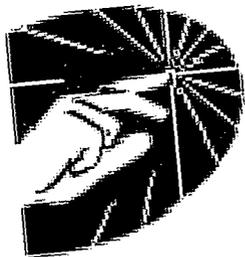
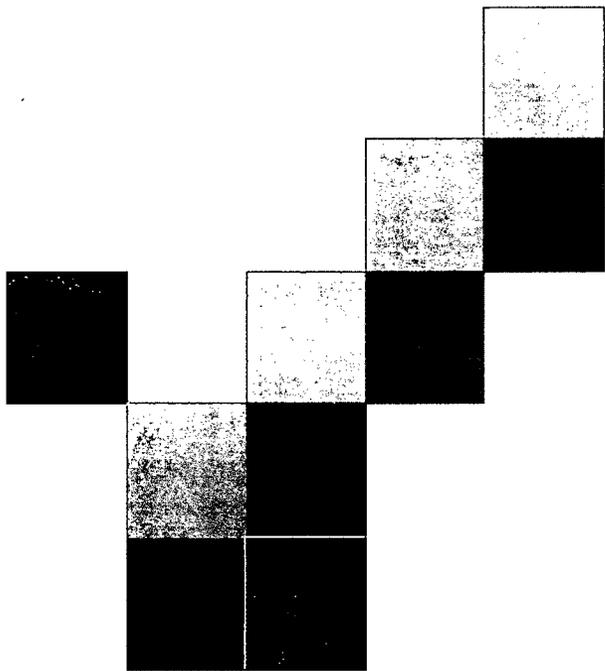


AP1000-ESBWR Design Centered Work Group

Joint Meeting with NRC Staff
December 07, 2006



Dominion[®]



Introductory Remarks

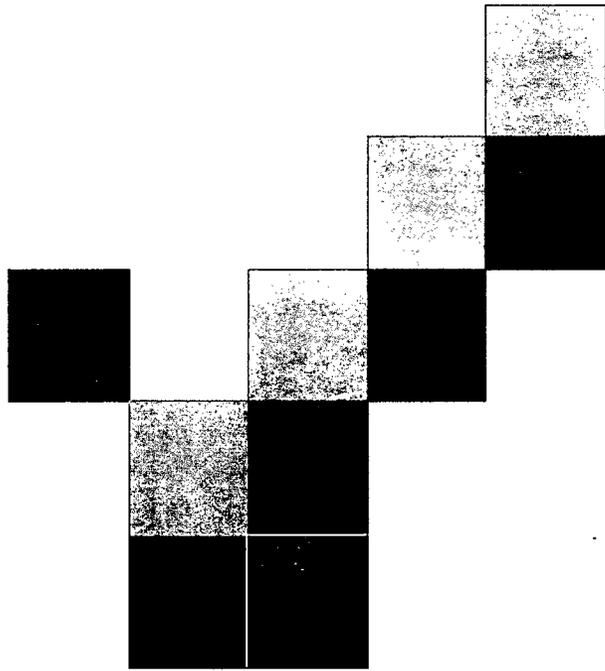


Agenda

- Opening Remarks
- EALs
- Environmental Review Process
- FERC-NRC Application Process
- COL Permitting Approach
- Prior meeting follow-ups

- ESBWR DCWG

- AP1000 DCWG

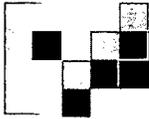


Emergency Planning:
Emergency Action
Levels (EALs)



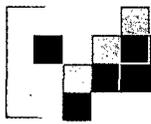
NEI 07-01 *Methodology for Development of Emergency Action Levels – Passive Reactor*

- Includes AP1000 and ESBWR
- Adapts NEI 99-01, Rev. 5 (draft)
 - Rev. 5 (draft) includes FAQs and other industry-identified changes
- NEI 07-01 draft to be reviewed 12/11-13 by NEI Task Force
 - Will determine schedule for presentation to NRC based on the outcome of these meetings
- Provides Initiating Conditions and Emergency Action Levels
- Some specific plant parametric information pending completion of detailed design or site-specific information



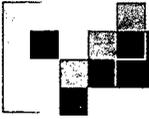
NEI 07-01 (continued)

- Development supported by DCWGs, reactor vendors, contractor teams, and NEI
- AP1000
 - Westinghouse supporting NuStart COL applications, with immediate focus on Vogtle ESP
 - Complete by February 2007 to meet Vogtle schedule needs (with subsequent implementation in COL applications)
- ESBWR
 - General Electric supporting NuStart/Dominion efforts for Grand Gulf and North Anna COL applications
 - Completion date not yet set



NEI 07-01 (continued)

- Includes EALs by “Recognition Category” consistent with NEI 99-01
 - Abnormal Rad Levels/Radiological Effluent
 - Cold Shutdown/Refueling System Malfunction
 - Fission Product Barrier
 - Hazards or Other Conditions Affecting Plant Safety
 - System Malfunction
- Each EAL guide includes:
 - Recognition Category
 - Emergency Class
 - Initiating Condition: symptom- or event-based
 - Operating Mode Applicability
 - Example EALs corresponding to the IC
 - Basis information



