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WNU INTRODUCTION

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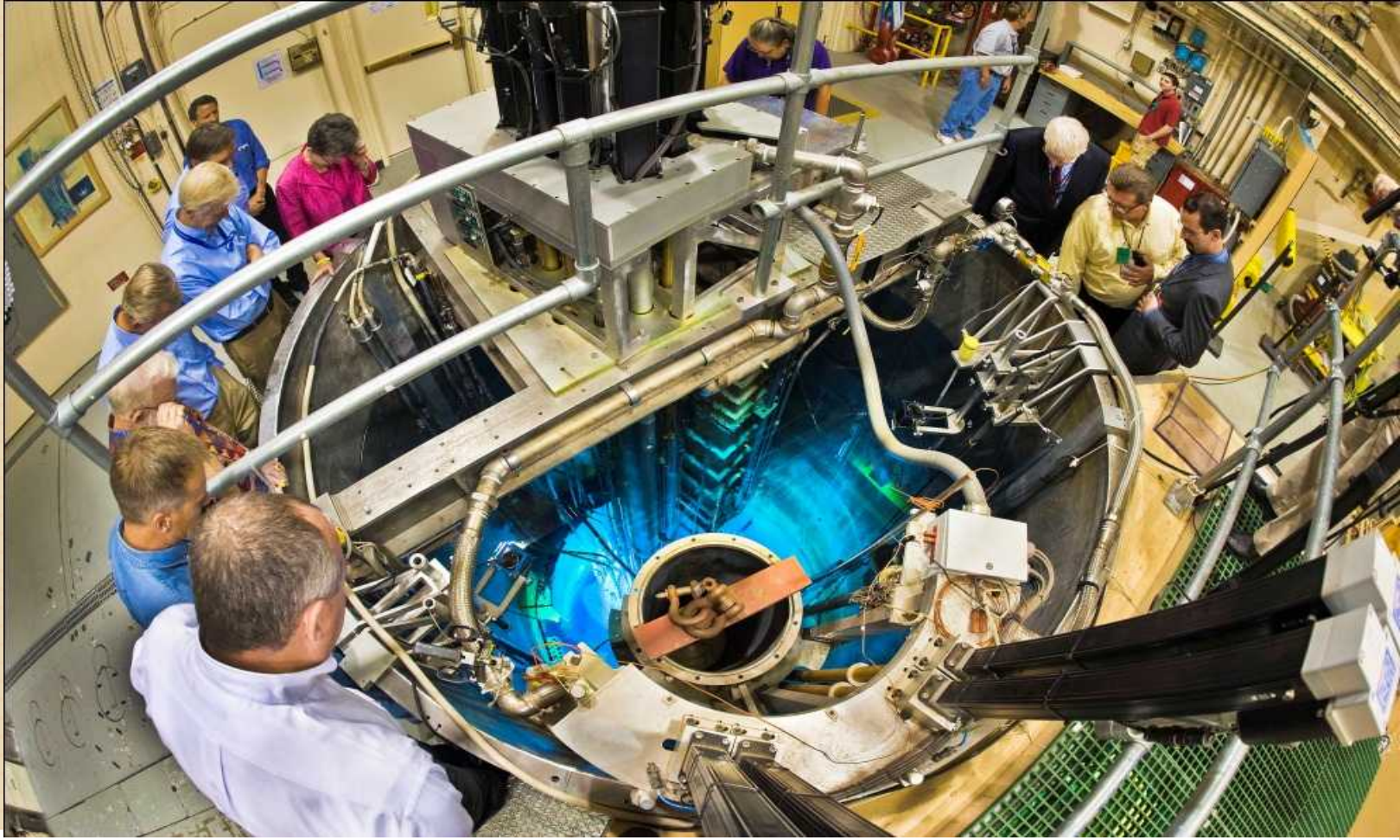
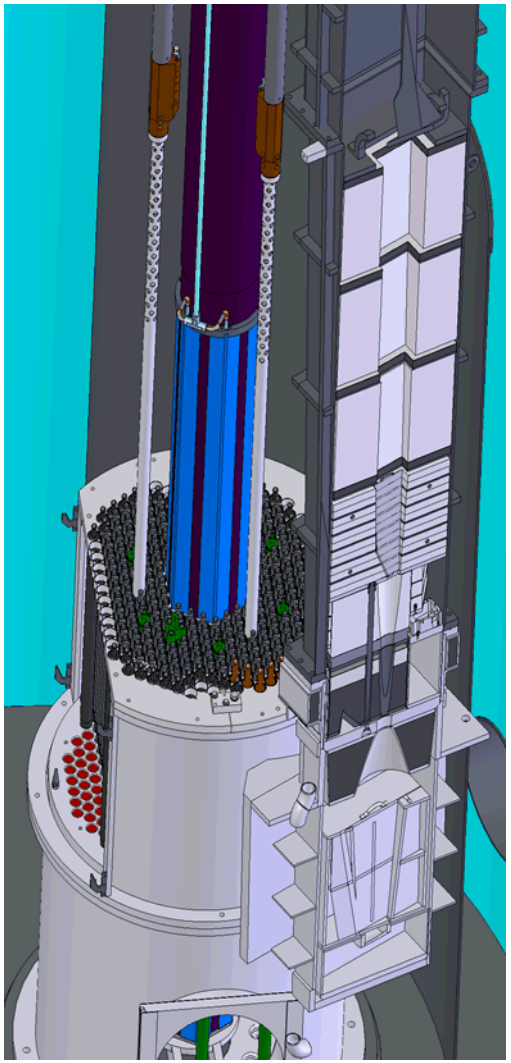


