**ABSTRACT**

# A Large Low-Pressure Advanced High-Temperature Reactor (AHTR)

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# A Large Low-Pressure Advanced High-Temperature Reactor (AHTR)

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Oak Ridge National Laboratory, Sandia National Laboratories, and the University of California–Berkeley are developing a new reactor concept for hydrogen and electricity production: the Advanced High-Temperature Reactor (AHTR). The goal is to develop a large economic reactor with passive safety systems that delivers high-temperature heat with the coolant exit temperature (depending upon the specific objectives) between 750 and 1000EC. The AHTR fuel is a graphite-matrix coated-particle, the type used in high-temperature helium-cooled reactors. The coolant is a molten fluoride salt with a boiling point near 1400EC. With a low-pressure liquid coolant, passive safety systems proposed for liquid-metal reactors (such as the General Electric S-PRISM) can be used. Electricity is produced using a multireheat helium Brayton cycle. Depending upon design details, the power output for this passively safe reactor will be between 1000 and 1500 MW(e). A description and status of the reactor concept are provided.