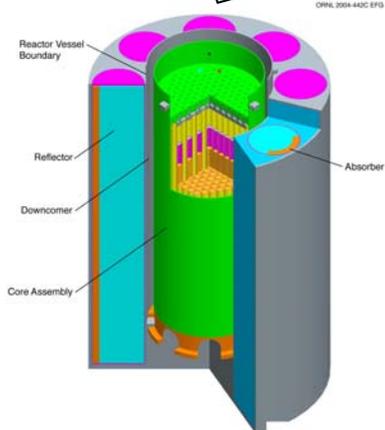
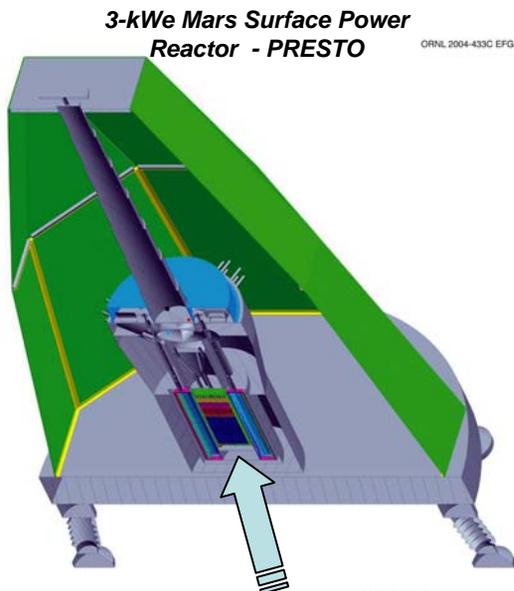


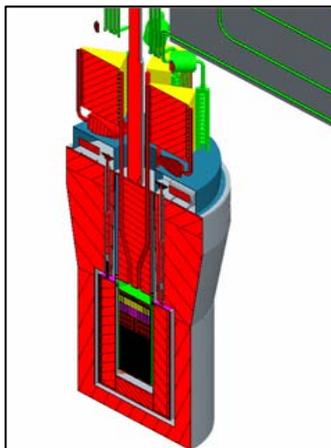
ARSS Develops Advanced Reactor Concepts and Conducts Design Review Analyses

Relevant Information and Prior Research	Data Needed	Analysis Tools/ Testing/R&D Required	Design Analysis & Optimization of Key Parameters	Design Syntheses	Reactor Performance Objectives	Reactor Application	End State
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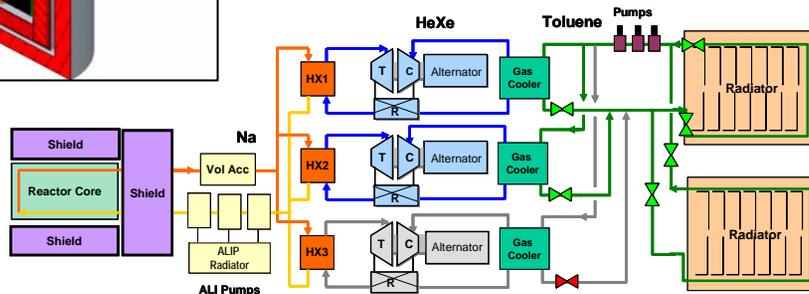
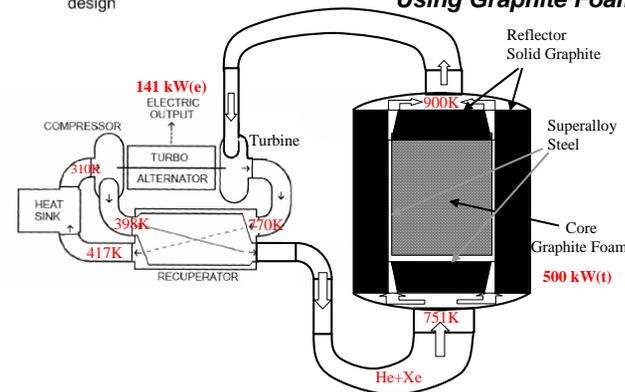
Core Design for PRESTO