Example Sequence: Loss of Power

- Unusual Event: loss of offsite power to all essential busses for greater than 15 minutes
- Alert: loss of all offsite and onsite AC power capability for greater than 60 minutes
- Site Area Emergency: loss of all offsite and onsite AC power for greater than 24 hours
- General Emergency: prolonged loss of all offsite and onsite AC power for greater than 72 hours

- *Note: representative example sequence shown for discussion only*
 - *Subject to change per industry review/comment*
 - *Could vary by design*



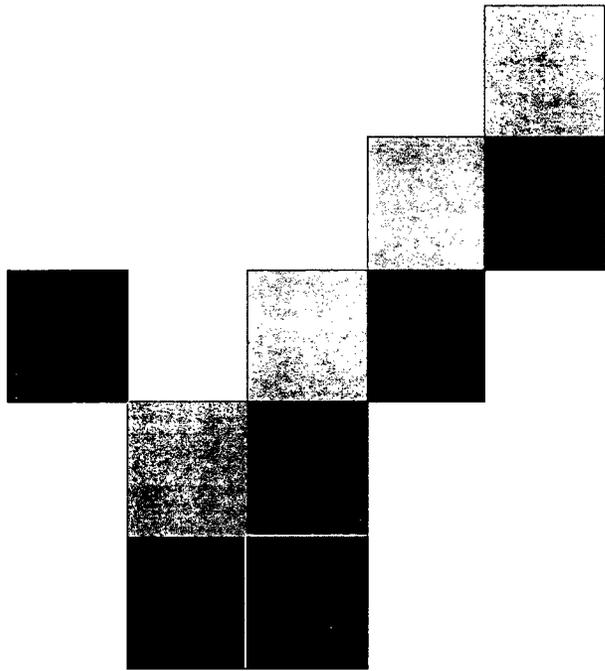
Emergency Action Levels

- NEI 07-01 will include instrument values and setpoints available at current stage of design
- Additional instrument values and setpoints pending completion of detailed design, construction/installation (as appropriate) will be noted as “[TBD]” – To Be Determined

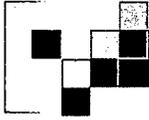


NEI 07-01

- Passive plant applicants intend to develop EALs based on NEI 07-01 to prepare COL applications
- Goal is to obtain timely NRC endorsement of NEI 07-01

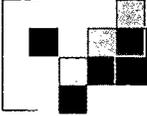


Environmental Review Process Update



Key Objectives

- Present process developed for identifying “new-and-significant” information in COLA ER
- Present planned COLA ER content organization
- Suggest potential future COLA ER topics for discussion



COLA ER: Overall Content

- Content governed by proposed 51.50(c)(1) requirements
 - (i) Information to demonstrate that the design of the facility falls within the site characteristics and design parameters specified in the early site permit;
 - (ii) Information to resolve any significant environmental issue that was not resolved in the early site permit proceeding;
 - (iii) Any significant new information for issues related to the impacts of construction and operation of the facility that were resolved in the early site permit proceeding; and
 - (iv) A description of the process used to identify new and significant information regarding the NRC's conclusions in the early site permit environmental impact statement. The process must use a reasonable methodology for identifying such new and significant information.
 - (v) A demonstration that all environmental terms and conditions that have been included in the early site permit will be satisfied by the date of issuance of the combined license.

