

NRC New Plant Reviews

Processes and Expectations

Design Centered Work Group Meeting
June 13, 2007

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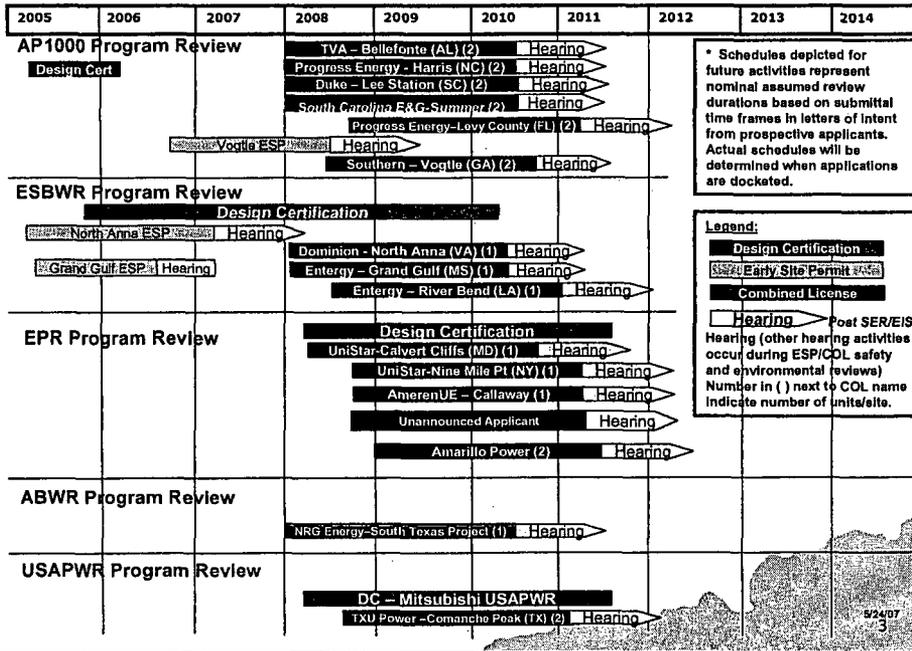
Presentation Objectives

- ◆ NRC new reactor applications review process
- ◆ NRC challenges
- ◆ Expectations
- ◆ Concerns

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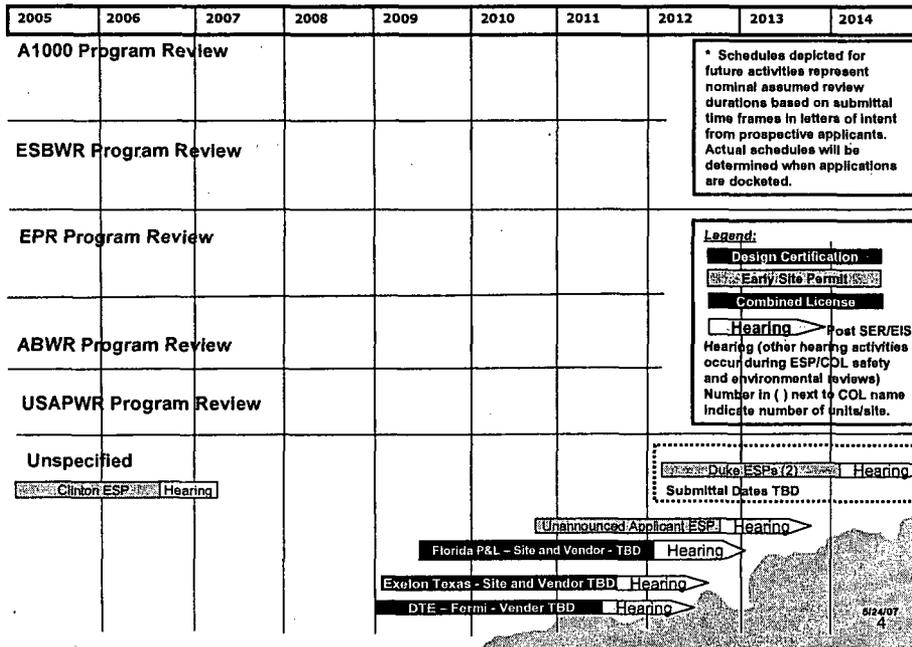
New Reactor Licensing Applications (Site and Technology Selected)

An estimated schedule by Fiscal Year



New Reactor Licensing Applications (Site or Technology TBD)

An estimated schedule by Fiscal Year



Situation

An unprecedented amount of review work to be performed in a limited time using a new process not fully used before