Annular Core Research Reactor

http://www.youtube.com/watch?v=pa0Fmcv83nw&hd=1

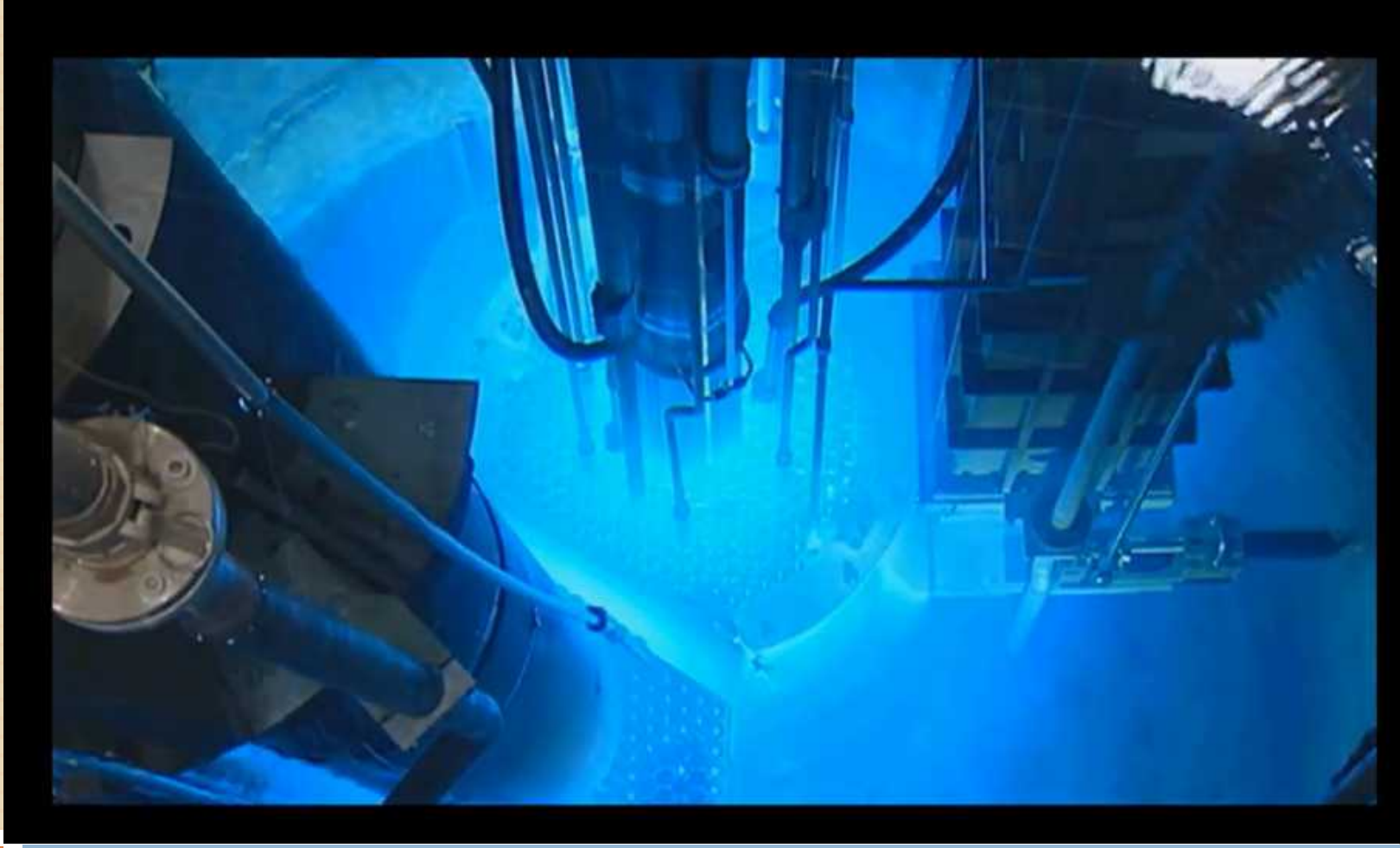
Sandia National Laboratories Annular Core Research Reactor

