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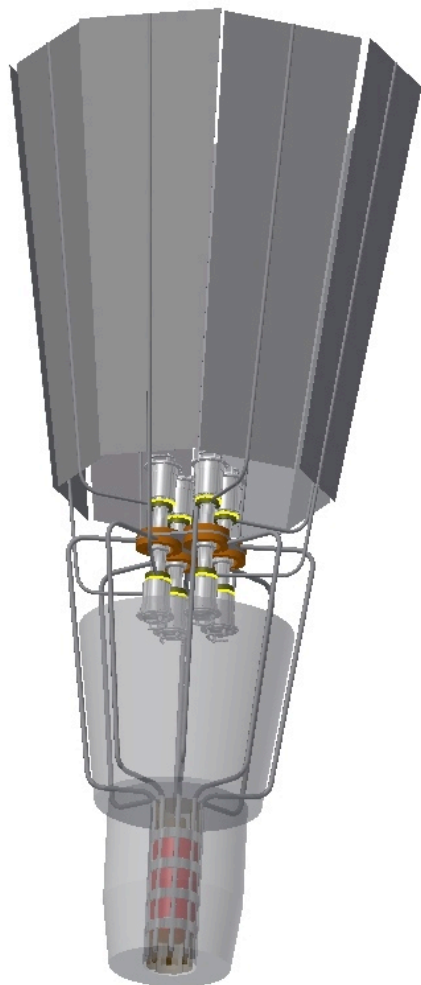
KiloPower Program

Presented to Aerospace America,
(A Magazine of the AIAA)

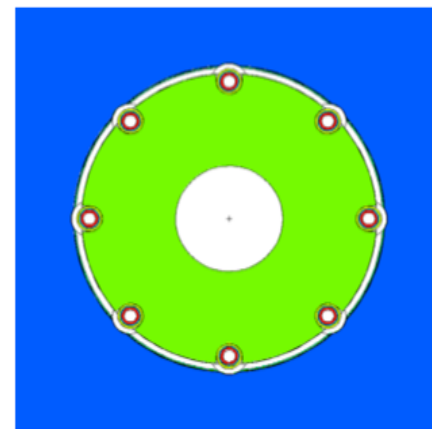
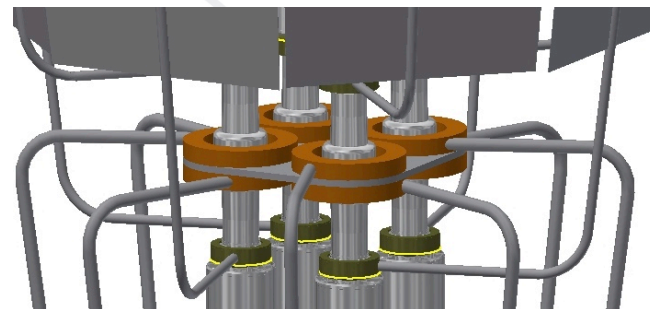
Patrick McClure
Los Alamos National Laboratory