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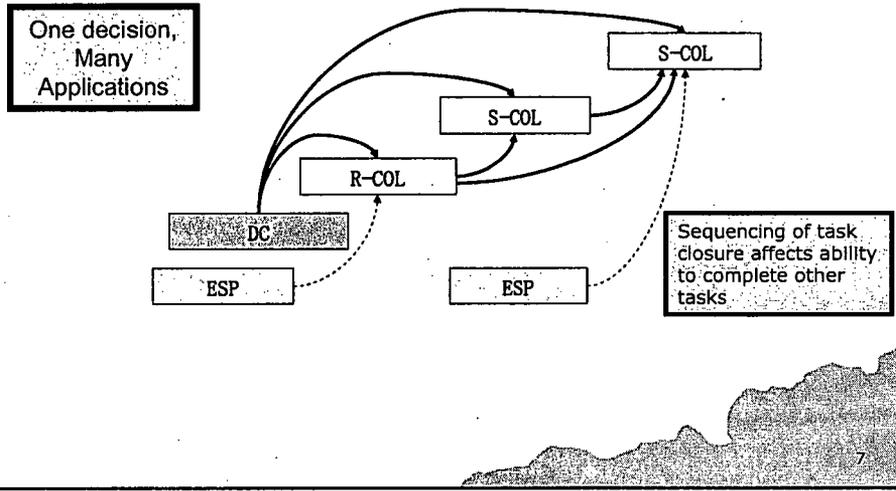
Solution

- ◆ Design Centered Reviews
- ◆ Licensing Program Plan and EPM Solution
 - Pre-plan
 - ◆ Specific tasks
 - ◆ Specific technical skill sets for specific tasks
 - ◆ Specific hours to perform review
 - ◆ Defined durations and dates
 - Server based software to manage reviews
 - Dedicated NRO Branch to manage scheduling process
 - ◆ Develops plan
 - ◆ Manages changes to plan

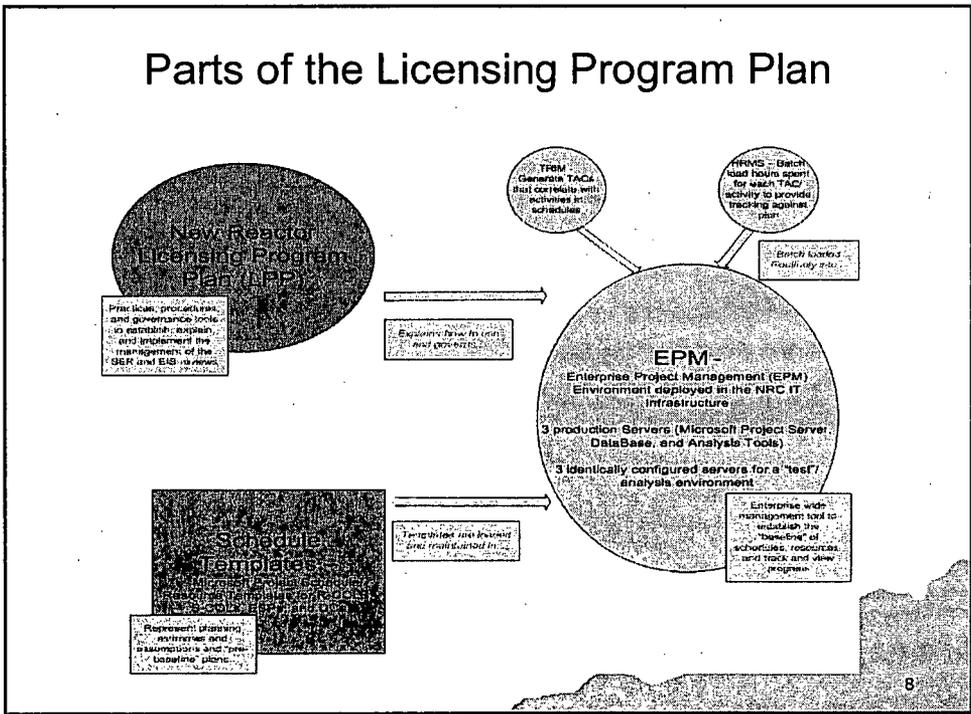
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Design Centered Reviews