- Pool-type reactor
  - Steady State up to 4.4 MW
  - Pulse up to 60 GW, 500 MJ
    - Energy yield of 7ms FWHM
  - Shaped Power Transients
- Neutron vulnerability & radiation hardness testing
- Experimental data for development and validation of computer models used to simulate radiation effects on electronic systems



Annular Core Research Reactor

- Transient Rod Withdrawal – electromagnetically move 3 transient rods to set profiles via software
- Modified TRIGA Fuel – 35% U-235 UO2-BeO
- Fuel Ringed External Cavity (FREC) – 20% U-235 UZrH (TRIGA)
- 2 Safety Rods, 6 Control Rods, 3 Transient Rods, 4 FREC Rods
- Neutron Radiography Capability – both direct and indirect methods
- Spectrum modification to tailor neutron energy and the intensity of gammas



Annular Core Research Reactor

Licensed to 2.4 MW (thermal) – Steady State

Pulse up to 60 Giga Watts, 500 Mega Joules,

Reactor Engineer & Operator

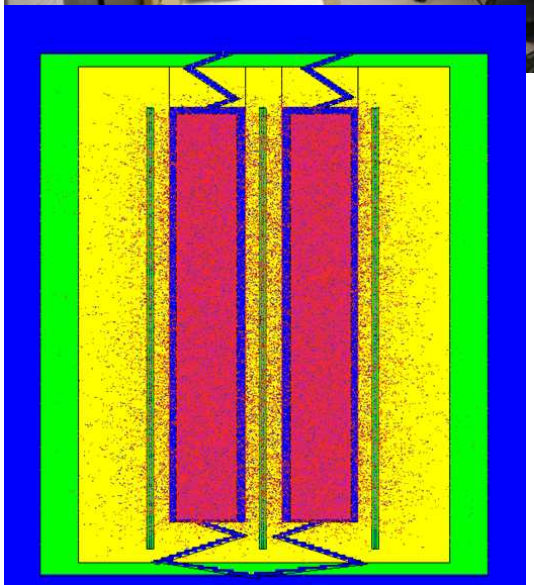
Operator

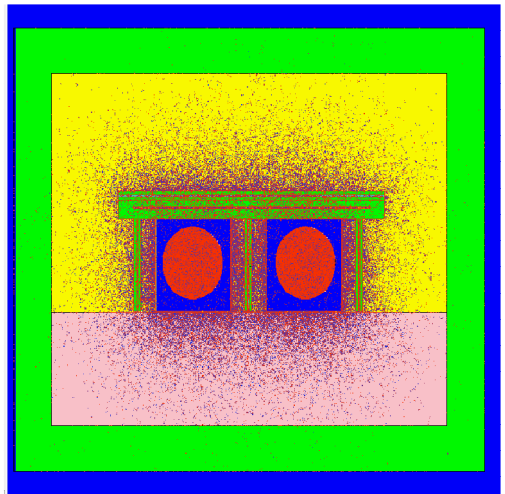
- DOE qualified RO
- Calibrations
- Maintenance
- Experiment Plans
- Handel “hot” experiments and manage waste

