

NE-23-29915 – Experimental and Software Validation of Integral Thermal-Hydraulic Behavior in Fuel Assemblies

Based in Santa Clara, California, Oklo Inc. is a nuclear technology developer specializing in the production of the Aurora product line. This product is a series of commercial reactors on the MW scale that will primarily provide off-grid electric power, satisfying the demand for those customers isolated from large-scale electric grids.

The bulk of momentum loss of the reactor system coolant flow is contributed by the reactor core. The characterization of this pressure drop is important for system sizing and thermal-hydraulic characterization. This project seeks to address 1) pressure drop behavior of a typical sodium fast reactor fuel assembly with an orifice device and 2) orifice device onset of cavitation.

Oklo will partner with Argonne National Laboratory (ANL) and utilize the PELICAN test loop for this work. By using water as a working fluid, the facility performs fluid similitude scaling to achieve testing conditions typical of sodium fast reactors. The data collected in this project will provide insight into the design and thermal-hydraulic performance of Oklo's fuel assemblies as well as support validation of key modeling tools.