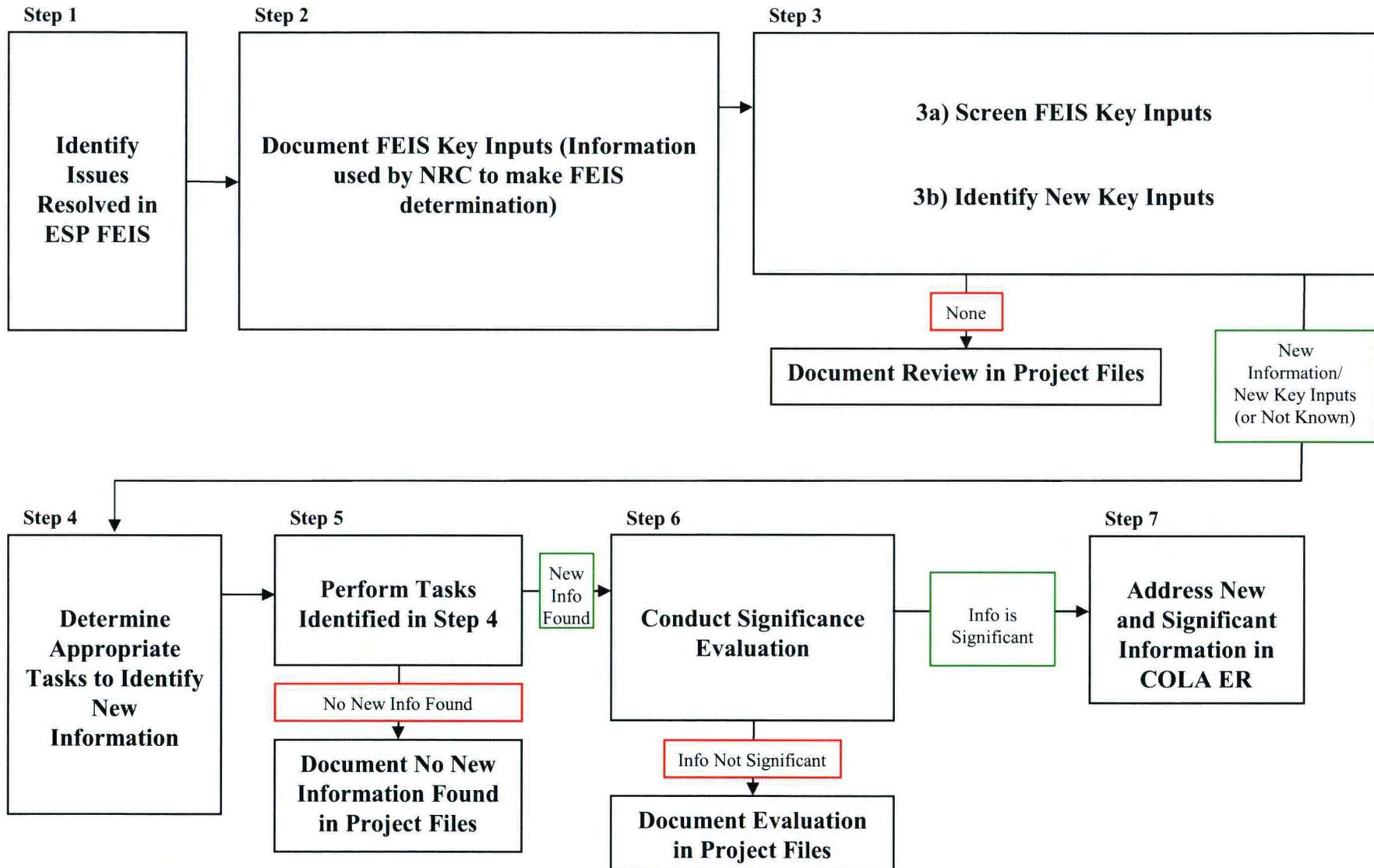
- Format will follow NUREG-1555



COLA ER New and Significant Information Process - Approach

- COL Applicant will utilize the ESP FEIS as the baseline to implement the N&S process
- Similar to License Renewal use of GEIS in the approach to N&S information
- Consistent with NRC Workshop discussions of April 20-21 and May 17-19

COLA ER New and Significant Information Process - Flowchart

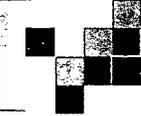




COLA ER Process Used to Identify New and Significant Information

Step 1: Identify Issues Resolved in ESP FEIS

- COL applicants referencing an ESP include any new and significant information for issues related to the impacts of construction and operation of the facility that were resolved in the ESP proceeding (SECY 06-0220, pg 7)
- COL Applicant will utilize as a baseline the FEIS to implement the N&S process



COLA ER Process Used to Identify New and Significant Information

Step 2: Document FEIS Key Inputs (information used by NRC to make FEIS determination)

- Careful review of FEIS conclusions and stated assumptions
- This would include FEIS Appendix J, NRC Staff Assumptions Relevant to the Analysis of Impacts
- Based on the above review, document results in an auditable form, e.g., table of FEIS Key Inputs



COLA ER Process Used to Identify New and Significant Information

Step 3a: Screen FEIS Key Inputs for the following:

- Information subject to change during the time elapsed since the FEIS was issued
- Assumptions which may no longer be valid

Step 3b: Identify New Key Inputs

- New information that could have an impact on an NRC FEIS conclusion
 - not considered in FEIS; and
 - not generally known or publicly available during the preparation of the FEIS



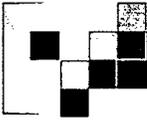
COLA ER Process Used to Identify New and Significant Information

Step 4: Determine Appropriate Tasks to Identify New Information

- For example:
 - Check websites
 - List potential regulatory agencies or non-governmental organizations to contact

Step 5: Perform Tasks Identified Above

- Was new information found?
 - If YES, use new information in significance evaluation
 - If NO, document no new information found



COLA ER Process Used to Identify New and Significant Information

Step 6: Conduct Significance Evaluation

- Is the information material to the issue being considered?
- Does the new information have the potential to affect NRC findings or conclusions?
 - If YES, document results as per Step 7
 - If NO, document in file records

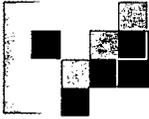
Step 7: Address significant new information in COLA ER

- For issues related to the impacts of construction and operation of the facility that were resolved in the ESP proceeding



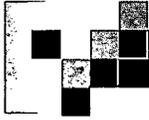
COLA ER Contents

- Table of Contents based on NUREG-1555
- Additional topics included in Chapter 1
 - Information required by 10 CFR 51.50(c)(1)
 - Roadmap from FEIS Table of Contents to locations in COLA ER