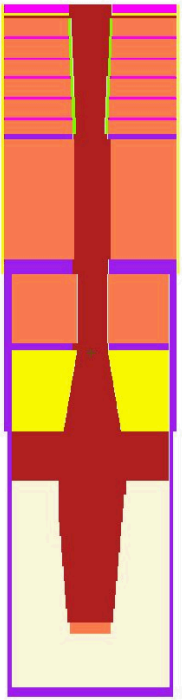
Reactor Engineer

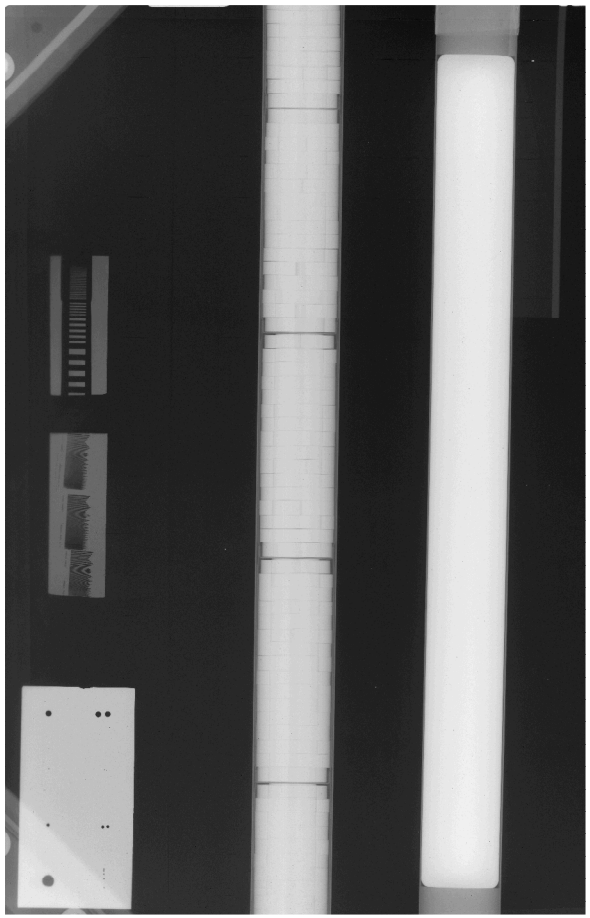
- Design/modifications
- Shielding /dose calcs
- Safety analysis (USQ)
- Characterization work

