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# Reactor Oversight Process (ROP) for Inspecting Vogtle Site with AP1000 Design

January 14 and 22, 2020 Public  
Meetings

# The AP1000 passive design provides overall safety enhancements.

- Passive versus Active Components
  - AC is not required for safe shutdown
  - Elimination of safety-related motor operated valves
  - Elimination of AC powered safety-related pumps
- Simpler Design – no need for human interaction for the first 72 hours
- Uses natural forces such as gravity, convection and condensation cooling

The Westinghouse AP1000 Plant

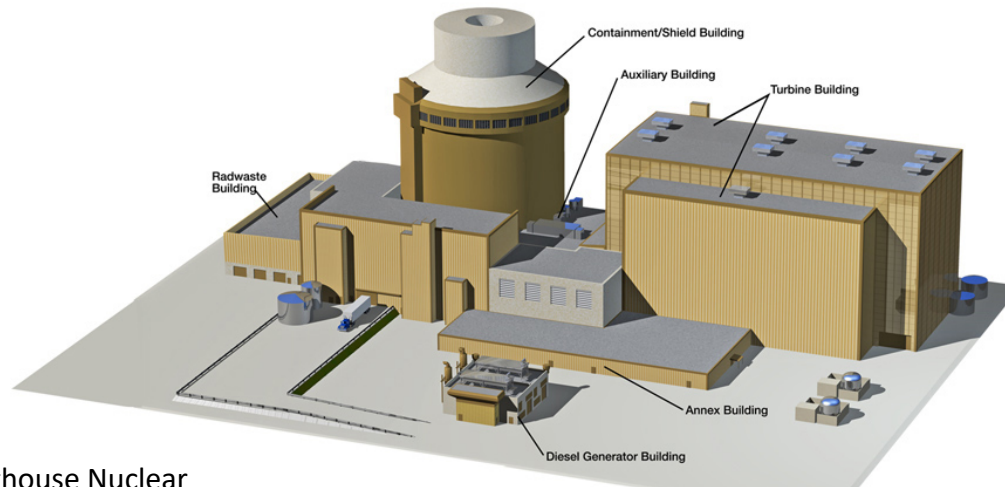


Image of AP1000™ – Westinghouse Nuclear

The above illustration is an artist rendering and may not depict actual design and layout

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Simpler design results in the need for an inspection sample range reassessment.

