1st Pre-Application Meeting with NRC

ESBWR Design-Centered Working Group

North Anna COL Application

Grand Gulf COL Application

River Bend COL Application

July 14, 2006

Opening Remarks

- We share NRC's vision of a design-centered approach to preparing and reviewing standard Combined License applications (COLAs)
- Our commitment to meeting our submittal schedules with quality COLAs is firm
- Standardization extends beyond COLAs to plant design and programs
  - Standard programs may cross technology lines

Meeting Purpose

- Introduce ESBWR DCWG Participants
- Describe DCWG Plans, Schedules and Expectations
- Describe COLA Development Approach
- Summarize DCWG Response to Regulatory Issue Summary 2006-06 Request
- Discuss Key Challenges
- Propose Next Steps

ESBWR DCWG Participants

- Dominion, Entergy, NuStart, and GE have formed the ESBWR Design-Centered Working Group (DCWG)
- The DCWG is currently supported by
  - Bechtel Power Corporation
  - Enercon Services, Inc.
- DOE provides funding to NuStart and Dominion through Nuclear Power 2010 initiative
- ESBWR DCWG coordinates with other technologies through NEI and NuStart

ESBWR DCWG Points-of-Contact

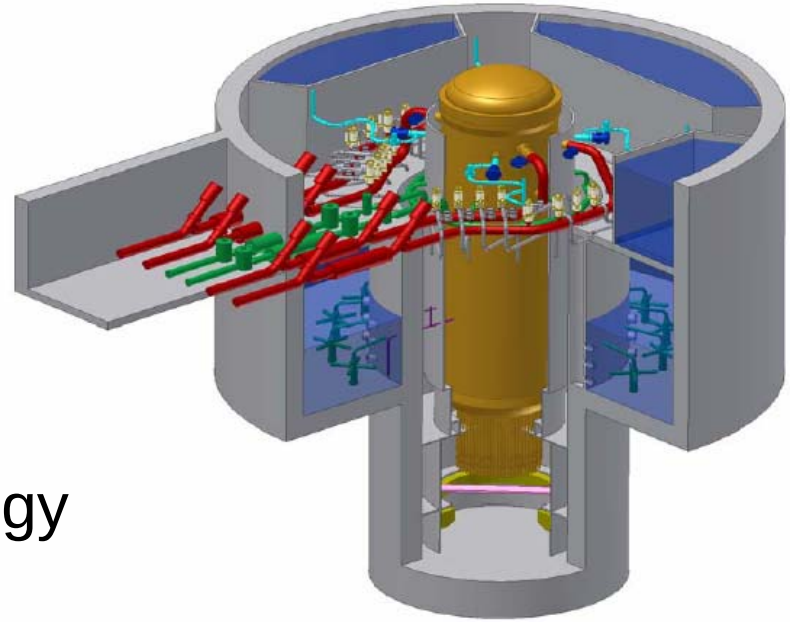
- Dominion (North Anna)
  - Gene Grecheck
  - Joe Hegner
- NuStart (Grand Gulf)
  - Marilyn Kray
  - Tom Williamson
- Entergy (River Bend)
  - Randy Hutchinson
  - George Zinke
- GE (DCD Scope)
  - Steve Hucik
  - David Hinds

Key DCWG Activities/Scope

- ESBWR design is currently under review by NRC for final design approval and certification
- COL applications referencing the ESBWR design for
  - North Anna
  - Grand Gulf
  - River Bend
- Standardization extends to
  - Licensing
  - Standard plant design
  - Standard operational programs
  - Collaborative approach to site-specific issues

ESBWR

- Design Certification Application Accepted December 1, 2005
  - Docket 52-010
- Advanced Design
- Passive Safety Features
- 4500 MWt
  - ~1,575 MWe gross
- Leverages ABWR Technology
  - Builds on Existing BWR Experience