Nuclear Reactor Engineer &Operator









Maintenance Activities

CH2MHILL
Plateau Remediation Company

Hanford

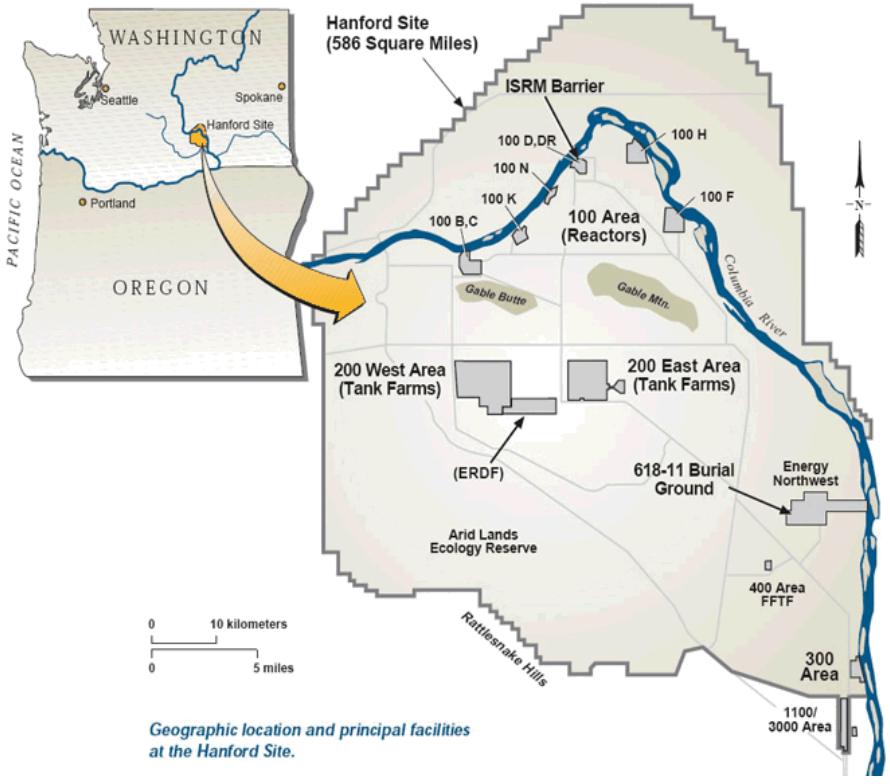
Richland, Washington

USA

