**NE-21-26418: SMR Containment Cable and EPA System**

Engineered Solutions Group LLC (ESG) is a small business based in Brevard, North Carolina. Their mission is to use their experience and creativity to provide innovative and practical solutions for the nuclear power industry.

Current SMR designs will need to account for more severe environments inside containment than other existing nuclear power plants. Elevated temperatures exceeding 600°F, pressure levels of 1000 psig, and radiation exceeding 1E09 rads are predicted for SMR containment. Due to these high temperatures, current electrical components, which use organic materials for insulation, cannot be used. This includes cables, connectors, and Electrical Penetration Assemblies (EPAs). Although Mineral Insulation (MI) cable can survive in these extreme temperatures, this cable has higher costs, longer lead times, and poses difficulties with installation. While ESG has identified another alternative, this technology is not impervious to water. ESG has designed a cable routing system with connectors and EPA that protects cables from water exposure. However, there are no commercial test labs that can qualify this cable technology.

Oak Ridge National Laboratory (ORNL) has existing test capabilities and extensive expertise in this arena and ESG has identified an experimental program at ORNL that would enable ORNL to test and qualify the target cable technology and interface design. This project will enable ESG to develop this technology to support current and future SMR designs.