August, 2016

1 kWe Kilopower

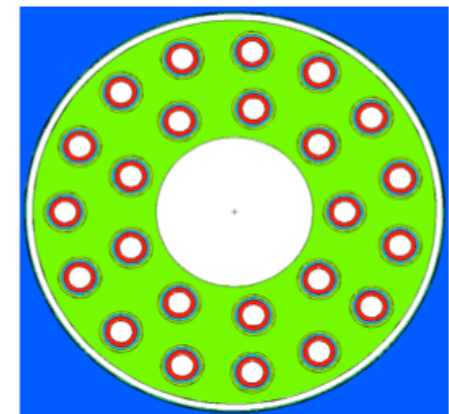
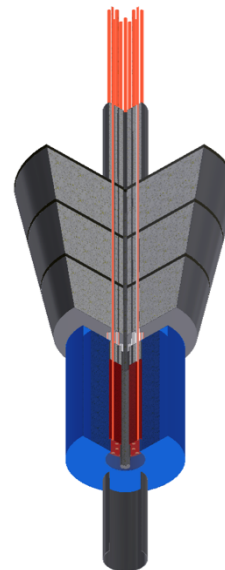
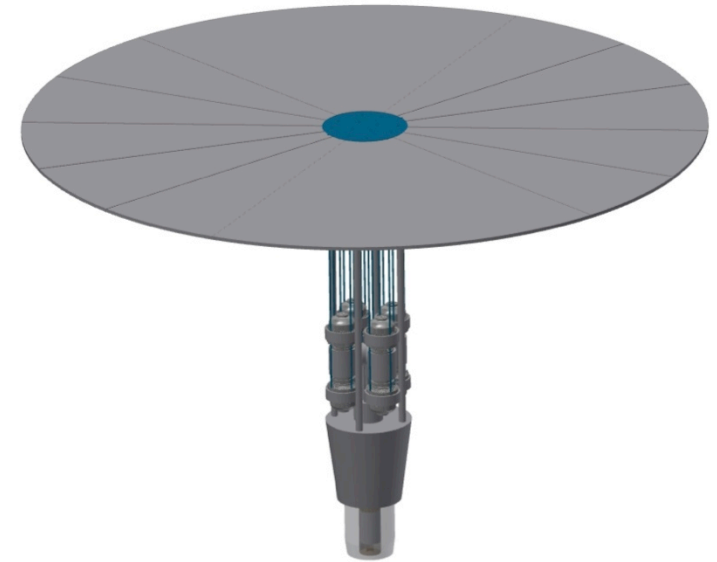
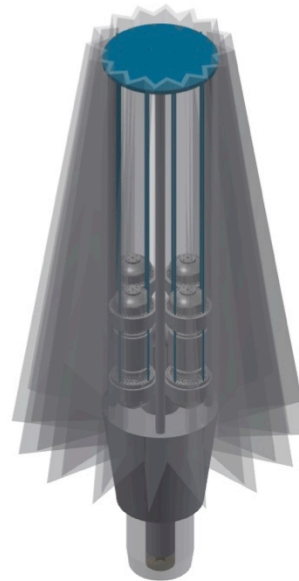


- 4 kWt UMo Core (25kg)
- BeO Reflector
- (8) 230/Sodium heat pipes
- (8) Modified ASC Converters
- (16) Ti/Water heat pipes
- Al Radiator
- 390 kg total mass
- 2.6 W/kg
- 28 VDC Bus
- 1 amp-hr startup
- 15+ year design life
- < 1% fuel burnup
- 1×10^{11} neutrons/cm²,
100krad (16yr) @ 10m
dose plane



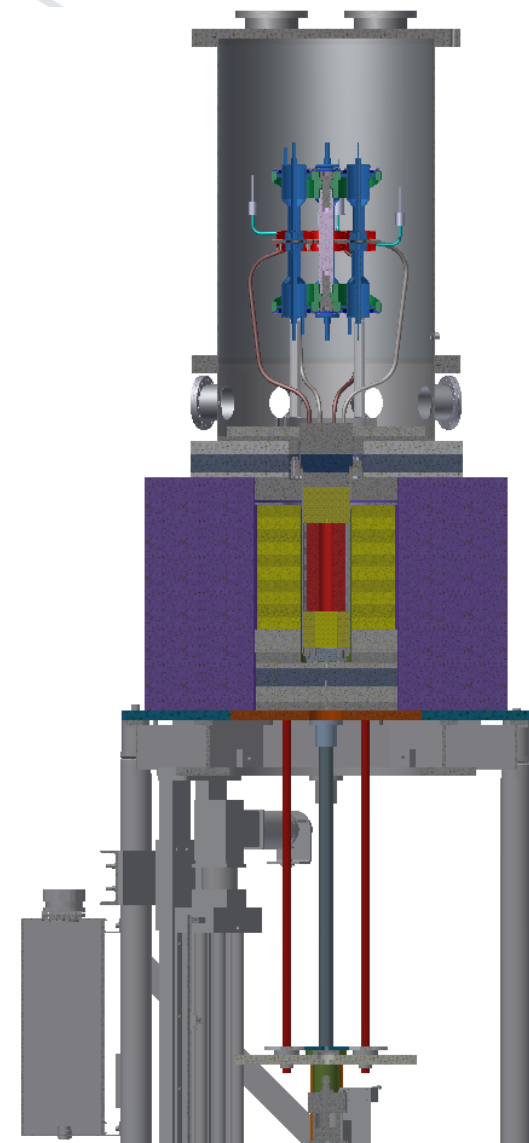
10kWe Kilopower

- 40 kWt UMo Core
- BeO Reflector
- (24) 230/Sodium heat pipes
- (8) 1.25 kWe Stirling Converters
- (32) Ti/Water heat pipes
- Al Deployable Radiator
- 1800 kg total mass
- 5.6 W/kg
- Mission Specific Bus Voltage
- 2 amp-hr startup
- 15+ year design life
- <1% Fuel Burnup
- 1×10^{11} neutrons/cm²,
100krad (16yr) @ 10m dose plane