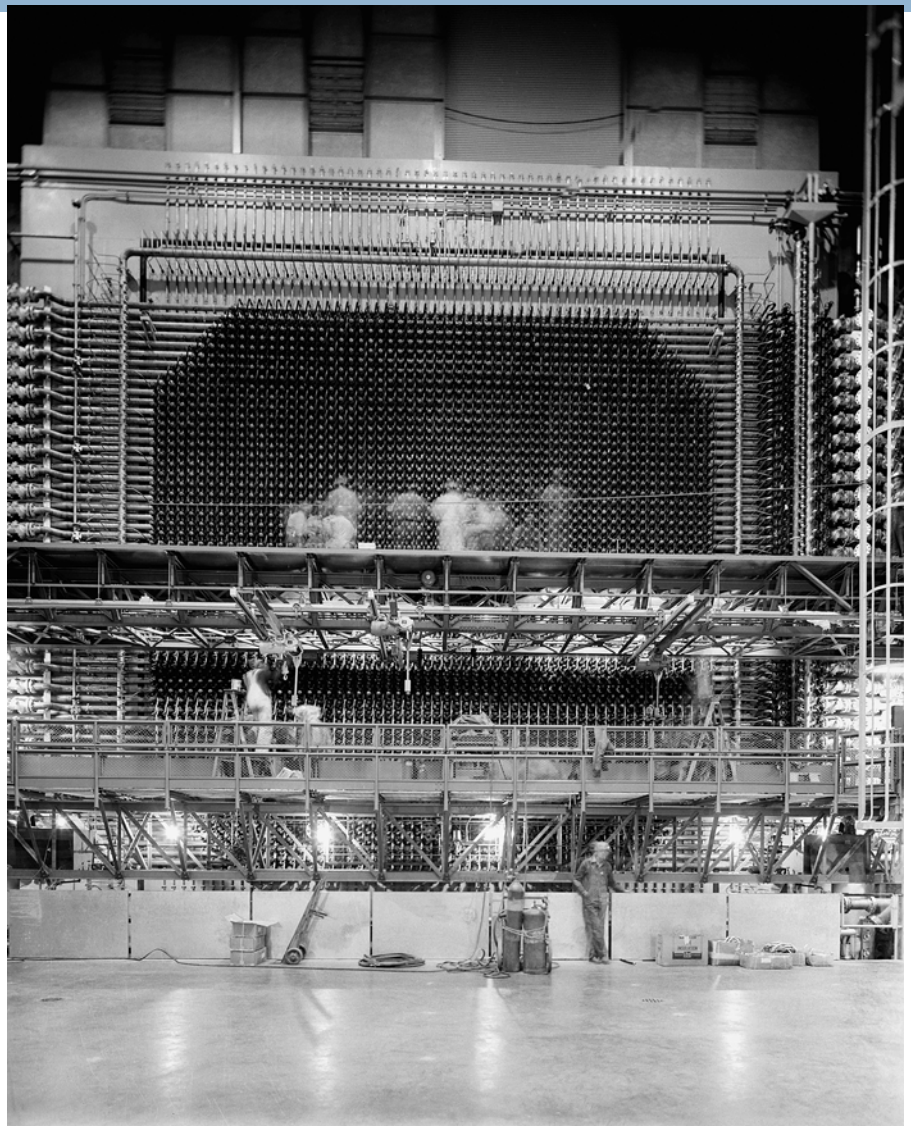
Hanford Cleanup Site

Washington State

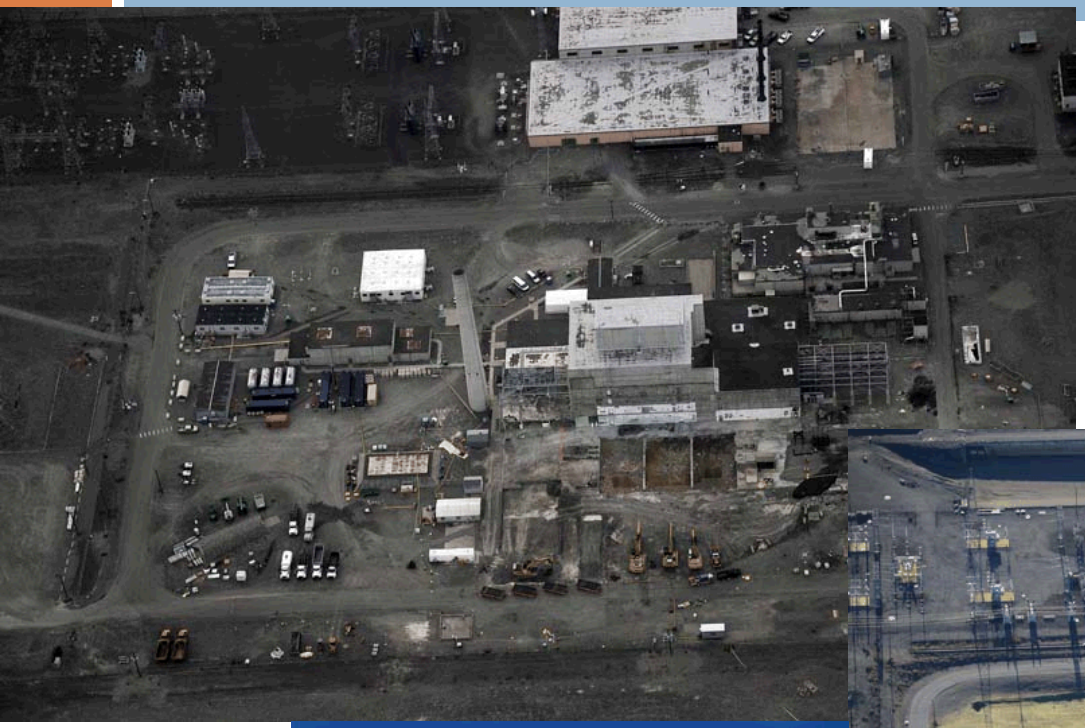
Plutonium Production



Geographic location and principal facilities at the Hanford Site.