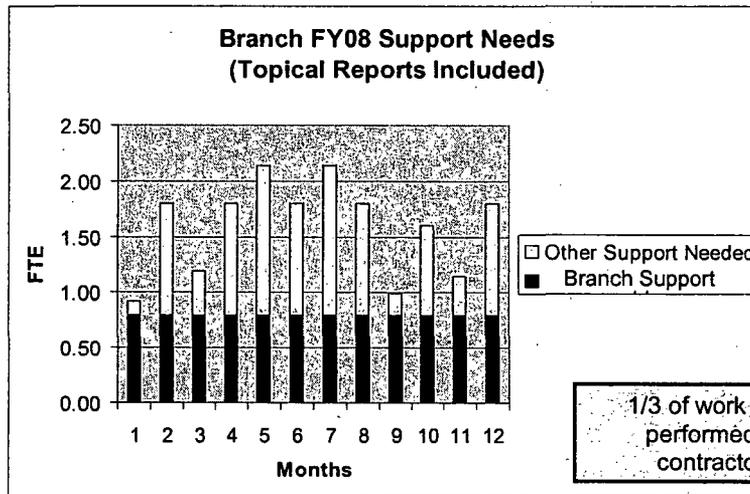
License Reviews within a Design Center are Related



Parts of the Licensing Program Plan

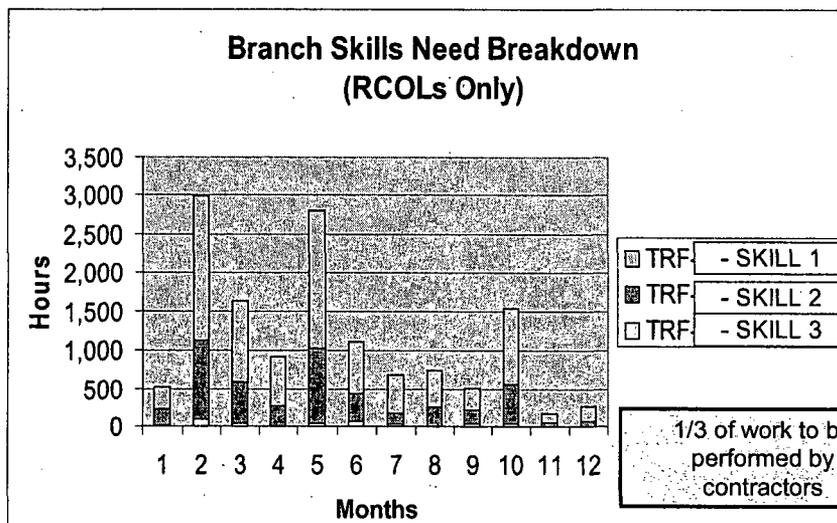


EPM Provides Insights



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When and Which Technical Specialties Needed



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Necessity is the Mother of Invention

- ◆ 25 applications
 - Many simultaneous applications
 - Up to 350 technical reviewers working simultaneous

- ◆ Each application ~2800 tasks
 - ~250 SRP sections
 - 25 Applications ~70,000 tasks

- ◆ LPP and associated schedule
 - Tool to keep it all straight
 - Tool to evaluate change impact
 - Tool to electronically understand how the reviews are progressing
 - Tool to analyze and assist in prioritization of tasks

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Major COL, DC, and ESP Schedule Templates Standard Scope Areas

Scope Area	DC	ESP	COL
Acceptance Review	Yes	Yes	Yes
Safety Evaluation	Yes	Yes	Yes
Environmental Review	..	Yes	Yes
Hearings	..	Yes	Yes
Rulemaking	Yes

Types of reviews
are standardized

The schedule templates/EPM include the following data, based on best available information:

- Identification of all tasks
- Task predecessor relationships for activities within a single licensing review.
- Resource usage and utilization assignments for each task, using generic resources
- Task duration

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LPP Effect on Performance of Reviews

- ◆ NRO approach (LPP/EPM Solution)
 - Safety 1st - Schedule 2nd
 - ◆ Adjust schedule
 - Details of process provided by each Branch (tasks, technical specialties, and hours)
 - LPP schedules when work is to be performed
 - EPM tracks progress at a greater level of detail
 - ◆ Each task has a responsible person who will need to status the work

Bases of Technical Decisions -- NO CHANGE!!!

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Starting to Use LPP Now

- ◆ Vogtle ESP review
 - Currently using EPM Solution
- ◆ ESBWR DC review
 - July 1 will use EMP Solution
- ◆ Other new plant applications as they are submitted

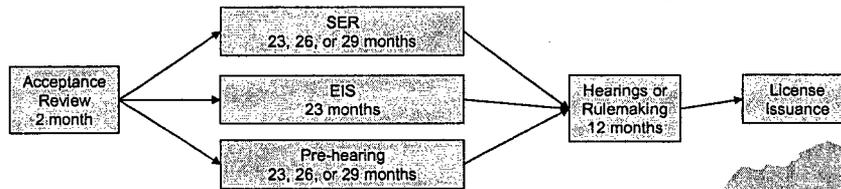
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Overall Work Structure

- ◆ Licensing work for DCs, COLs and ESPs is organized into the same overall work structure (duration):

