

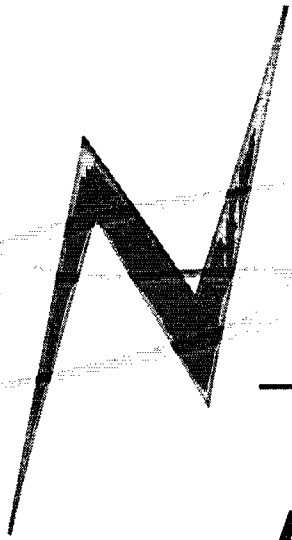
Bellefonte 3&4

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**AP1000 Design-Centered
Work Group**

**Meeting with NRC Staff
September 20, 2006**

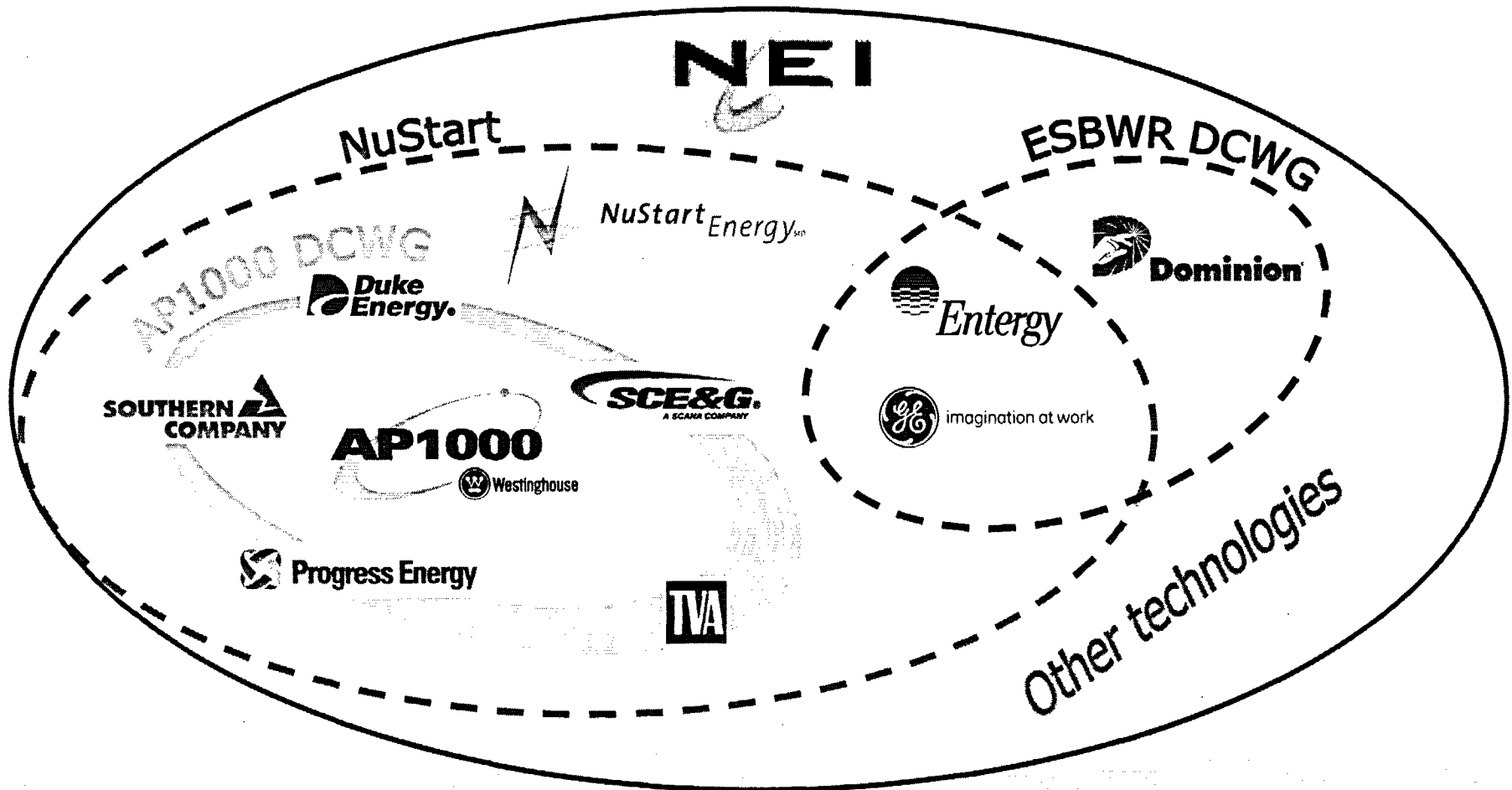
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Meeting Purpose