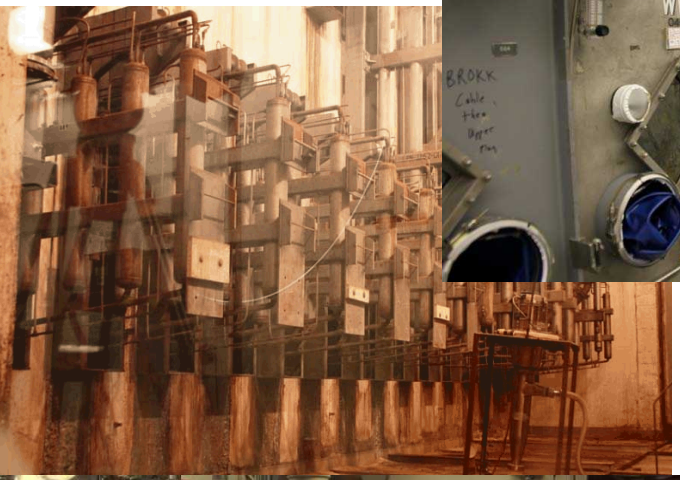


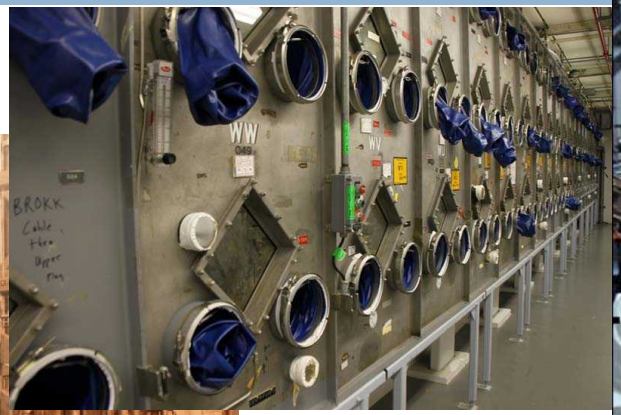
Hanford



Hanford

Hanford





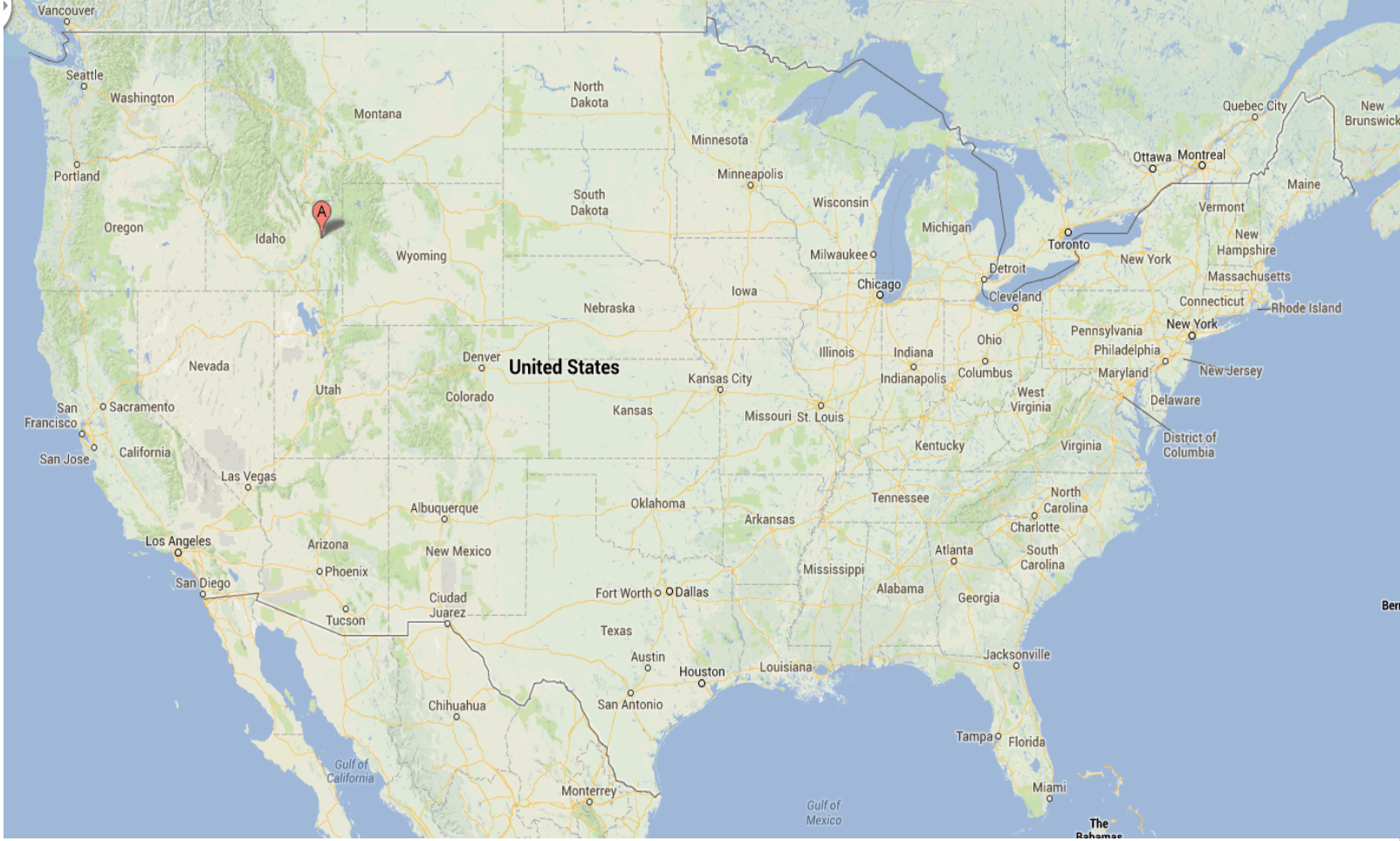
Internal & External Dosimetrist

- Internal dose calculations
  - Inhalation
  - Ingestion
  - Puncture wounds
- Workplace air monitoring
- Dosimetry investigations
- Counseling of radiation workers
- Bioassay and indicator nuclide criteria
- TLD correction factors

Idaho Clean Up Project
