



U.S.NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

**Joint AP1000/ESBWR
Design-Centered Working Groups
Pre-COL Activities:
Quality Assurance Audits**

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Pre-COL Application Audits

- Verify suitability of QA processes applied to the development of the COL application
 - **Support** acceptance review by staff
 - Identify any programmatic issues that could affect the **completeness and accuracy of the information** in the application



Audit Scope

- Review **implementation** of QA policies and procedures applied to the development of the COL application
- Review QA controls implemented during site characterization activities (for COL applications not referencing an ESP)
- Review adequacy of contractor oversight by COL applicant



Audit Scope

(Continued)

- Key QA attributes
 - Design control, procurement control, control of purchased material, equipment and services
 - Nonconformance, corrective actions, audits
 - Training and qualification, QA records
 - Test control, Measuring and Test Equipment (site characterization activities)



Lessons Learned

- **Timing is crucial** – COL application must be sufficiently complete for a meaningful audit to be conducted
- Emphasis on design control processes (incorporation by reference, departures from DCD, and site-specific aspects)
- Contractor scope of work needs to be clearly identified and defined



Lessons Learned

(continued)

- Audit focus is **implementation** of QA programs and processes needed to yield a quality COL application
- Early staff interaction with COL applicant and contractors enhances audit efficiency and effectiveness



Conclusion

- Pre-COL Audits
 - Should **inform** the acceptance reviews to enhance efficiency and effectiveness
 - Should **provide insights** to the NRC staff on the completeness and accuracy of the application



Questions?

OFFSITE POWER SYSTEM

- AP1000 design was granted an exemption to GDC 17 for providing two offsite power sources from the transmission network, however it was required to provide one circuit satisfying the requirements of GDC 17 with regard to capacity and capability
- Staff recognizes that the risk significance of offsite power system in AP1000 design is low, however the single offsite power circuit provided from the transmission network must meet the applicable regulation
- GDC 17 requires that provisions be provided to minimize the probability of losing offsite power from the transmission network
- Since AP1000 design offsite power is covered by RTNSS and is relied upon to power active non-safety systems as defense-in-depth measures for providing first line of defense to reduce challenges to safety systems, staff believes it is important that these systems be powered from a reliable offsite power source
- Having a single circuit increases the probability of a total loss of offsite power to the station, therefore it must be properly protected
- RG 1.206 recommends that an applicant provide a FMEA of the switchyard components to minimize the probability of losing the single circuit from the grid as a result of switchyard centered events
- Staff is not asking for a failure mode of the single offsite power circuit components but rather failure modes of the other components in the switchyard that could fail this circuit