- **Joint session with ESBWR DCWG (EALs)**
- **Discuss AP1000 pre-application interactions and submittals**
 - Cross-technology standardization
 - Joint AP1000-ESBWR topics
 - Industry-level topics
 - AP1000 Westinghouse submittals
 - AP1000 COL applicant submittals
- **Review DCWG Plans, Schedules, Expectations and COLA Development Approach**
- **Discuss upcoming and proposed pre-application interactions**

Cross-Technology Standardization



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ESBWR-AP1000 Common Topics



Dominion[®]



Dominion

EALs for ESBWR/AP1000

- **Reg. Guide 1.101 does not address ALWRs**
- **NEI 99-01's conceptual approach and structure can be adapted to address ALWRs**
 - Review and adapt NEI 99-01 concepts and structure, using a systematic approach that considers passive features and severe accident sequences
 - Identify Recognition Categories & Initiating Conditions, with high-level provisions for site-specific information
 - EAL ITAAC 1.1 (Approved per SRM/SECY-05-0197)
 - Significant input from GE and Westinghouse
 - Applicable to all ESBWR and AP1000 units



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Future AP1000-ESBWR "Overlap" Topics





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AP1000



AP1000 DCWG

Industry-Wide Topics



- LWA
- COL application level of detail (general)
- Seismic
- Radiation Protection
- Training
- Emergency Preparedness
- Security
- Quality Assurance
- Maintenance Rule

AP1000-Specific Interactions: Westinghouse TRs and Meetings

- **Westinghouse Technical Reports (TRs) –**
 - 62 TRs currently planned
 - 31 TRs submitted to NRC to date
 - NRC technical review complete on 3 TRs (associated with completing 4 COL Information Items)
 - TRs submittals on schedule
 - 23 RAIs questions issued
 - 10 have been responded to
 - RAI responses to date issued within 30 days
 - Near-term schedule of key interactions
 - Oct 3-5: Chapter 7, I&C (Monroeville)
 - Nov 7-9: Chapter 18, HFE (Monroeville)
- **New (presently unscheduled) TR Topics**
 - Considering additional TRs (pending details of Part 52 changes)
 - Twin-unit AP1000s collocated at a given site
 - Alternate Turbine-Generator Design

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AP1000-Specific Interactions: Other Pre-Application Activities

- **DAC workflow process – Nov 2006 mtg (TBV)**
- **Plans for addressing COL information items – Dec 2006 mtg**
- **Potential policy issues – dependent in part on 10CFR52 and DG1145**
- **Schedule for site characterization activities – largely complete**
- **Plans to request limited work authorization – dependent on rulemaking**
- **Other site work to support plant construction**
- **Source of historical site information for geology, meteorology, and socio-economic data**
- **QA program – part of ongoing NEI efforts**
- **Analysis needed to support offsite power analysis with RTO**
- **Relationship between COL application and other licensing activities (e.g., review of DC) – dependent on 10CFR52**

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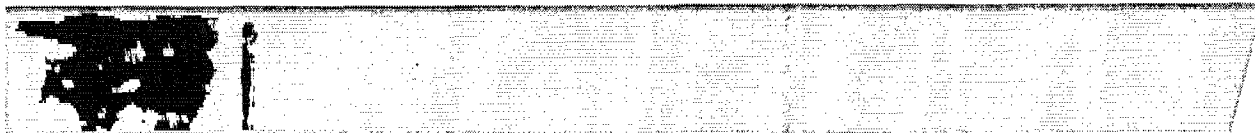
AP1000 Site-Specific Pre-Application Activities

- **Topics (from DG1145)**
 - Alternative Sites
 - Pre-Application Monitoring
 - Federal, State, Tribal, and Other Entities
 - Initial Data Collection
- **Approach**
 - DCWG will identify common information to be discussed at DCWG meeting in Nov-Dec (e.g., approach, level of detail, etc.)
 - Follow up with site-specific onsite reviews
- **Generic topic: Staff plans for pre-review of ER**
 - Plan to apply to current applicants
 - Reconciliation of schedule



FSAR Format and Sample Chapter/Section Review

- **Incorporation by Reference**
- **"Margin tags" approach to identification of content**
 - Working with ESBWR DCWG
- **Workshop to review sample content**
 - Level of detail
 - Incorporation by reference
 - Other elements of application content
 - Plan for workshop in mid-November



