

# R-4 REACTOR

## (NCSCR-4)

### GENERAL

**REACTOR TYPE:** Aqueous homogenous, fully enriched (93%) uranium, light water moderated, graphite reflected, uncooled

**HISTORY:** December 1958 Modified from NCSCR-2 to NCSCR-4 during relocation to the Bureau of Mines Building

April 1959 Reactor Operational  
1961 Reactor Shutdown

**DESIGNER/BUILDER:** North Carolina State College

### REACTOR PHYSICS

**MAXIMUM POWER:** 100 watts thermal

**NEUTRON FLUX:** Average Thermal -  $1 \times 10^9$  n/cm<sup>2</sup>·sec, Average Fast -  $1 \times 10^9$  n/cm<sup>2</sup>·sec.

**CORE PARAMETERS:** Excess Reactivity = 1.0%  $\Delta k/k$

### CORE LOADING

**SHAPE:** Cylinder, 10.6875 inch diameter, 5.71 inches high with hemispherical bottom with 5.344 inch radius

**CRITICAL MASS:** 766.5 grams <sup>235</sup>U

**CORE LOADING:** 793 grams <sup>235</sup>U in form of 1.32 kg UO<sub>2</sub>SO<sub>4</sub>, enrichment 93%, diluted in H<sub>2</sub>O 13.9 liter solution

**POWER DENSITY:** 0.007 kW/liter

### FUEL ASSEMBLY DATA

**FORM & COMPOSITION:** (not applicable)

**CLADDING:** (not applicable)

**SUBASSEMBLIES:** (not applicable)