COLA ER Contents

- Chapter 1 – Introduction: Introduction, N&S Process Description, Roadmap
- Chapter 2 – Environmental Description: Resolution of unresolved issues, updated information as identified via N&S process
- Chapter 3 – Plant Description: Demonstration table
- Chapter 4 – Environmental Impacts of Construction: Resolution of unresolved construction impacts, N&S information
- Chapter 5 – Environmental Impacts of Station Operation: Resolution of unresolved operation impacts, N&S information



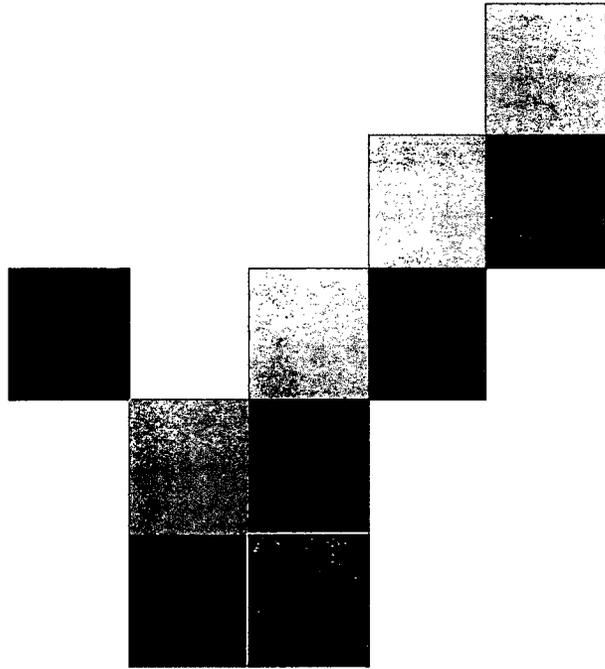
COLA ER Contents

- Chapter 6 – Environmental Measuring and Monitoring Programs: Resolution of unresolved issues
- Chapter 7 – Environmental Impacts of Postulated Accidents Involving Radioactive Materials: Resolution of unresolved issues, updated information as identified via N&S process
- Chapter 8 – Need for Power: Unresolved or deferred issues
- Chapter 9 – Alternatives to the Proposed Action: No-action alternative, energy alternatives
- Chapter 10 – Environmental Consequences of the Proposed Action: Updated impact summary tables, unresolved issues, cost-benefit analysis

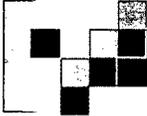


Potential Future Environmental Review Topics

- Chapter 3 comparison table – demonstration that the design of the facility falls within the site characteristics and design parameters in the ESP
- Variances
- Environmental permits for construction and operation
- Examples of N&S information evaluations
- Pre-Application activities and interactions



