

North Anna Power Station
New Fuel Storage Rack and Spent Fuel Pool
Criticality Analysis
Proposed License Amendment Request

NRC Pre-Submittal Meeting
April 26, 2016



Agenda

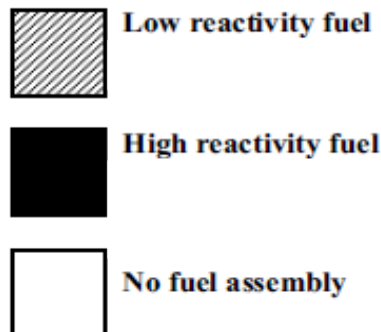
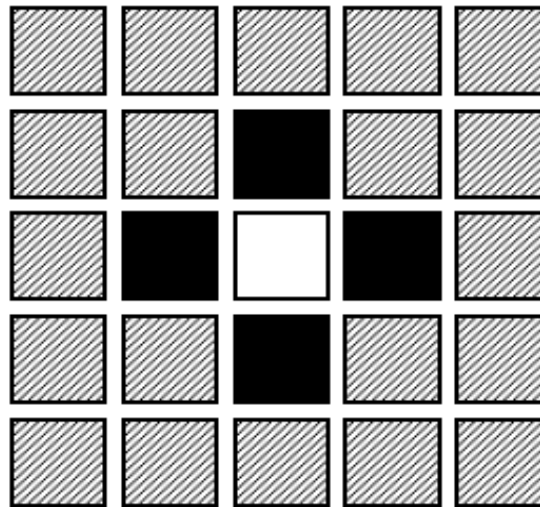
- Current NAPS SFP Configuration
- Proposed Changes
- Analysis Goals
- Criticality Analysis Checklist
- Conservatism
- Conclusion/Timeline

Current NAPS SFP Configuration

- One rack cell design, 4.6 w/o U-235 maximum enrichment, 1737 total cells
- Flux-trap with Boraflex, 10.56 inch pitch
 - No credit for Boraflex
 - Credit for soluble boron
- Region 1 (4 out of 4 storage, one burnup curve)
- Region 2 (5x5, one empty cell, one burnup curve)
 - Cell blocker in center cell

Current NAPS SFP Configuration (cont'd.)

- Current Region 2 (5x5)



Proposed Changes

- Increase enrichment limit to 5.0 w/o U-235
 - Enhance core design flexibility
- Simplify Region configuration
- Region 1
 - 2 out of 4 storage, no burnup requirement
- Region 2
 - 4 out of 4 storage
 - One burnup curve for low decay time
 - One burnup curve for 3 year decay time
- No installed neutron absorber credit

Analysis Goals

- Incorporate recent criticality issues and improvements
- Increase identified margin
- Consistent with the Criticality Analysis Checklist

Criticality Analysis Checklist*

- Follows expected criticality analysis report format
- Includes placeholders for analysis Scope, Methods, and Details
- Shaded bars indicate major Sections
- Indentation indicates a subtopic
 - Element within a topic or group
- Indicates some elements NOT included or NOT applicable
 - Justification or explanation provided

* Previously provided to NRC Staff; Available upon request

Conservatism

- NRC administrative margin of 0.01 ΔK reserved to account for minor current and/or emergent methodology issues and uncertainties
- Identify Dominion retained margin to allow for future design changes and/or methodology issues

Conclusion / Timeline

- A North Anna SFP and new fuel rack criticality analysis License Amendment Request will seek to increase maximum fuel enrichment, simplify storage configurations, and increase identified margin to k_{eff} limits
- Major milestones:
 - Submit LAR to NRC Sept 2016
 - Receive SER Sept 2018
 - Shuffle fuel 4 Q 2018
 - Implement new TS 4 Q 2018