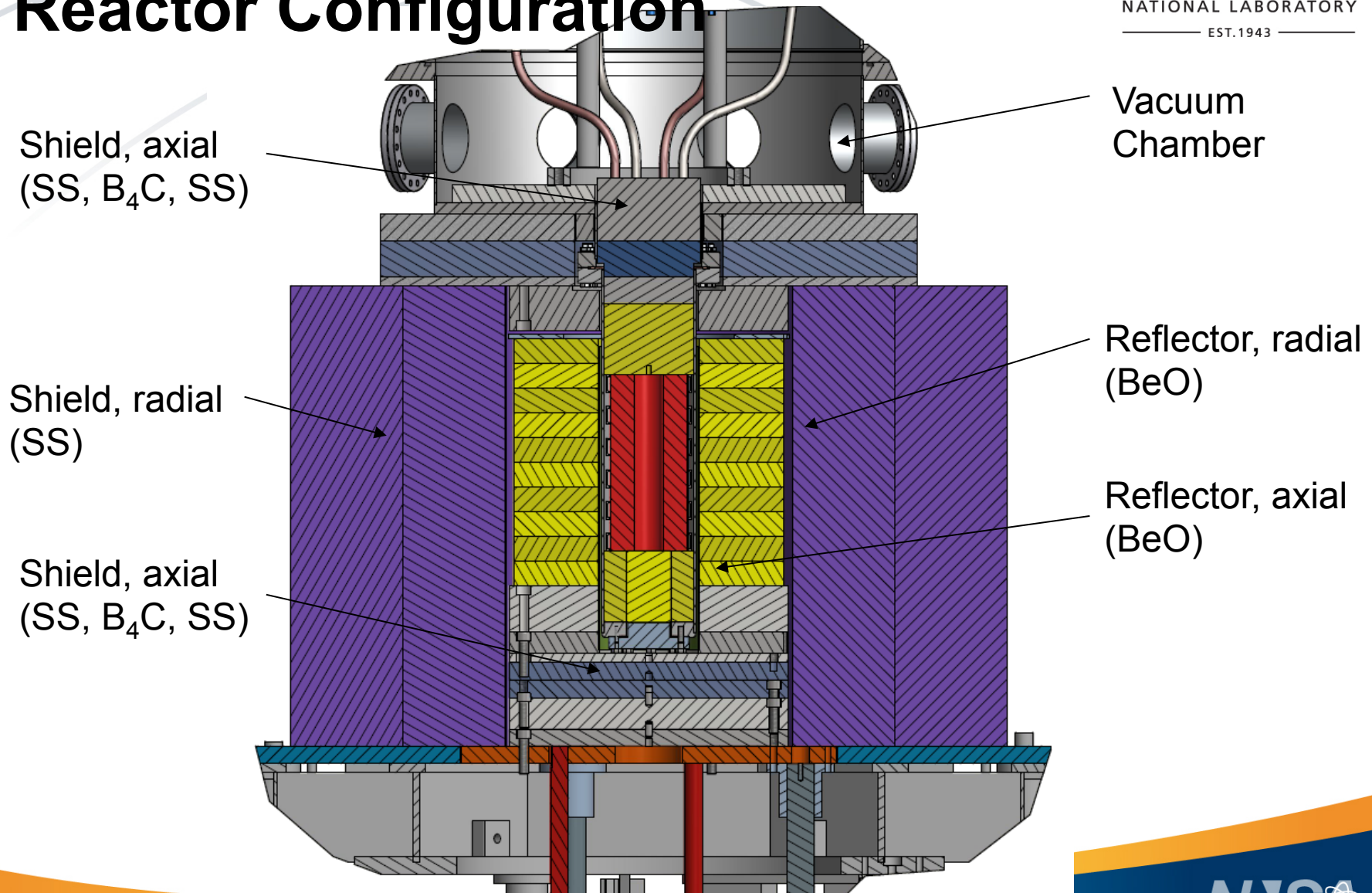


KRUSTY Integration Test (DAF)