FERC-NRC Application Process



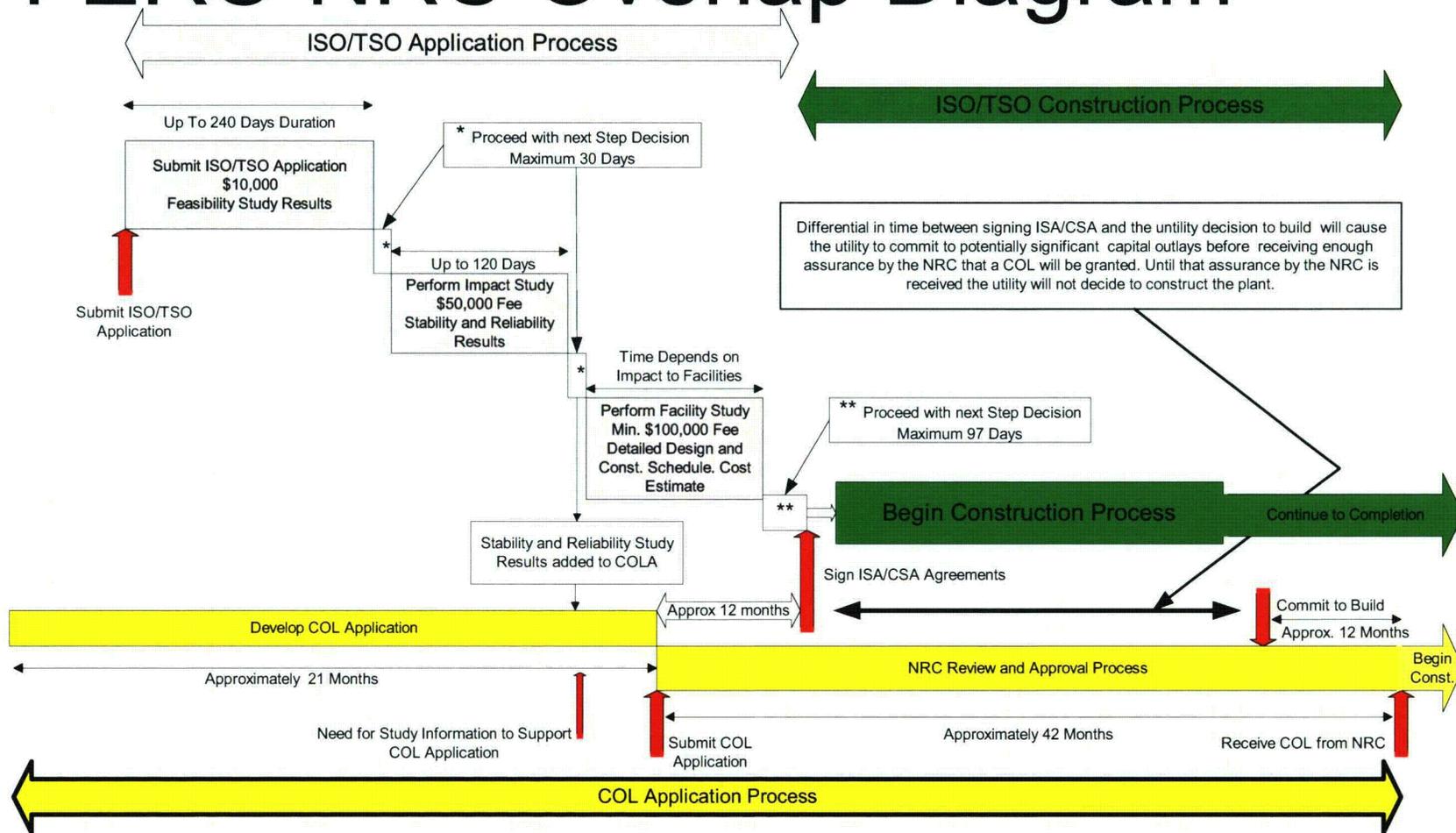
Regulatory Processes

■ Two Regulatory Processes, FERC-NRC

□ FERC Process

- Process is codified
- Provide evenhanded access to all applicants
- Provide stable and reliable grid
- Rules created for non-nuclear generators
 - Non-nuclear utilities or generation companies have already performed internal studies and have made decision to build
 - FERC rules didn't take NRC application process into account

FERC-NRC Overlap Diagram

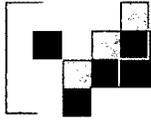


Generic COL (NRC) and ISO/TSO Application
(Process timelines are estimates unless otherwise noted)



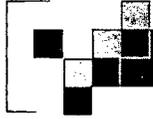
Regulatory Processes

- FERC application:
 - Has defined time intervals
 - Three studies which have time limit constraints
 - Must sign continuation agreements or exit Queue
 - Interconnect Service Agreement (ISA)
 - Commits utility to grid upgrades
 - Modifications to grid are incurred at expense of applicant
 - Tariff agreement may allow for recovery costs
 - Costs cannot be recovered until Unit is operational



Regulatory Processes

- FERC Application Continued
 - Interconnect Service Agreement (ISA)
 - Upgrades may be substantial
 - Example - Calvert Cliffs ~ \$70 million dollars
 - Also may take up to 9 years after signing ISA to complete system upgrades
 - Unit may not be allowed to operate or fully recover generation costs until upgrades are completed.
 - Dropping out of Queue process will require reentry
 - Grid reliability and stability study will need to be reevaluated
 - ISA will need to be signed perhaps years before COL is approved and utility decision to build



Regulatory Processes

■ NRC COL Process

□ COL Application Development

- Will require grid stability and reliability study for application
- Switchyard design

□ COL Application Approval Phase

- Will require years to complete
- Subject to rejection
- Affects utility decision to build

□ Construction

- Due to length of construction and application process it will be years before the utility can recoup costs of ISA



Regulatory Overlap

■ Overlap

- COL application requires:
 - Stable and reliable grid analysis
 - Lengthy review and approval process
- FERC application provides the grid analysis
 - But requires utility to stay in Queue
 - Study will require reanalysis if utility exits Queue
 - ISA will need to be signed shortly after the three studies are completed
 - Due to time required to perform system upgrades, exiting the Queue may not be an alternative



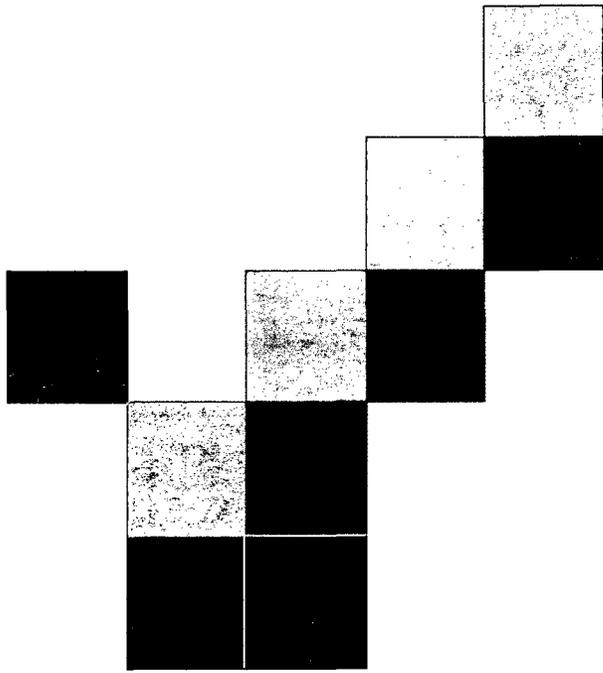
Conclusion

■ Conclusion

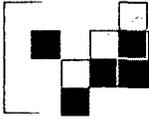
- This is a generic issue for all applicants
- Utility will have to make significant financial commitment before decision to build is made