North Anna

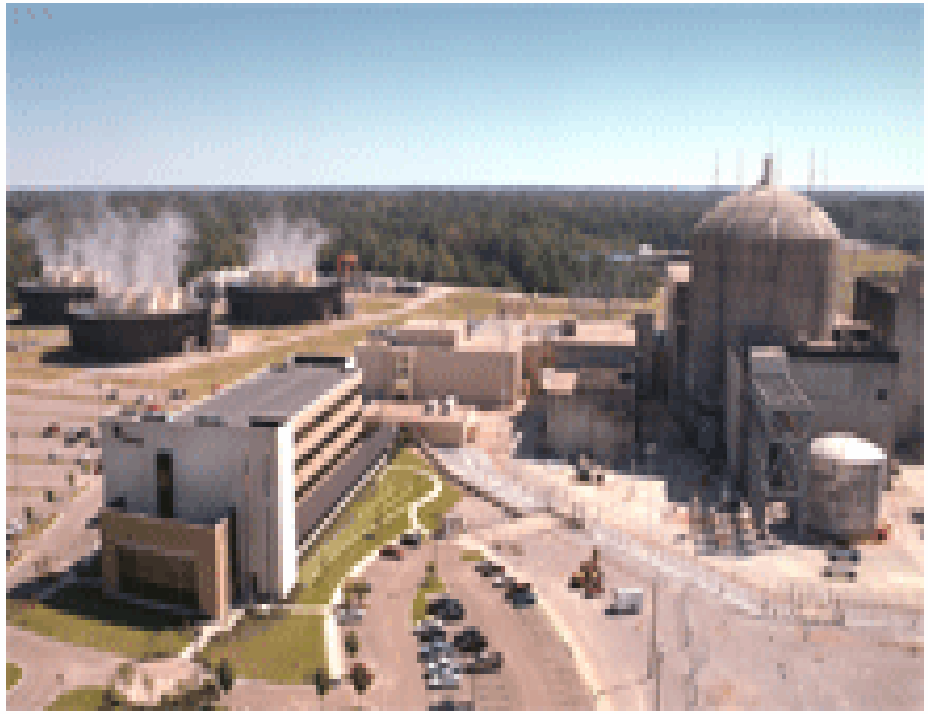
- Located in central Virginia
- Two existing units
- NRC ESP Docket No. 52-008
- ESP application submitted September 2003
- Final SER and EIS expected late 2006
- ESP expected in 2007

Grand Gulf

- Site located in west central Mississippi
- One existing unit
- NRC ESP Docket No. 52-009
- ESP application submitted October 2003
- Final SER and EIS issued
- ESP expected in 2007

River Bend

- Site located near St. Francisville, Louisiana
- One existing unit
- No ESP licensing action



DCWG Plan, Schedules & Expectations

- Plan
  - Take advantage of ongoing ESBWR design certification
  - Submit standard COLAs using a design-centered approach
- Schedules [1]
  - Submit North Anna and Grand Gulf COL applications (each for one unit) to NRC in November 2007
  - Submit River Bend COL application to NRC in May 2008

1 Dependent on completion of NRC actions and final applicant organization approvals

- Expectations
  - NRC issues ESBWR design certification in June 2009
  - NRC issues North Anna/Grand Gulf COLs in June 2010
  - NRC issues River Bend COL in December 2010

Design-Centered Approach

- Individual projects have been preparing for COLAs for more than a year. Activities include:
  - Division of responsibilities
  - Work breakdown structure
  - Integrated project schedule
  - Resources to support schedule
  - COLA development process
  - Ongoing ESP and DCD licensing actions
  - NEI COL Task Force
- Individual projects coordinated their efforts to enhance efficiency and effectively became a DCWG

Design-Centered Approach (cont.)

- DCWG members are currently preparing:
  - Standard COLA sections (i.e., identical content)
  - Standard COLA sections with some site-specific content
  - Site-specific COLA sections (for North Anna and Grand Gulf, primarily derived from ESPs)
- A Division of Responsibility (DOR) designates the DCWG member responsible for authoring each section
- Standardization is being enhanced through a feedback loop from COLA to design certification
  - Reduce number of COL items
  - Enhance format and content of DCD and COLA

Division of Responsibility (DOR)

Authoring Organization	Scope
GE	Responsible for COLA sections relating to ESBWR design
Dominion/NuStart/Entergy	Responsible for COLA sections related to operations and administrative information
Dominion/Bechtel	Responsible for North Anna site-specific sections
NuStart/Enercon	Responsible for Grand Gulf site-specific sections

ESBWR COLA Standardization

- High degree of standardization will be achieved

FSAR Standardization		
Number of FSAR Sections	**Percent of FSAR Sections**	**Section Type**
127	75%	Standard (identical)
27	16%	Standard with a limited amount of site-specific information
9	5%	Standard with a moderate amount of site-specific information
7	4%	Site-specific
170	**100%**	**Total**

- Various subsections will be standard across reactor technologies

RIS Response Status

The following two slides summarize the RIS 2006-06 questions

The intent of the slides is to identify questions we've already covered (identified with a )and set the stage for the next slides that address the remaining items

RIS 2006-06 Items

- Whether a DCWG will be formed
- Who is the R-COL applicant?
- When will R-COL and S-COL applications be submitted? (month/yr.)
- Will applicants provide RAI responses within the typical 30 day period?
- Identify standard and site-specific sections at the x.y.z level

RIS 2006-06 (cont.)