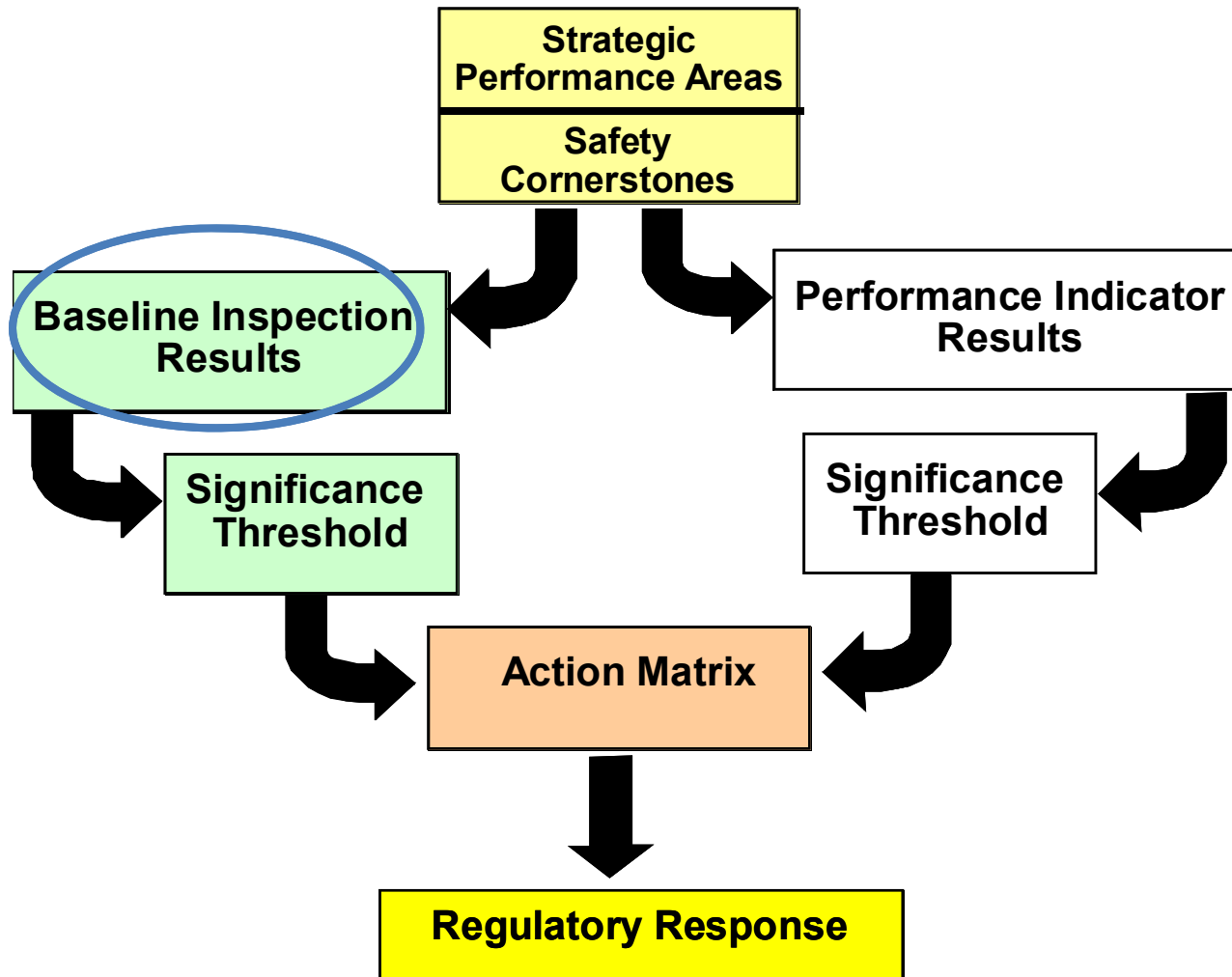
- 50% fewer safety-related valves
- 35% fewer pumps
- 80% less safety related piping
- 85% less control cable
- 45% less seismic building volume

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# NRC Performance Goals