50-kWe Lunar Surface Power Reactor



- Related materials research
- Related reactor designs
- State of Research/ development of power conversion options
- Materials characterization
- Nuclear data—cross sections
- Fuel performance
- Computer code/models
- Visualization tools
- Irradiation testing and examination
- Physical testing
- Fuel choice and enrichment
- Core geometry
- Fuel-moderator-coolant "package"
- Operating temperature regime
- Material performance
 - Thermal
 - Irradiation
- Heat rejection
- Integration of
 - Nuclear design
 - Thermal hydraulic design
 - Materials design
- Power level
- Operating temperatures
- Power conversion system
- What is incentive for designing/ deploying the reactor?
- Develop new reactor concept

Solid State Compact Reactor Using Graphite Foam



Block Diagram: Liquid-Metal Reactor Brayton Power System

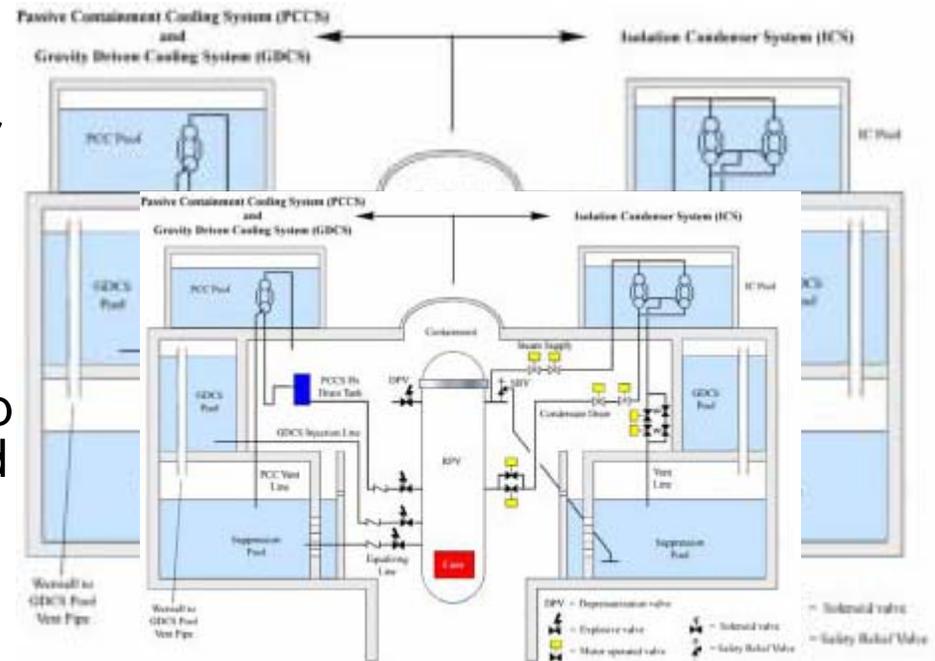
Reactor

Power Conversion

Radiator

Capabilities to Support the Design, Operation, Control, and Safety of Nuclear Systems for the Next Generation of Reactors

- Modeling, analysis, and measurements for evaluating reactor power systems
- Validate design and reactor power systems operation
 - Fuel, coolant, and material performance
 - Design margins
- Identify requisite R&D and develop technologies needed for advanced reactor designs/concepts
- System level modeling
 - Dynamic response
 - Transient analysis
- Instrumentation & controls
 - Control systems and sensors
 - New technology development & assessment



Staff Has Experience With:

- ✓ Light-water reactors (LWRs – B's & P's)
- ✓ Gas-Cooled Reactors (GCRs)
- ✓ Liquid-Metal Cooled (LMRs)
- ✓ Molten-Salt Reactors (MSRs)