■ NRC finding on grid reliability/stability is based on information provided at COL application

- FERC process and compliance with NRC GL 06-02 continue to ensure grid reliability/stability



Non-NRC Permitting



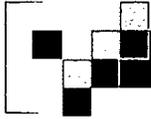
DCWG Permitting Strategy

- Briefing on DCWG-level coordination on key pre-application interfaces with permitting agencies
- Site-specific process for securing appropriate federal, state, and local permits
- Certain common aspects
- Joint-DCWG approach to benchmarking permitting process
- Will support review of site-specific pre-application interfaces as needed



Joint-DCWG Approach

- Utilize existing utility's permitting plan as example/point of departure
- Benchmark other sites:
 - Timing of permit requirements
 - Coverage of topics
 - Discussion in ER



Example Permitting Plan

- Permit type or regulatory decision
- Jurisdiction
- Permit “owner” (e.g., utility applicant, construction contractor, etc.)
- Permit timing/schedule
 - Needed for or at time of COL application submittal
 - Needed for or at time of onsite work/site preparation
 - Needed for or at time of construction
 - Needed for or at time of operation
- Estimated lead time
 - Permit preparation
 - Agency review



Examples (Hypothetical SC Plant)

- Well Permits (SC R61-71)
 - Timing: needed for COL application submittal (i.e., prior to site characterization)
 - Jurisdiction: State of SC (SC DHEC)
 - Prep time: 30 days
 - Review time: 14 days
- Consultation on cultural resources from SHPO (36 CFR Part 800)
 - Timing: needed for COL application submittal
 - Jurisdiction: State of SC (SHPO)
 - Prep time: 30 days
 - Review time: 60 days
- Bureau of Air Quality Construction Permit (SC R. 61-62)
 - Timing: needed for construction (will also cover initial 12 mos of operation; scope is permanent air emitting equipment to be installed for plant operations)
 - Jurisdiction: State of SC (BAQ)
 - Prep time: 3 weeks
 - Review time: 4 months



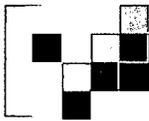
Permit Examples (not comprehensive)

- Consultation on cultural resources (SHPO), endangered species (USFWS, SCDNR), wetlands (USCOE)
- NPDES Stormwater Permit, Storm Water Pollution Prevention Plan (SWPPP), Erosion Control Plan, County Septic Tank Permit, Wastewater Treatment Permit, NPDES Permit Sanitary Wastewater Discharge, Wastewater Treatment Discharge, Cooling Tower Blowdown Discharge, NPDES Operations Stormwater Permit
- Bureau of Air Quality Construction Permits, Concrete Batch Plant BAQ Permit, Title V Air Operating Permit or Conditional Major Source Permit
- Water Withdrawal Registration/Use Permit, Water Quality Certification (SCDHEC), Sec 404 Dredge & Fill Permit (USCOE)
- Grading Permit, Blasting Permit, Spills Response Plan, Diesel Fuel Storage Tank (UST) Installation Permit, Construction & Demolition Landfill, Pollution Prevention and Waste Minimization Plan, Process Waste Disposal/RCRA ID Number
- County Building Safety Engineering Report, Building Permit
- DOT Highway Encroachment
- Certificate of Public Convenience and Necessity (SC Public Service Commission)



Plan Status

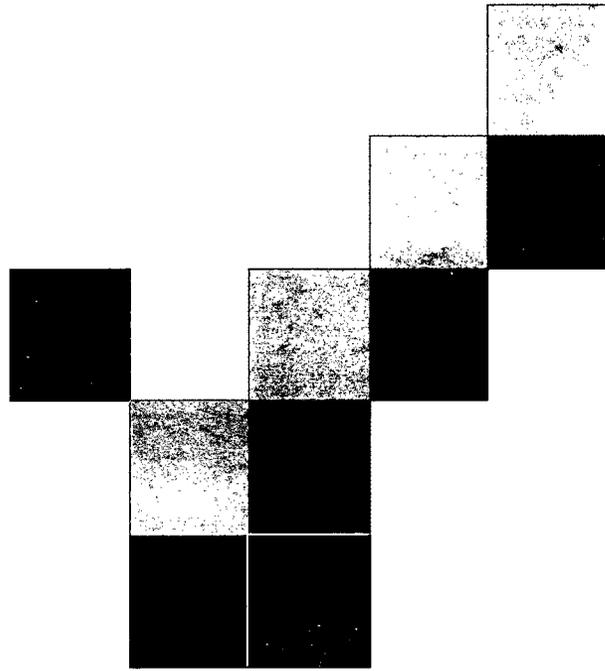
- Various levels of state/local agency engagement/review of plans and activities
- Additional DCWG benchmarking to occur early 2007
- Informing Staff



