

## **NE-24-32515 – Improvements to Passive Heat Removal Systems in SAS4A/SASSYS-1**

ARC Clean Technology, Inc. (ARC) is located in Washington D.C. Their purpose is to reshape the energy industry by providing affordable electricity and industrial heat that is scalable and carbon free. ARC is currently developing the ARC-100 sodium cooled fast reactor.

Safe operation of a sodium cooled fast reactor can be significantly aided by heat removal systems that do not rely on active power, but function using passive means. There are typically two types of systems utilized: the Direct Reactor Auxiliary Cooling Systems (DRACS), and the Reactor Vessel Auxiliary Cooling System (RVACS). These systems are modeled in the SAS4A/SASSYS-1 (SAS) code to perform reactor safety analyses.

For this project, ARC will work with Argonne National Laboratory (ANL) to enhance the SAS modeling capabilities for passive heat removal systems, including the generic RVACS model and the DRACS heat exchanger models. These enhancements will enable ARC to recover safety margins and have a better representation of the system's response during long-term cooling events.