Idaho National Laboratories

Idaho Falls, Idaho

USA



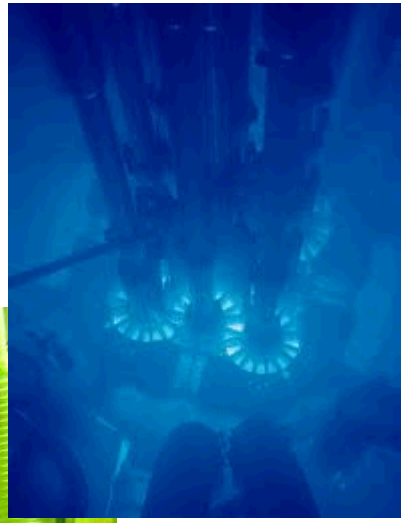
Idaho Falls, Idaho

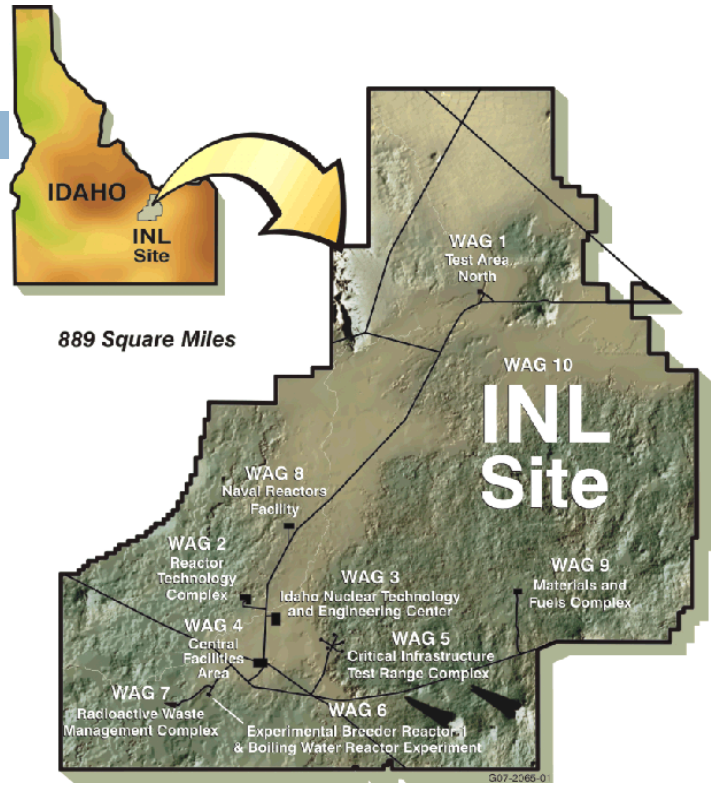
Idaho Falls, Idaho

Idaho Cleanup Project

- Spent Nuclear Fuel transfer from wet to dry storage
- Integrated Waste Treatment Unit – treat 900,000 gallons of sodium bearing liquid waste
- Decontamination and Decommissioning
- Retrieved buried waste

Radiological Engineer





Questions