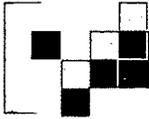
Description of Permits in ER

TABLE 1.2-1
FEDERAL, STATE, AND LOCAL AUTHORIZATIONS

Agency	Authority	Requirement	License / Permit No.	Expiration Date	Activity Covered
U.S. Nuclear Regulatory Commission (NRC)	10 CFR 52.79	Environmental report			Preparation of a combined license application for construction and operation of a commercial nuclear power plant.
U.S. Fish and Wildlife Service	Endangered Species Act, 50 CFR 402	Consultation			Consultation concerning potential impacts to federal threatened & endangered species.
U.S. Department of the Interior	36 CFR 800	Consultation			Identification and evaluation of historic properties.
Federal Aviation Administration	Federal Aviation Act, 14 CFR 77	Permit			Permit for structures over 200 ft in height (construction cranes, cooling towers).
U.S. Coast Guard	14 U.S.C. 81, 83, 85, 633/ 49 U.S.C. 1655(b).	Authorization			Navigation markers authorization to protect river navigation from hazards connected with temporary construction activities in a river.
U.S. Army Corps of Engineers	Clean Water Act, 40 CFR 322	Permit			Placing structures or working in or affecting navigable waters. Aquatic resource alteration (wetland filling, stream alteration).
	33 CFR 323	Section 4.4 Dredge and fill discharge permit			Permit for discharge of dredged spoils.

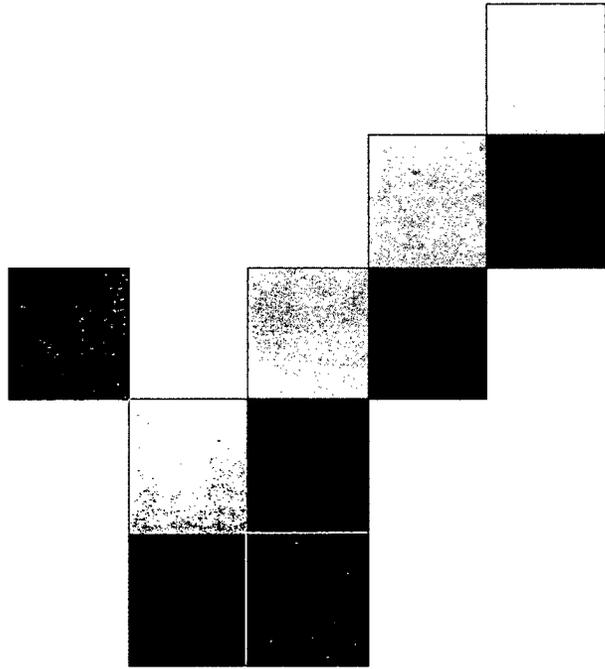


Follow-up From Prior Meetings

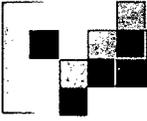


Prior Meeting Follow-up Items

- Each DCWG to send letter requesting treatment of DCWG as separate business entity
- List of Left Margin Annotation types
- Scope of “other site work to support plant construction”
- NRC Staff feedback on acceptability of operational programs in DCD (followed by DCWG feedback on example programs to be considered)
- Information needed on fabrication schedule
- “All-DCWG” COL Application Workshop
- SGI briefing on TSC location

