fluctuations should also be noted.

3.5 **Equipment Movement:** Describe how materials will arrive at the Laboratory (delivery by self/courier, packaging, pallets/loose, etc). List mass and

dimensions of irreducible items, transportation needs (e.g., dolly, cart, rail, etc), any hoisting requirements. Note: Large items must be transported by Laboratory personnel via rail. A high-value handling form can be used to ensure a higher level of coordination for certain items. There may be restrictions on the numbers of loads that can be moved underground on a given day.

3.6 **Services:** List service requirements as a function of time (e.g., water, compressed air, etc) as well as other delivered consumables such as compressed gases and cryogens. Include a description of any other facility support requested. The cost of providing some services may be passed on to the Experiment.

3.7 **Site Preparation:** Include any special requirements (e.g., concrete flooring, holes drilled, concrete pillars, etc). Some of these costs may be passed on to the Experiment. Note: In some less-developed areas, the Experiment may need to construct an enclosure to protect equipment from small falling rocks.

3.8 **Vibration Control:** May dictate distance from main shafts and main ventilation as well as sensitivity to drilling and blasting associated with specific maintenance projects or infrastructure developments.

3.9 **Computing Resources/Network:** Provide the number of network ports/wall jacks, bandwidth requirements and any specific hardware needs (computer server, timing signals, etc).

3.10 **Surface Space:** Provide requirements for staging and storage of equipment on surface (specify cold or heated storage) as well as any office needs.

4. Hazards and Integrated Safety Management (ISM)

All activities performed at SURF must be conducted in a manner that ensures protection of the workers, the public and the environment. Project goals will be accomplished safely by following a process of integrated safety management.

4.1 **Hazards:** List Experiment-related hazards. In some cases, a separate Experiment Hazard Assessment Summary (EHAS) may be required to fully account for all hazards and any controls or mitigation.

4.2 **Procedures:** List any Job Hazard Analysis (JHA) or procedure documents that will be developed to ensure safe conduct of the experiment at SURF. Note that most activities require a formal hazard analysis and that different phases of a project can have different hazards.

4.3 **Training:** List training that is required by Experiment personnel. Consider hazards such as high voltage, chemicals (including lead), radiation, pressure, cryogens, fall arrest and confined spaces.

4.4 **Inventories:** Provide an inventory of the materials and equipment in the categories listed below:

4.4.1 **Chemicals:** Provide an inventory of chemicals that includes the name of the responsible person, arrival date at Sanford Laboratory, storage information (quantities, locations and containment descriptions), an indication of whether the chemical is considered hazardous waste and whether any waste is expected. Safety data sheets (SDS) must be provided to the Laboratory prior to bringing chemicals onsite.

4.4.2 **Electrical Equipment:** Provide an inventory of electrical equipment as noted above (Section 2.2.1) that includes information such as the model and serial number of equipment as well as power consumption, location of use and the equipment owner. The inventory will also reflect the date of Sanford Laboratory inspections.

4.4.3 **Radioactive Materials:** Provide an inventory of radioactive materials that includes isotope, physical description, activity, owner, primary emission, arrival date and storage location. All radioactive materials (including NRC-exempt sources) must be approved by the Radiation Safety Officer (RSO). Transportation of radioactive sources to or from SURF property must be coordinated with the SURF RSO, and only individuals approved by the Sanford Laboratory RSO are authorized to handle radioactive sources on Sanford Laboratory property. Note that new radioactive sources may need to be added to the SDSTA NRC license, and license amendments can take up to 90 days.

4.4.4 **Pressure Vessels:** Provide an inventory of pressure vessels that includes information such as a description of the equipment, including manufacturer, model, serial number, manufacture/purchase date, institution owner, certificate of authorization number, national board number and any supporting documentation, including a copy of the ASME certificate.

4.4.5 **Hoisting & Rigging Equipment:** Provide an inventory of experiment-owned hoisting and rigging equipment that includes a description of the items (manufacturer, model and serial number, if applicable) as well as location.

5. Personnel Access Requirements

5.1 **Personnel Schedule:** List expected onsite experiment personnel as function of time; maximum and minimum numbers would also be useful. Note: There are restrictions on underground access.

5.2 **Personnel Access:** List number of onsite work hours expected per day and per week (steady-state and maximum). Note: There are restrictions on work hours.

6. **Experiment Schedule**
   Provide a schedule of experiment activities, including different phases of the project such as installation, commissioning, operation and decommissioning.

7. **Decommissioning Plan**
   Provide details regarding how the experiment will be decommissioned.

Once the details are finalized, a formal receipt will be issued by the Science Director indicating that the Experiment Planning Statement is acceptable.