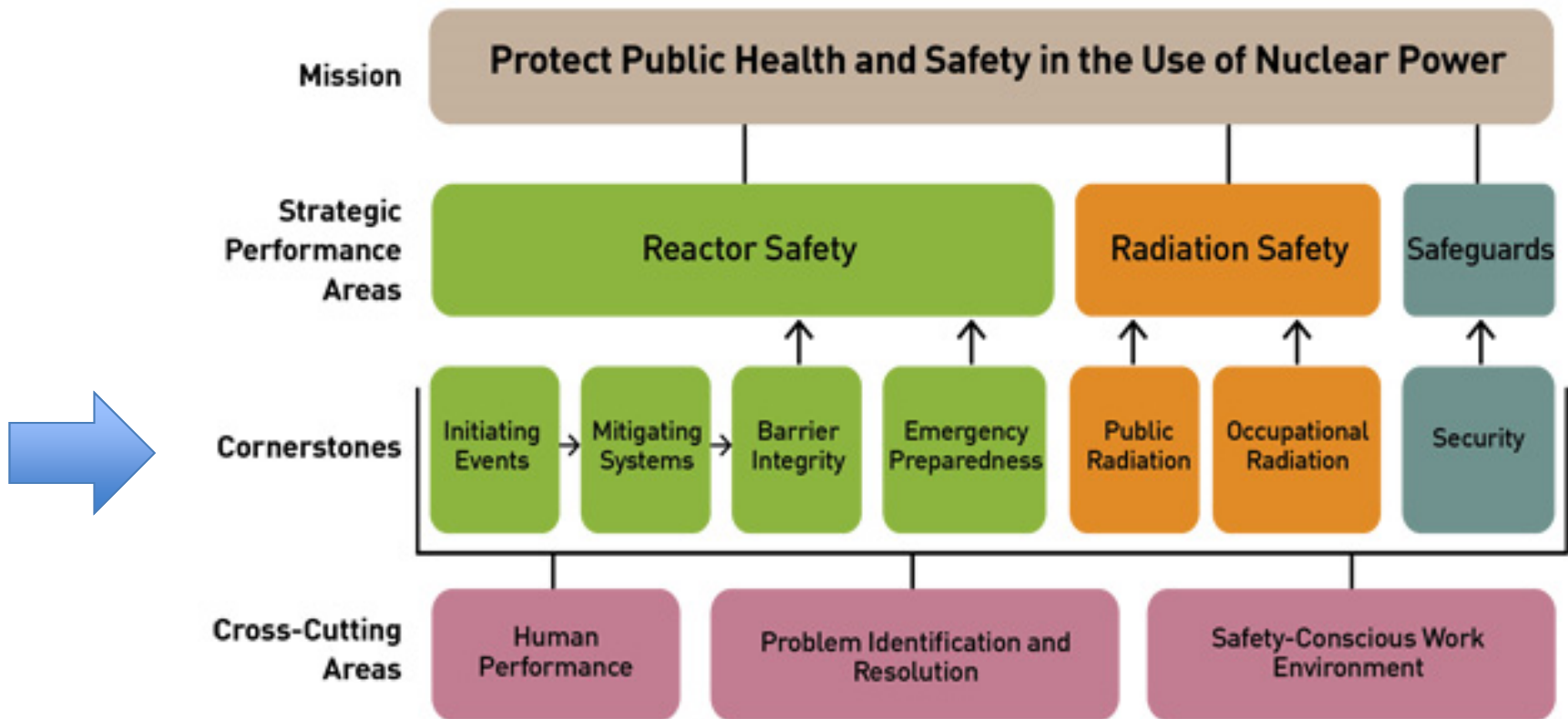
- Safety: Ensure adequate protection of public health and safety and the environment.
- Security: Ensure adequate protection in the secure use and management of radioactive materials.