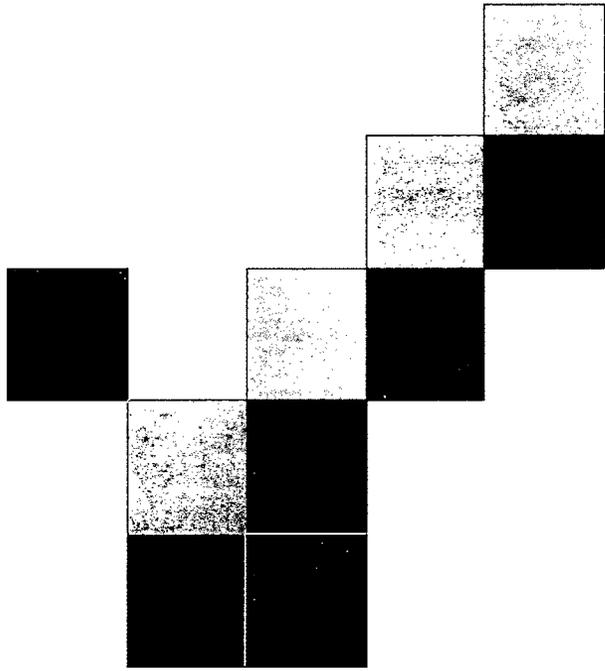


ESBWR DCWG



ESBWR DCWG Agenda

- Project Status
- Action Items
- Disposition of COL Items

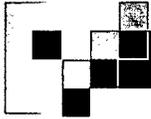


AP1000 DCWG



AP1000 DCWG Agenda

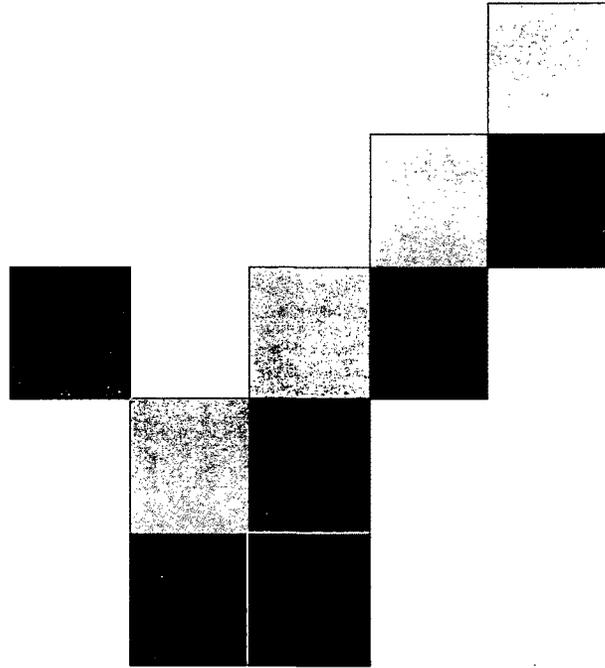
- Project Status
- PRA
- DCD Revision



AP1000 Project Status

- Bellefonte site boring complete – analysis in progress
- Bellefonte meteorological and groundwater data collection in progress
 - Meteorological data collection ~April 2007
 - Groundwater data collection ~June 2007
- Technical Reports: > 50% submitted
- FSAR development: ~25% complete
- ER development: ~15% complete

- On schedule for October 31, 2007 submittal



AP1000 Site-Specific Probabilistic Risk Assessment



AP1000 Site-Specific PRA Issues

- Design Certification Internal Events PRA:
site-specific validation of generic
assumptions
 - Loss of Offsite Power
 - Changes resulting from detailed design
- Site-specific External Hazards
 - COL Item 19.1.5-1
- Site-specific Level 3 PRA



Internal Events PRA

- COL Applicant needs to verify:
 1. Assumptions in the Design Certification AP1000 PRA are applicable to the site
 2. Changes resulting from site-specific design
- Solution:
 - Checklist to validate assumptions
 - Criteria list to evaluate changes/departures



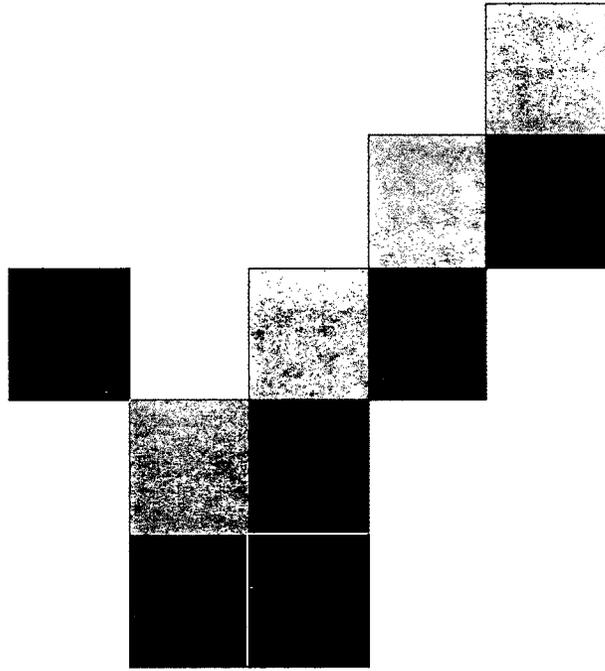
External Events PRA

- Globally addressing COL Item 19.1.5-1
- Solution:
 - Westinghouse to provide a list of candidate External Hazards to COL Applicants
 - Applicants to individually evaluate applicability of External Hazards to the site and provide Initiating Event Frequencies to Westinghouse
 - Westinghouse to collect Initiating Event Frequencies and select most limiting (i.e. highest frequency)
 - Westinghouse to qualitatively evaluate the limiting frequencies vs. NUREG-1407 criteria such that all sites are bounded by the single evaluation
 - Quantitative analysis will be performed, if necessary, using the limiting frequency(ies) such that all sites are bounded by the single analysis
 - Summarize results in Chapter 19 of the DCD / FSAR



Level 3 PRA

- Use of Design Certification Level 3 PRA in site-specific COL Applications
- Confirm with site-specific information that Level 3 PRA (DCD Rev. 15) is bounding (Westinghouse)



AP1000 DCD Revision



AP1000 DCD Revision

- Proposed 10 CFR §52.63(a)(1)(vi) allows for a design certification amendment that “contributes to increased standardization of the certification information“
- Intended to allow for changes primarily to account for:
 - first-of-a-kind-engineering (FOAKE),
 - design information developed to resolve DAC, or
 - increased design details (e.g., resolution of COL action items)



AP1000 DCD Revision (continued)

- Westinghouse intends to submit DCD Revision 16
Spring 2007
 - Assumes rule change supports revision
 - Incorporate Technical Reports (TRs) and close COL Information Items
 - Reflect design changes
- The bar is high:
 - Changes not proposed to support design improvements in general
 - Changes proposed via TRs mainly to resolve COL information items and DAC
 - Limited number of design changes



COL Applications Referencing DCD

- Currently reference DCD Rev 15 plus TRs
- TRs under “one issue, one review” approach – includes hearing?
- NRC review/approval of DCD Rev 16
 - Conforming change to COL application will be required
 - Possible option to reference Rev 16 in COL applications