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Security

- **AP1000 DCWG participates in NEI New Plant Security Task Force working on development of security related documents and issues**
- **Multiple discussions have take place between industry and NSIR**
- **Goal is to standardize to the maximum extent practical with the industry**
- **Challenges for AP1000**
 - Approved DCD exists
 - Format differences for Chapter 13.6
 - Content differences for Chapter 13.6
 - Change process for Tier 2 material requiring NRC approval
- **Industry vs DCWG standardization**

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Operational Programs

- **SECY-05-0197**

- Required operational programs to be clearly and sufficiently described in terms of scope and level of detail to allow reasonable assurance finding of program acceptability in COL
- FSAR descriptions will identify program implementation milestones
- License condition on program implementation
- Separate from the COLA, specific program implementation schedules will be provided to support NRC inspections

- **Three categories**

- Program being developed at industry level (NEI)
- Program being developed for submittal with COL application
- Candidate for submittal of AP1000-specific technical reports in advance of COL application

Industry-Level Operational Programs

Program	DCD/ FSAR Section	COL Information Item(s)	Implementation
Emergency Preparedness ¹	13.3	9.5-10 (communications) 13.3-1 13.3-2 13.5-1 (procedures) 18.2-2 (EOF design)	NEI team evaluating opportunities for generic approach to required COLA content and determining how to best address NEI 99-01 EALs for new reactor designs
Fire Protection ²	9.5.1	9.5-1 through -4	NEI task force being formed to develop generic FSAR content (9.5.1); AP1000 DCWG evaluating NEI approach vs DCD
Maintenance Rule	17.6	17.5-6	NEI team has proposed alternative DG-1145 language; template FSAR Section 17.6 to be developed
Operator Training Operator Requalification Plant Staff Training	13.2	13.2-1	Proposed template for generic Section 13.2 planned for submittal Fall 2006

¹ Split: NEI program & COLA program

² Split between NEI & COLA program TBD (new NEI task force)

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Industry-Level Operational Programs

Program	DCD/ FSAR Section	COL Information Item(s)	Implementation
Security Plan Safeguards Cont. Weapons Training Weapons Qual'n/ Requalification Vehicle Control Access Authorization Fitness for Duty	13.6	13.6-1 through -4	NRC endorsement requested of generic materials submitted 18 Aug 2006: <ul style="list-style-type: none">• Template for Section 13.6³• Generic ITAAC on physical security• Templates for COLA info on security during plant construction (proposed NEI 03-12, Appendices E & F) Evaluating development of additional security-related templates
Radiation Protection ⁴	12.5	12.5-1	NEI task force evaluating generic Section 12.5 (from NEI 04-01 and in consideration of DG-1145) for possible endorsement 2006
Quality Assurance	17	17.5-1 through -5	NEI team developing template for Chapter 17, interacting with Staff

³ Refer to prior discussion of possible AP1000-specific implementation

⁴ Split between NEI & COLA program TBD

- Both Emergency Plan and Security Plans are also "COLA Phase" programs with separate plans submitted as part of COL application

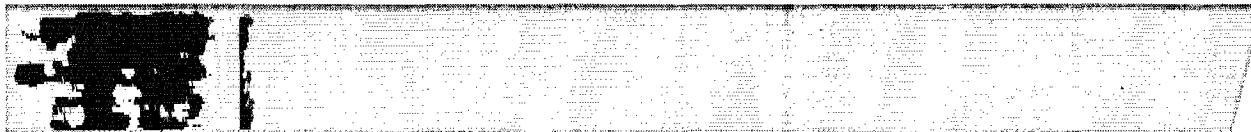
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AP1000-Specific Operational Programs

- **Early submittal of technical reports**
 - Opportunity to close certain operational-program COL information items before application submittal
 - Early review of program descriptions to be referenced in FSAR
 - Includes discussion of implementation milestones (for post-COL inspection planning)
- **Approach to TR submittal, review, and use**
 - Consistent with past AP1000 TRs
 - DCWG prepares and submits TR (NuStart submittal)
 - Staff reviews and requests additional information as needed
 - Staff documents conclusion in SER (stand-alone or part of subsequent certification revision, if supported by regulation)
 - Individual applicants refer to TRs in discrete COL applications (or revised certification, if applicable)

