National Criticality Experiments Research Center (NCERC)

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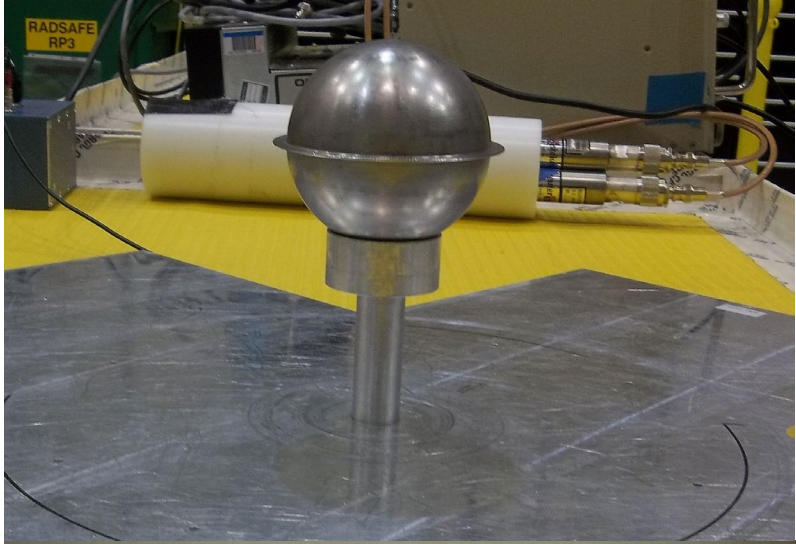
What is NCERC?

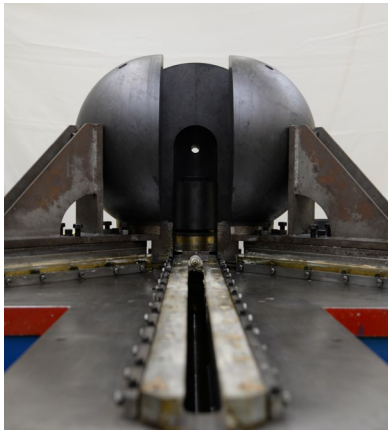
- General-purpose critical assembly facility
- Located within the Device Assembly Facility at the Nevada National Security Site
- Operated by Los Alamos National Laboratory

Radiation Test Objects

- Subcritical objects
  - U
  - Pu
  - Np
- Current applications:
  - Radiation detector testing
  - Nuclear data measurements
  - Criticality safety training demonstrations



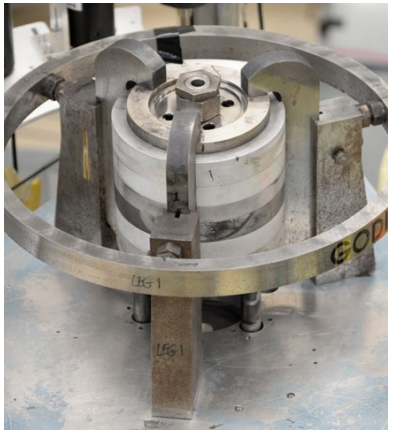
Critical Assemblies at NCERC



Flattop

Planet

Comet



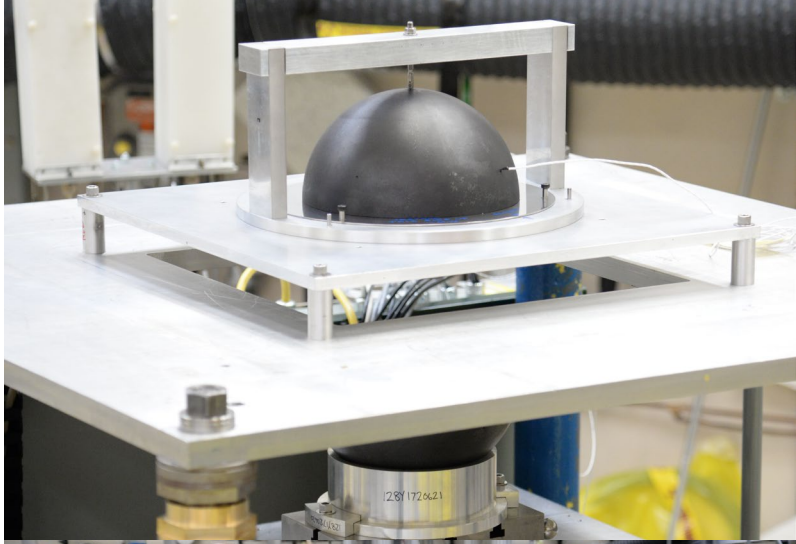
Godiva-IV

Flattop

- Components
  - 1000 kg natural uranium reflector
  - HEU (~16 kg) or Pu (~6 kg) core
- Current applications:
  - Sample reactivity worth studies
  - Reactor dynamic excursion studies
  - Sample neutron activation studies
  - Dosimetry measurements
  - Criticality safety training demonstrations

