

Southern Nuclear Operating Company, Inc. Briefing to NRC Commissioners on Advanced Reactor Preparedness through Regulatory Engagement and Research Cooperation

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April 13, 2021



Topics



- SNC Perspective on Advanced Reactors
- Advanced Reactor Demonstration Project – DOE award for risk reduction
- Approach to licensing (Licensing Modernization Project and guidance)

SNC Perspective on Advanced Reactors



Develop and demonstrate high potential advanced nuclear options that can provide the best value to the company & customers

RIGHT TECHNOLOGY

- Provide the backbone of a net zero economy – clean electricity, heat, hydrogen
- Address safety & sustainability

RIGHT TIMELINE

- Support decarbonization commitments & demands
- Replace potential retirements

RIGHT COST

- Competitive with natural gas combined cycle with post-combustion carbon capture and solar with battery

BEST VALUE

- Grow revenue in a rate neutral way
- Be options positive – expand the market past electricity

Advanced Reactor Demonstration Project DOE award for Risk Reduction Project



MCRE will be the first critical MCFR and positions the technology for success on MCFR Demo Reactor

ADVANCED REACTOR DEMONSTRATION PROGRAM

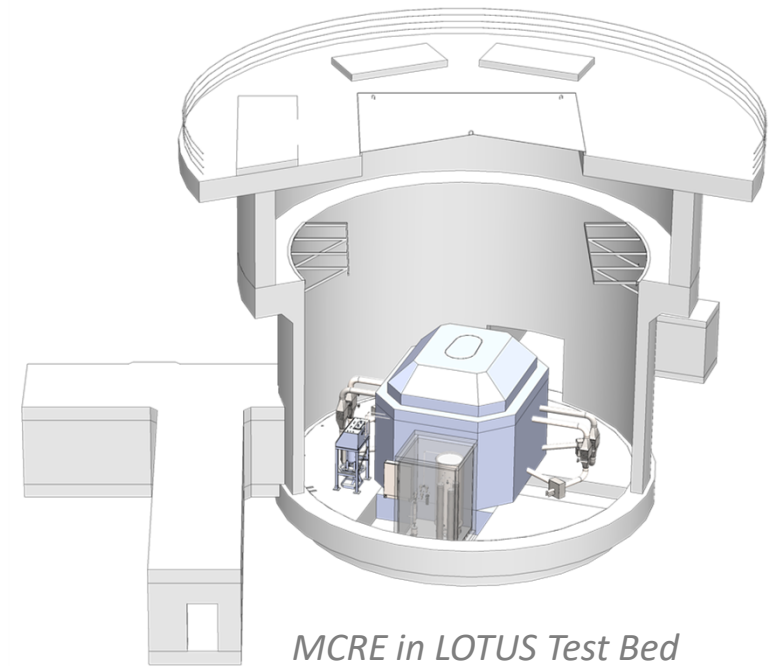
\$113M TOTAL PROJECT (80/20 Cost Share)

- Principal Investigator: Nick Irvin
- Program Manager: Lauren Lathem

MOLTEN CHLORIDE REACTOR EXPERIMENT

MCRE will be the first fast spectrum molten salt reactor in the world and the fourth MSR ever operated

- INL sited & DOE authorize
- Low power operation up to ~500 kWth
- Provides empirical nuclear data to support design and licensing of MCFR Demo
- Demonstrates safe reactor control under a variety of operating conditions



MCRE in LOTUS Test Bed



Approach to Licensing



Regulatory Framework to Support Development and Deployment of a Variety of Innovative Solutions

AGILE

- Coherent, integrated safety-focused requirements for entire plant life cycle
- A dependable platform to equitably treat a variety of nuclear energy generating systems

PREDICTABLE

- Performance-based objectives are explicitly established
- Technology-inclusive guidance to meet the expected objectives are provided

RESILIENT

- Manages state-of-knowledge and state-of-art changes effectively without unnecessary burden, delay or disruption



Technology Inclusive Risk-Informed Performance-Based Framework
Part 53
NEI 18-04 / RG 1.233 (LMP) – Optional Method

Abbreviations



- SNC – Southern Nuclear Operating Company, Inc.
- MCRE – Molten Chloride Reactor Experiment
- MCFR – Molten Chloride Fast Reactor
- INL – Idaho National Laboratory
- DOE – Department of Energy
- NRC – Nuclear Regulatory Commission
- MSR – molten salt reactor
- NRIC – National Reactor Innovation Center
- LOTUS – Laboratory for Operation and Testing in the United States
- EPRI – Electric Power Research Institute
- NEI – Nuclear Energy Institute
- RG – Regulatory Guide
- LMP – Licensing Modernization Project