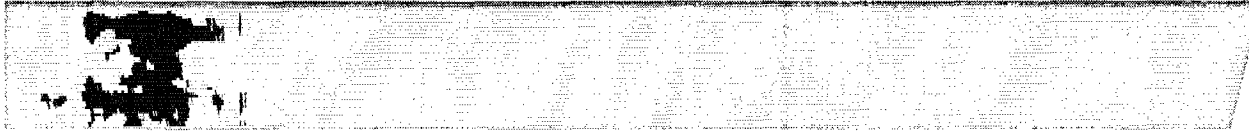
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Operational Program: Containment Leak Rate Testing

- **Associated DCD/COLA text: 6.2.5**
- **COL Information Item: 6.2-1**
 - The Combined License applicant is responsible for developing a "Containment Leakage Rate Testing Program" which will identify which Option is to be implemented under 10 CFR 50, Appendix J. Option A defines a prescriptive-based testing approach whereas option B defines a performance-based testing program.
- **Program schedule: TR Oct 2006**
 - Commit to Option ^{A or} B and provide implementation commitment and [↑] schedule
- **Implementation timing: prior to fuel load**

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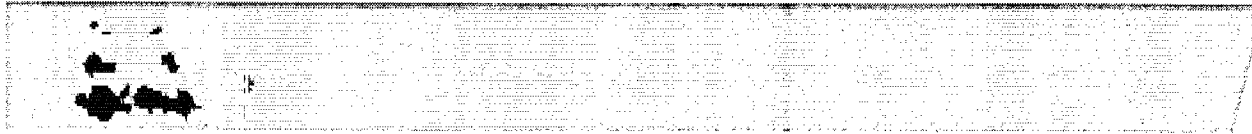
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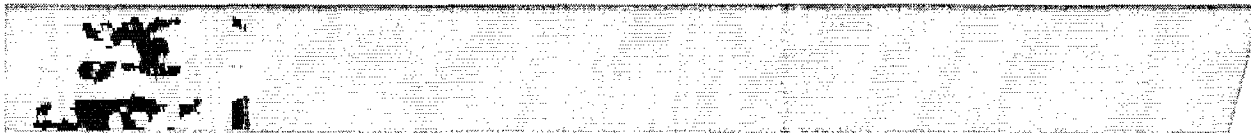
Operational Program: Radiation Protection

- **Associated DCD/COLA text: 12.5**
- **COL Information Item: 12.5-1**
 - The Combined License applicant will address the organization and procedures used for adequate radiological protection and to provide methods so that personnel radiation exposures will be maintained ALARA.
- **Program schedule: TR Dec 2006**
 - Commitment to develop RP program that will define organization structure and procedures to maintain personnel exposure as low as reasonably achievable and within federal limits
- **Implementation timing: phased approach**
 - Source(s) on site
 - Fuel on site
 - Reactor critical



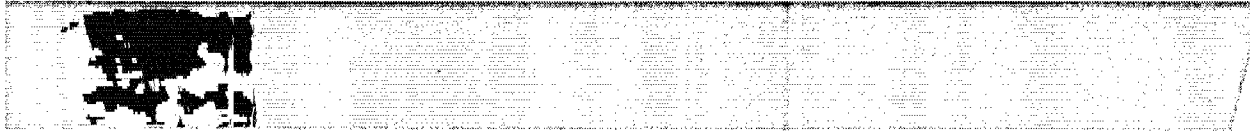
Operational Program: RV Material Surveillance

- **Associated DCD/COLA text: 5.3**
- **COL Information Item: 5.3-2**
 - The Combined License applicant will address a reactor vessel reactor material surveillance program based on subsection 5.3.2.6.
- **Program schedule: TR Nov 2006**
 - Commit to develop a program in accordance with NUREG-0800 5.3.1.II and as described in the DCD 5.3.2.6
- **Implementation timing: prior to system pressure testing (phased removal of samples as described in DCD 5.3.2.6)**



Operational Program: Process & Effluent Monitoring & Sampling

- **Associated DCD/COLA text: 11.5**
- **COL Information Item 11.5-2:**
 - COL applicant responsible for site-specific and program aspects of process and effluent monitoring and sampling per ANSI N13.1 and Regulatory Guides 1.21 and 4.15
- **Program schedule: TR Feb 2007 (TBV)**
 - Commitment to site specific Offsite Dose Calculations and Methodology Manual (ODCM) that will include items such as:
 - Instrument set point calculations
 - Offsite radiation monitoring locations
 - DG-1145 implies considerable detailed design information to comprehensively answer, thus extending the dates for NRC submittal
 - Normal, maintenance & off-normal operations
 - Updated P&IDs
 - Instrument sensitivities
 - Disposal site WAC
 - DG-1145-implied level of detail could require 50.59 or re-submittal based on actual equipment purchased (e.g., actual decon factors for ion exchange resin & charcoal)
- **Implementation timing: phased approach**
 - Sources on site
 - Chemicals on site