- Whether vendor/applicants intend to submit pre-application topical reports
  - How many?
  - Describe each report's scope and content
  - Schedule
- Whether and when applicants intend to submit an ESP
- Provide information within 45 days of RIS issuance

R-COL and S-COL Applicants

- The design-centered approach and the high-degree of standardization provides the DCWG with the opportunity to submit two COLAs concurrently
  - Demonstrate that a high degree of standardization can be achieved
  - Enhance NRC review efficiency
  - NRC resources currently will be well-positioned for COLA reviews
- The R-COL will be designated at the appropriate time
- The River Bend COLA would be a true S-COL

RAI Response Approach

- NRC and DCWG agree to an RAI response process modeled on ESP safety review and ESBWR DCD interactions
  - NRC develops draft questions
  - NRC/applicant discuss and establish response timeframe
  - NRC issues formal letter
  - Applicant responds as agreed

Pre-Application Topical Reports

- The overall need for pre-application topical reports is reduced because the ongoing ESBWR design certification review both
  - Benefits from predecessor DCs, and
  - Provides an opportunity to address NRC information requirements that might otherwise be deferred to COLA
- Nonetheless, a number of potential candidate areas for early interactions exists

Early Interactions

- Selected operational programs
  - Training
  - Fire protection
  - Radiation protection/ALARA
  - Security
- Quality assurance
- Initial reactor core safety analysis
- Emergency preparedness
- Limited work authorization
- NRC/DCWG workshops on COLA content

Key Challenges

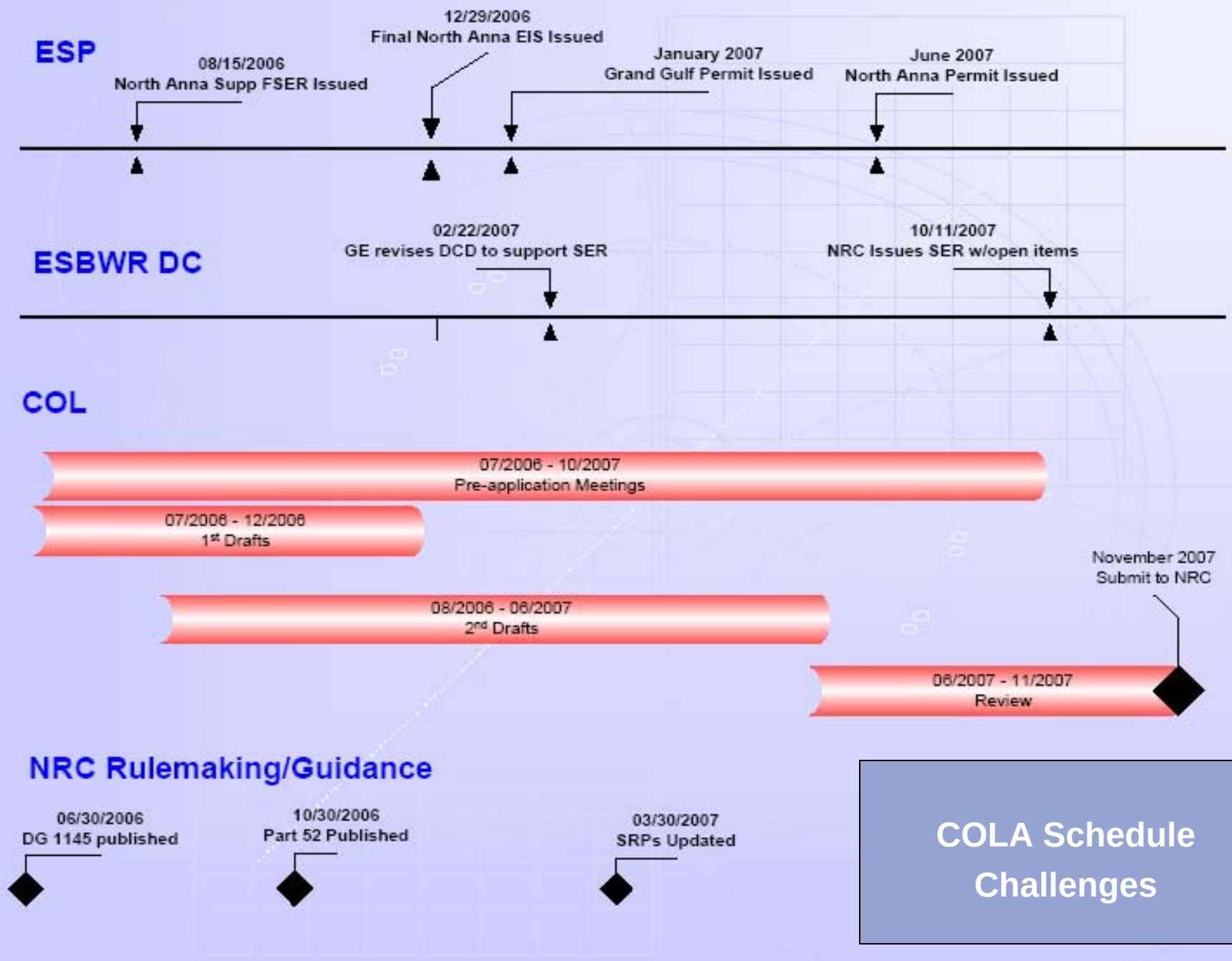
- COLA development approach was evaluated
- Key challenges were identified
- Certain assumptions and approaches have been developed
- The North Anna and Grand Gulf COLAs' submittal date is based on the validity of the assumptions and approaches