# Reactor Oversight Process



# The Cornerstones have supporting inspections.

## Reactor Oversight Framework





# Inspection oversight for Units 3 and 4 considers current inspection at Units 1 and 2

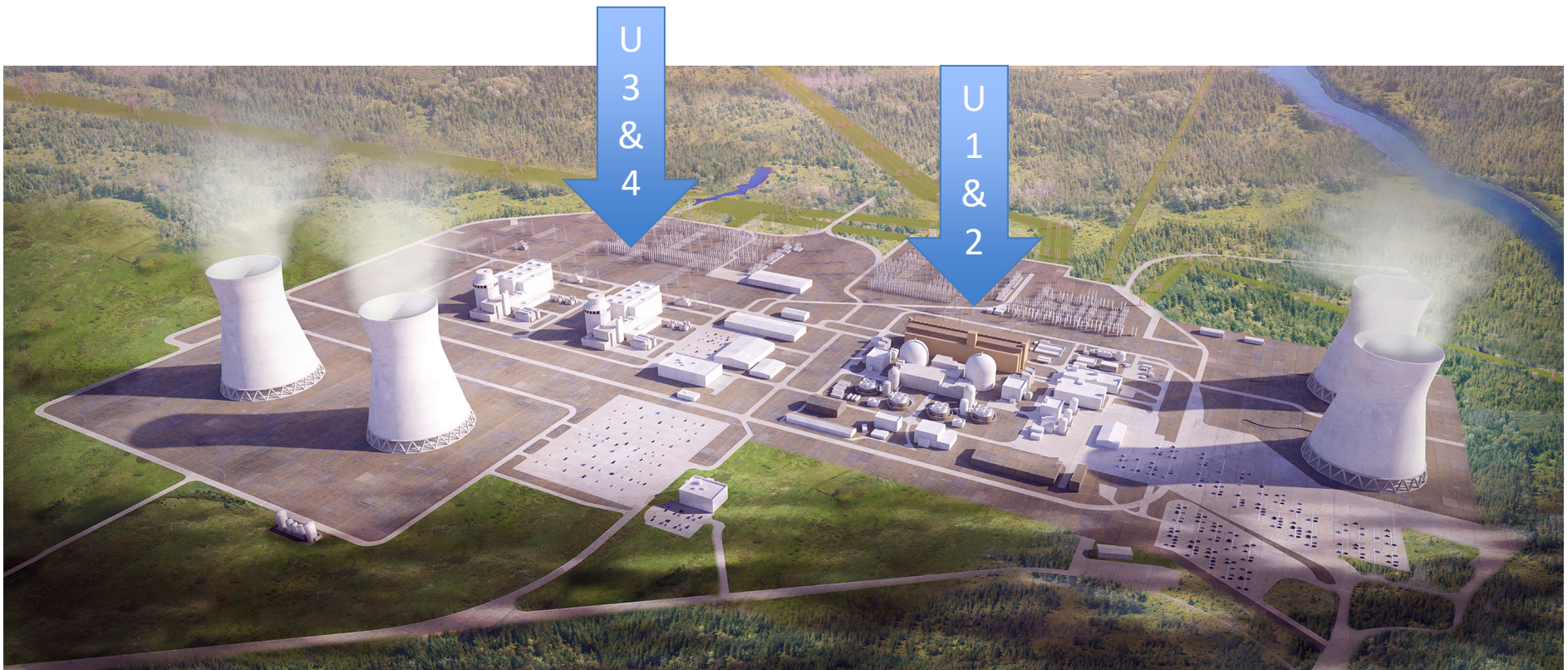
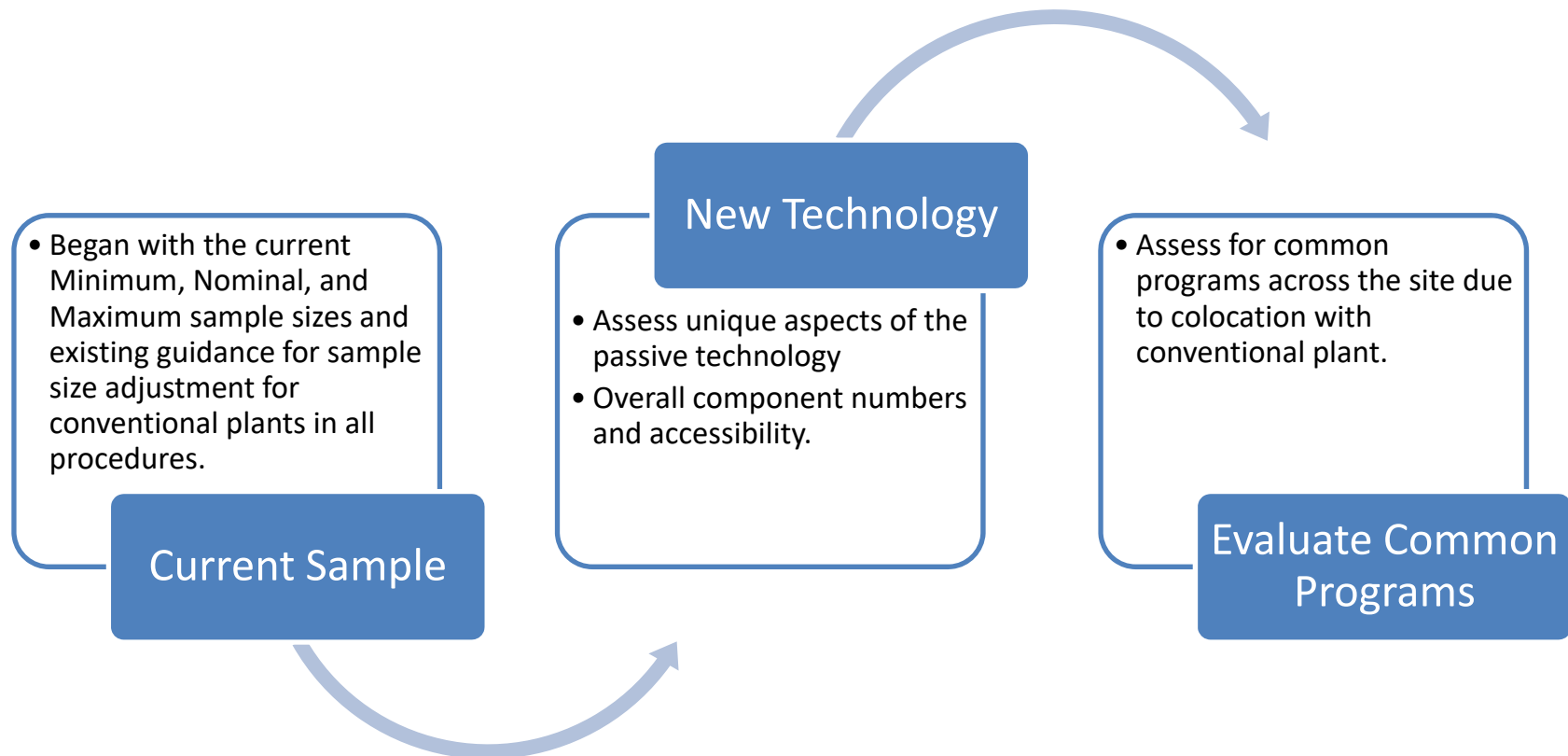