Operational Program: Preservice & Inservice Inspection

- **Associated DCD/COLA text: 5.2.4 & 6.6**
- **COL Information Item 5.2-2 and 6.6-1:**
 - Provide plant-specific preservice & inservice inspection program referencing edition/addenda of ASME Section XI used for selecting components subject to examination, description of components exempt from examination, and drawings or other descriptive information used for examination
 - Preservice inspection program to include examinations of RV closure head equivalent to those outlined in 5.3.4.7; inservice inspection program to address susceptibility calculations, inspection categorization, inspections of RV closure head, and associated reports and notifications per Order EA-03-009 or requirements that may supersede the Order; identify areas required by Order or subsequent requirements that applicant will be unable to perform or choose to perform an alternate
 - Inservice program to include provisions to ensure boric acid corrosion does not degrade RCS boundary
- **Program schedule: TR Nov 2006 (TBV)**
 - Program description as described in DCD sections 5.2.4 & 6.6
 - Commitment to ASME Code Edition and Addenda
 - Commitment for RV Head inspection program in accordance with NRC Order EA-03-009 (NOTE: RV head design incorporates design/inspection features that will minimize concerns with the present plant design issues)
 - Commitment to boric acid inspection program as part of Section XI inspections
- **Implementation timing: prior to system hydrostatic testing**



Operational Program: Preservice & Inservice Testing

- **Associated DCD/COLA text: 3.9.6, 5.4.8**
- **COL Information Item 3.9-4:**
 - Combined License applicants referencing the AP1000 design will develop an inservice test program in conformance with the valve inservice test requirements outlined in subsection 3.9.6 and Table 3.9-16. This program will include provisions for nonintrusive check valve testing methods and the program for valve disassembly and inspection outlined in subsection 3.9.6.2.3. The Combined License applicant will complete an evaluation as identified in subsection 3.9.6.2.2 to demonstrate that power-operated valves with low differential pressure have adequate margin and operability testing of these valves is not required.
- **Program schedule: TR Nov 2006 (TBV)**
 - Program describing preservice testing and inservice testing of valves per DCD section 3.9.6
 - Commitment to ASME OM Code year and Addenda
 - Evaluation demonstrating that POVs with low delta P will perform their intended safety function without need for periodic testing
- **Implementation timing: prior to fuel load (preservice) and systems operability testing (inservice)**



Operational Program: Environmental Qualification

- **Associated DCD/COLA text: 3.11**
- **COL Information Item: 3.11-1**
 - The Combined License applicant is responsible for the maintenance of the equipment qualification file during the equipment selection and procurement phase.
- **Program schedule: TR Nov 2006**
 - Commitment for EQ program that will include:
 - Receipt and maintenance of EQ files after receipt from the NSSS vendor
 - Identification of equipment bounded by EQ
- **Implementation timing: prior to system turnover to Operations**



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Operational Program: MOV Program

- ~~■ Departure/deviation from DCD text: none~~
- Associated DCD/COLA text: 3.9.6
- COL Information Item: *None found*
- Program schedule: TR Nov 2006
 - *A commitment for an MOV program that will include items such as:*
 - *Valves in program*
 - *Design parameters*
 - *Testing methods and frequencies*
- Implementation timing: prior to systems operability
- ~~■ Submittal vs. onsite review: submittal of TR~~