Key Challenges

- NRC Rulemaking/Guidance
- Process for parallel DC and COL reviews
- PRA
- ESP Environmental Finality

NRC Rulemaking/Guidance

- Schedule Challenge
  - NRC issuance of a revised Part 52 and guidance during COL application development
  - NRC activities and milestones factored into application development process
- Content Challenge
  - Level of additional design detail in COLA beyond DCD and premature information requirements
  - The DCWG will work through NEI to resolve
- DCWG assumption: Issues resolved in a manner that doesn't significantly impact content



COLA Schedule Challenges

Parallel DC and COL Reviews

- One issue, one review, one resolution
- NRC should avoid duplicative review in a COL proceeding of issues being resolved in design certification proceedings

Evolution of a Design and PRA

Conceptual Design	Design Base	Detailed Design	Construction Design	Plant in Operation
Is Design Feasible?	Can Design be Licensed?	Implementation of Design	Confirmation of Assumptions	Confirmation of Assumptions
Low Design Detail	Major Components Specified	All Components Specified	All Components Described	All Components Described
Qualitative Risk Assessment	Qualitative & Quantitative PRA	Quantitative PRA with Gaps	Quantitative PRA with Fewer Gaps	As-Built As-Operated PRA
Defense-in-Depth Concepts	Defense-in-Depth Analyzed	Defense-in-Depth Mostly Resolved	No Defense-in-Depth Issues	No Defense-in-Depth Issues
Past Vulnerabilities Addressed	Sequence Level Vulnerabilities Eliminated	System Level Vulnerabilities Eliminated	Component Level Vulnerabilities Eliminated	Additional Vulnerabilities Eliminated

← DCD/COLA Level of Design Detail

Design Detail Needed for PRA

- Recent NRC workshop feedback indicated DCD PRA is acceptable for COL
  - Site-specific information considered
- PRA with construction-level detail is needed to support risk-informed activities after COL issued

COLA ER Approach
(Applications Referencing ESP)

- Starting Point:
  - ESP Environmental Impact Statement
  - ESP Environmental Report
  - Design Certification Environmental Assessment (SAMDA)
- Previously resolved issues have finality for COL
  - Industry/NEI seeking to clarify NRC regulations in this regard

COLA ER Content

- COLA ER content (based on proposed rule)
  - Demonstrate actual ESBWR facility falls within site characteristics and design parameters specified in ESP
  - Resolve any environmental issues deferred in the ESP proceeding
  - Identify new and significant information
- Common approach to ER preparation

New and Significant Info

- Common approach (based on License Renewal process and May 16 NEI response to NOPR)
  - Review to identify “new” information
  - Significance determined with respect to environmental impacts defined in ESP EIS
  - Significant if new information results in change in “level of impact”
- Include information in COLA ER that is both new <u>and</u> significant
- Results maintained in auditable format available for NRC audit and inspection

New Plant Licensing Applications

An Estimated Schedule

Next Steps

- Engage with NRC staff on a regular basis
  - Pre-application meeting process
  - DCWG/NRC Workshops on COLA content
  - Scheduling
- Target for next meeting:
  - Week of September 4, 2006
  - Topics:
    - Pre-application interactions
    - Critical path NRC review issues
    - Pre-application activities list (DG-1145, Section C.IV.7)
    - Project status
    - NRC review of site-specific information

Summary

- Appreciate opportunity to meet
- NRC and DCWG vision is aligned
- DCWG is committed to on-schedule, quality, standardized COLAs