Image of Vogtle 1-4, Waynesboro Georgia – Georgia Power, A Southern Company

<http://www.multivu.com/players/English/7464951-ga-power-project-vogtle/>

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# NRC used a three step process to determine proposed sample sizes.





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Inspection procedures are either individual or site wide, and samples were addressed accordingly.

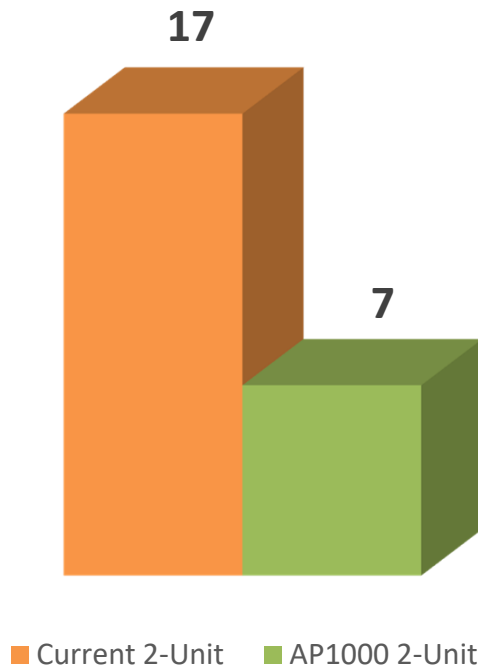
| Procedure Category  | Sample Size Analysis  |
|---|---|
| Individual Reactor Safety Baseline Inspection Procedures (BIPs) | Staff used technology specific component analysis and risk information inherent from the design of the two AP1000 units to develop sample size ranges in accordance with Inspection Manual Chapter 2515 |
| Common Site-Wide Program BIPs                                   | Staff evaluated and adjusted, if necessary, the maximum sample size to provide an adequate number of samples across the two different designs   |

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## Example of changes to BIPs which are conducted on 2-Unit PWR and 2-Unit AP1000 independently.

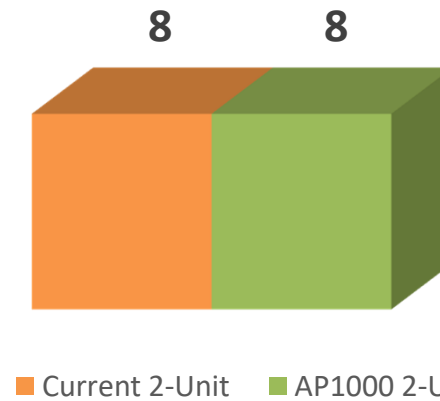
### IP 71111.22 Surveillance Testing – Design Specific

BIP Nominal Samples



### IP 71111.11 Licensed Operator Requalification and Performance – Design Independent

BIP Nominal Samples



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## Example of BIPs which are conducted as 4 unit site: Vogtle Site Common Engineering Inspections.

### **71111.21N.02 Design Basis Capability of Power Operated Valves**

- Current BIP sample range is 8-12 for existing units
- Staff assessment of AP1000 identified BIP sample range of 3-5
- Increase BIP sample maximum to 16 samples for Vogtle site with samples from all 4 units.