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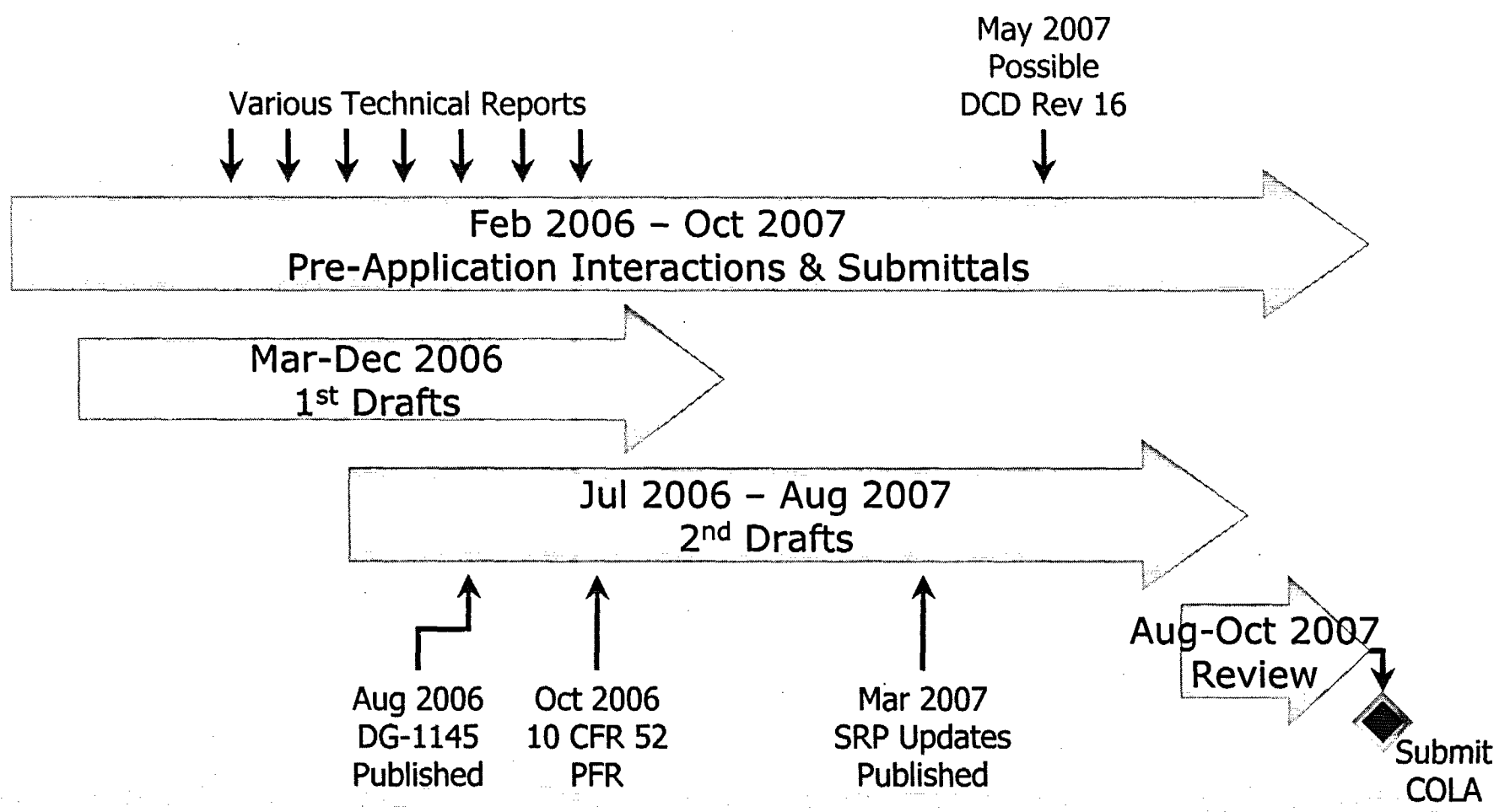


Future Interactions

- **Monthly meetings/workshops**
- **Near term proposed dates**
 - Week of 22 Oct, 20 Nov, 18 Dec (early in week)
 - To include joint sessions with DCWG, as applicable
 - To include workshop(s) to review application content
- **Subject to coordination with ESBWR DCWG and other NEI and NRC meetings**
- **Action: based on results of today's meetings, schedule next 90 days of interactions (meetings, workshops, TRs, etc.) by topic**



COLA Schedule



Bellefonte 384 Lee Nuclear 182 Summer 283 Vogtle 384 Harris 283



DCWG Plan & Schedule

■ Plan

- Maximize incorporation of certified design; minimize departures
- Address certain standardized COL information items in advance with collaborative "topical" submittals
- Submit standard COLAs using a design-centered approach

■ Schedules

- Submit various technical reports in support of pre-application interactions
- NRC issues SERs for pre-application technical reports
- Submit Reference Plant (Bellefonte) COL application and three others essentially simultaneously in October 2007 (assumes predictable outcome of various NRC actions)
- NRC issues Bellefonte, Harris, Lee, and Summer FEISs and FSERs by March 2009, COLs by March 2010

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