See PowerPoint *notes* for discussion of content

NAVAL NUCLEAR LABORATORY

# Guided Discussion – Benchmarks for FPY Data

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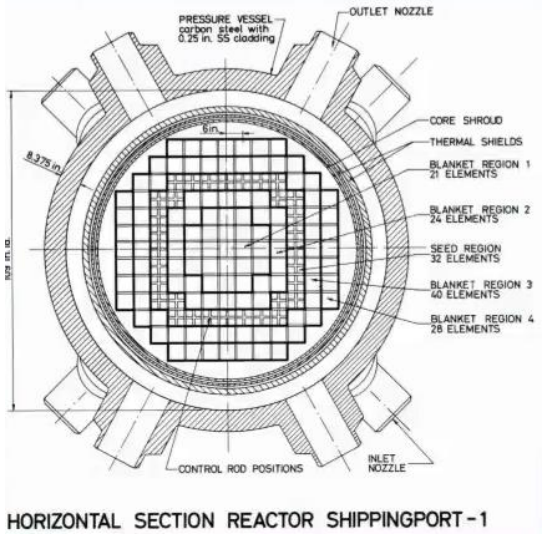
# Traditional FPY Validation Sources

- Power Reactor Depletion
  - Core follow – boron letdown, critical rod position, etc
  - PIE, radiochem, gamma scans on expended fuel
  - Often proprietary/classified data
- Spent fuel decay heat measurements
  - Uncertainties depend upon fidelity of core follow/depletion analysis
  - New SFCOMPS database

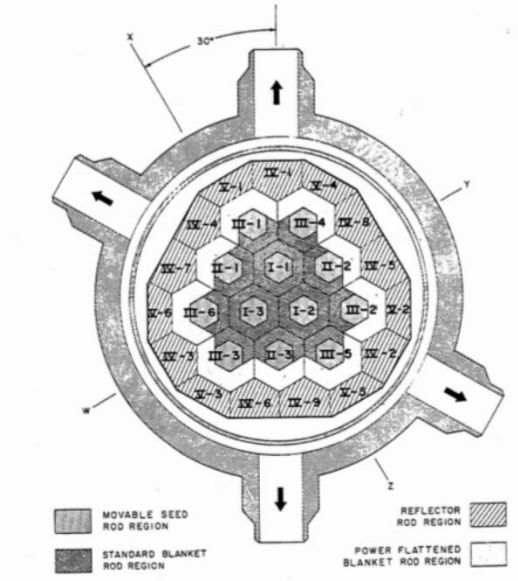
# Potential Reactor Depletion Benchmarks

- Government reactor codes that could be benchmarked
  - Shippingport PWR – Core 1 & Core 2
    - Validate U235 thermal FPYs
  - Light Water Breeder Reactor (LWBR)
    - Validate U233 thermal FPYs
  - Yankee Rowe
    - Validate U235 & Pu239 thermal FPYs
  - EBR-II – initial core, selected core depletions
    - Validate U235 & Pu239 fast FPYs
- New benchmarks would require focused strategic investments

PWR Core 1



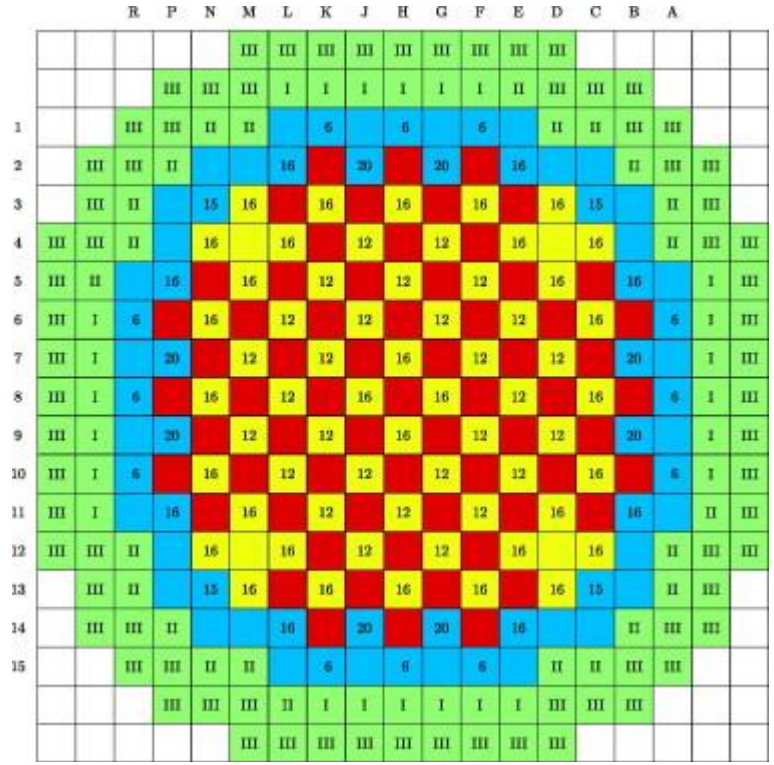

LWBR



# Potential Reactor Depletion Benchmarks

- Commercial Nuclear Power
  - BEARVRS – Westinghouse PWR
    - Draft IRPhEP Benchmark
    - Several cycle depletions
  - Westinghouse feedback
  - Studsvik feedback
  - Startup vendor feedback
- Other options?

BEAVRS



# Spent Fuel Decay Heat Benchmarks

- SPCOMPO Database
  - Spent fuel inventory benchmarks
  - Decay heat benchmarks
- Commercial Nuclear measurements
- Foreign measurements
  - Sweden

# Other Options for FPY Benchmarks

- ?