### **71111.21M Design Basis Assurance**

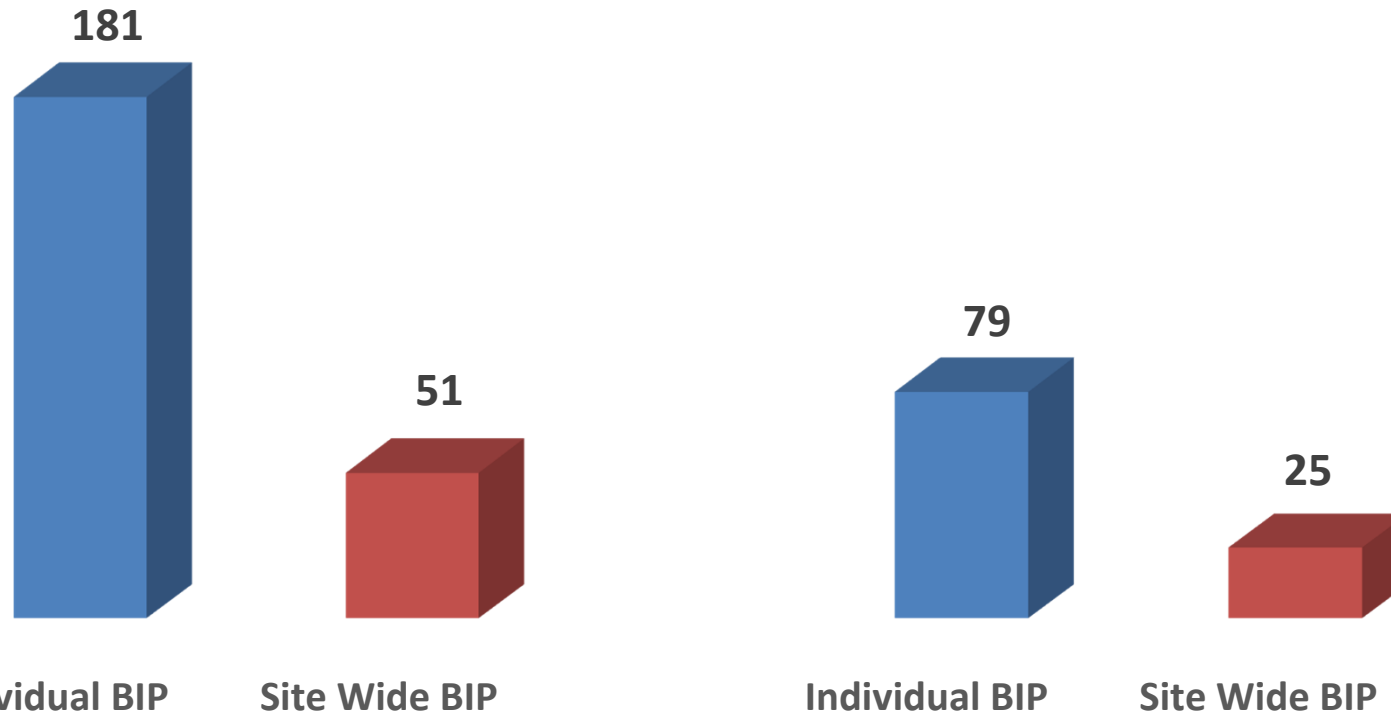
- Will require separate samples from Units 1&2 and Units 3&4 but existing maximum sample size is sufficient to account for all units.
- Vogtle inspection at maximum sample size.
- No change to baseline inspection.

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The staff has identified the number of samples for U3&4 based on the number of AP1000 components, risk characteristics, and co-location on an existing site.

Nominal Inspection Samples for  
Units 1&2

Additional Nominal Inspection  
Samples for Units 3&4



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Subject to additional NRC evaluation of Vogtle Site organizational structure for the applicable programs.

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The NRC review identified appropriate modifications to the baseline inspection program for the Vogtle site.

- The three step process considered current baseline, passive design, and co-location with an operating reactor.
- Appropriate sample sizes were identified for each inspection procedure to establish reasonable assurance of adequate protection.
- NRC identified inspection procedures for individual and site wide implementation.

**Questions?**

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# Reference Sources

- Reactor Oversight Process
  - <https://www.nrc.gov/reactors/operating/oversight.html>
- Public Electronic Reading Room
  - <http://www.nrc.gov/reading-rm.html>
- Public Document Room
  - 1-800-397-4209 (Toll Free)