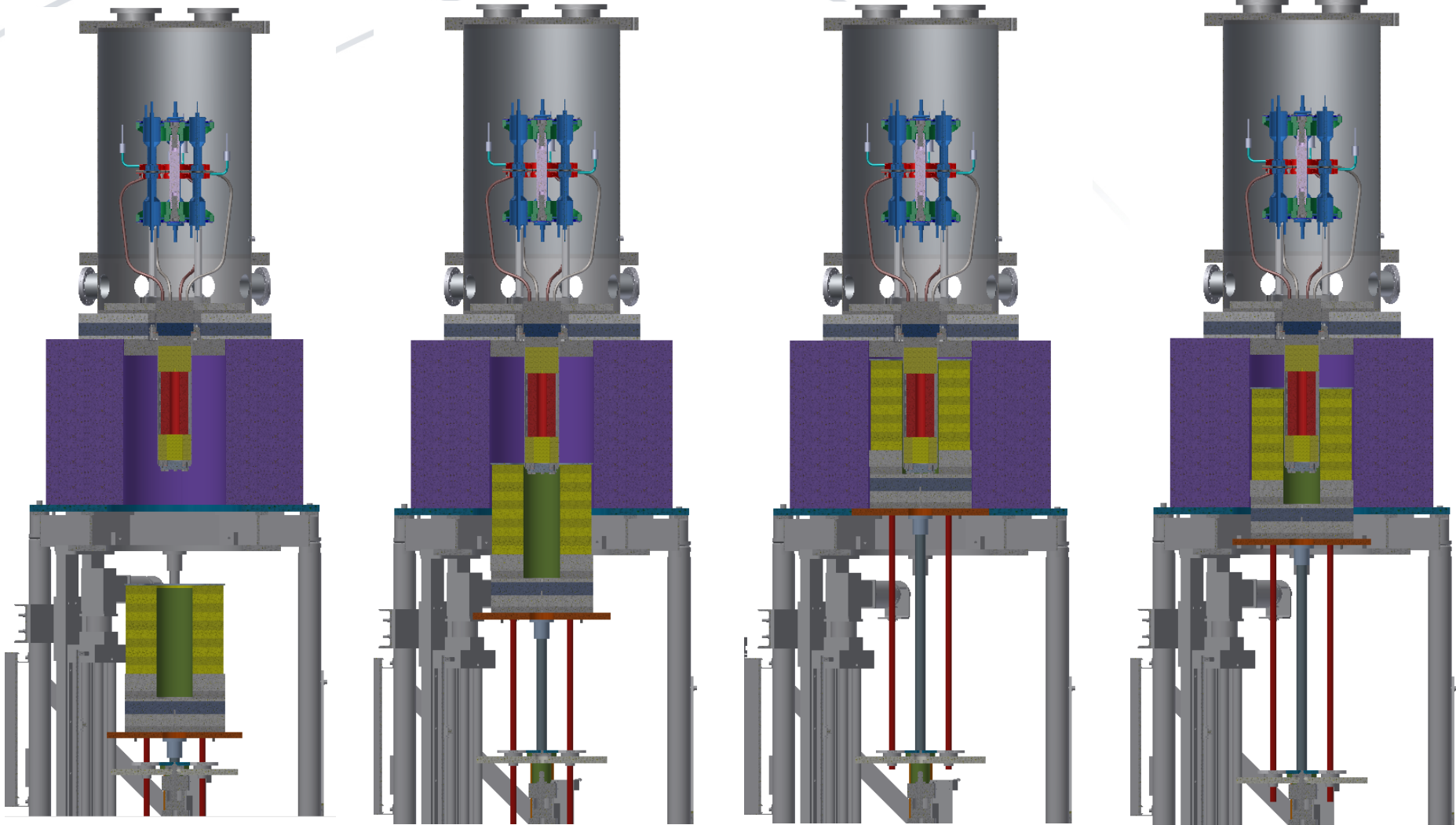
- Kilopower Reactor Using Stirling Technology
 - Comet criticality experiment at NNSA Device Assembly Facility
 - Same system configuration as DU thermal vacuum testing
 - HEU core
 - BeO reflector
 - Vacuum chamber addition
- Addresses
 1. Neutronics/Criticality
 2. Thermal power/feedback
 3. Reflector Performance
 4. Startup/Shutdown Operations
 5. Converted Electrical Power
 6. ATLO Safety processes



Reactor Configuration



Platen Positions



Fully Withdrawn

Neutronically withdrawn

Fully Inserted

Hydraulic scram
from full insertion