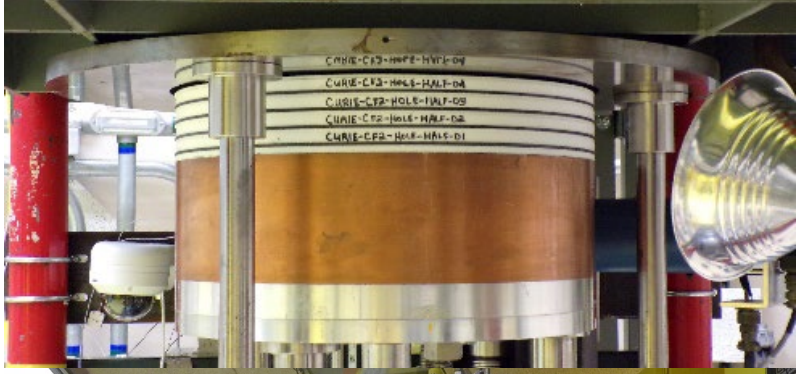
Planet

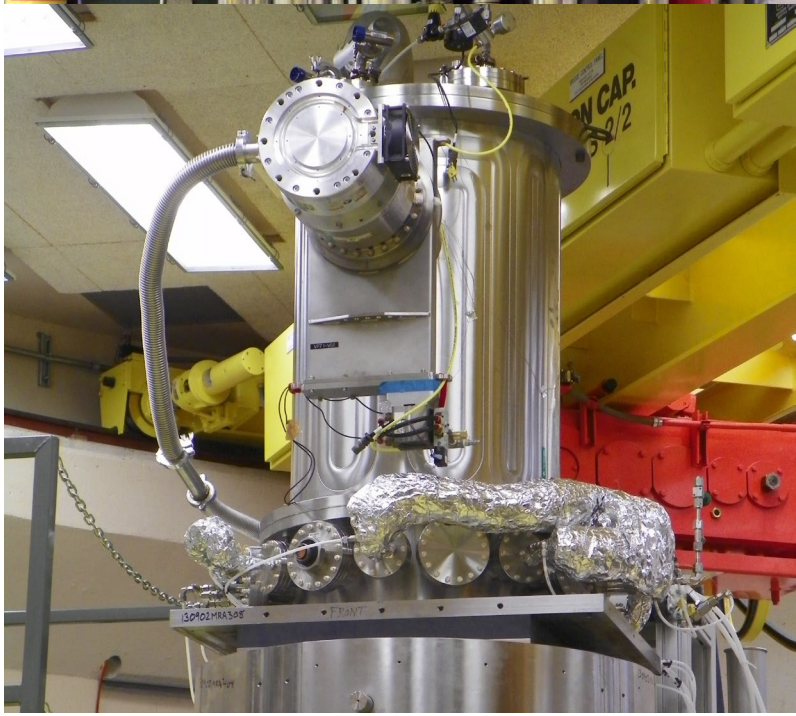
- Smaller vertical lift assembly
  - Can accommodate a wide variety of nuclear material and other materials
  - Core is divided into two parts and brought together remotely
- Current applications:
  - Critical mass studies
  - Nuclear data measurements
  - Reactor physics measurements
  - Criticality safety training demonstrations



Comet

- Larger vertical lift assembly
  - Can accommodate a wide variety of nuclear material and other materials
  - Core is divided into two parts and brought together remotely
- Current applications:
  - Critical mass studies
  - Nuclear data measurements
  - Reactor physics measurements
  - Criticality safety training demonstrations





Godiva-IV

- 66 kg of highly-enriched U (HEU)
- About the size of a
- Current applications:
  - Sample reactivity worth studies
  - Reactor kinetics benchmark studies
  - Reactor dynamic excursion studies
  - Sample neutron activation studies
  - Dosimetry measurements
  - Criticality alarm testing
  - Criticality safety training demonstrations