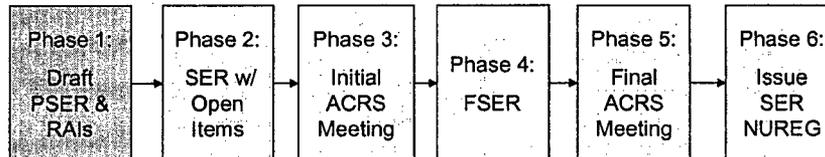
- Acceptance Review (2 month)
- 6-Phase SER (23, 26, or 29 months)
- 4-Phase EIS (23 months)
- 2-Phase Hearings (35, 38, or 41 months)
- License or Rule Issuance

Durations for planning purposes only, published schedule to be determined following Acceptance Review



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SER* – Key Activities and Products



- Prepare Preliminary SER Sections
- Draft RAIs
- Issue RAIs to applicant

- Applicant response to RAIs
- Develop SER input
- Develop Open Items
- Administrative processing & review
- Assemble & issue SER w/ Open Items

- Provide public SER w/ OI to ACRS
- Conduct ACRS Sub & Full Committee Mtgs
- ACRS issues Interim Letter Rept
- Staff response to ACRS letter

- Applicant response to OIs
- Develop FSER input
- Assemble draft FSER

- Provide public draft FSER to ACRS
- Conduct ACRS Full Committee Meeting
- ACRS issues Final Letter Report
- Staff response to ACRS letter report

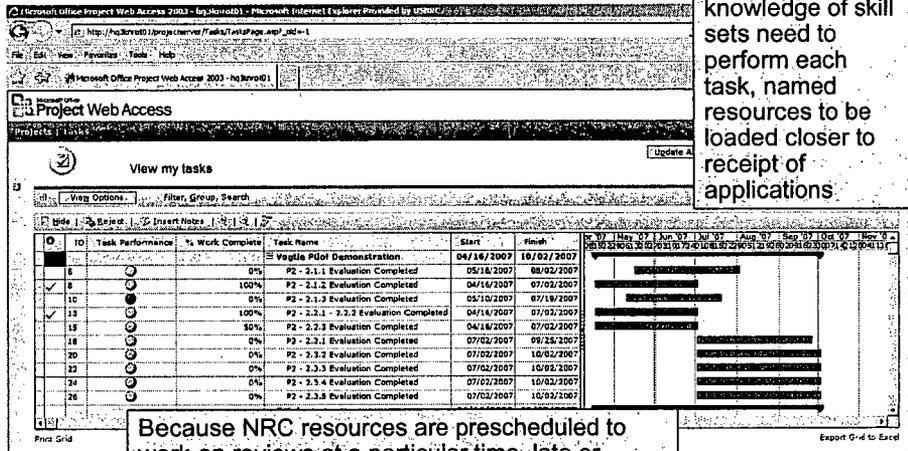
- Staff revises FSER, as necessary
- Assemble, process, & publish FSER as NUREG

Red letter activities will have NRC-applicant interface

* Similar for environmental reviews

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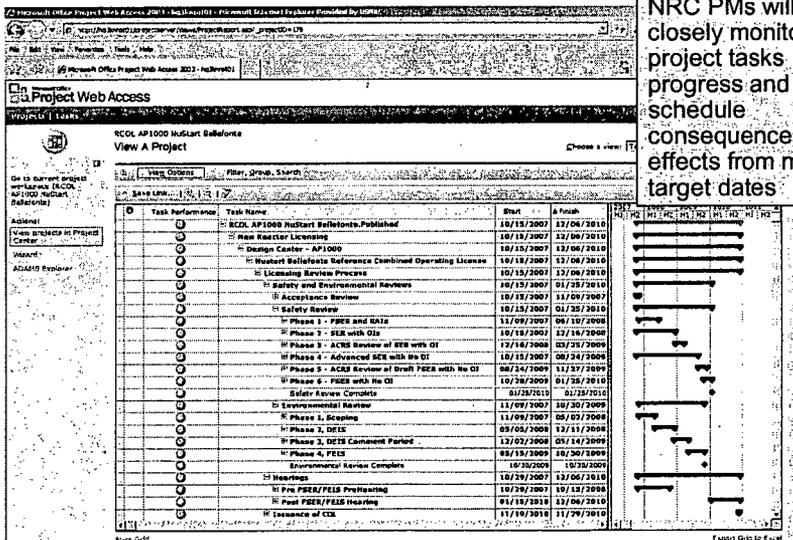
EPM Solution View of Assigned Tasks



Generic knowledge of skill sets need to perform each task, named resources to be loaded closer to receipt of applications

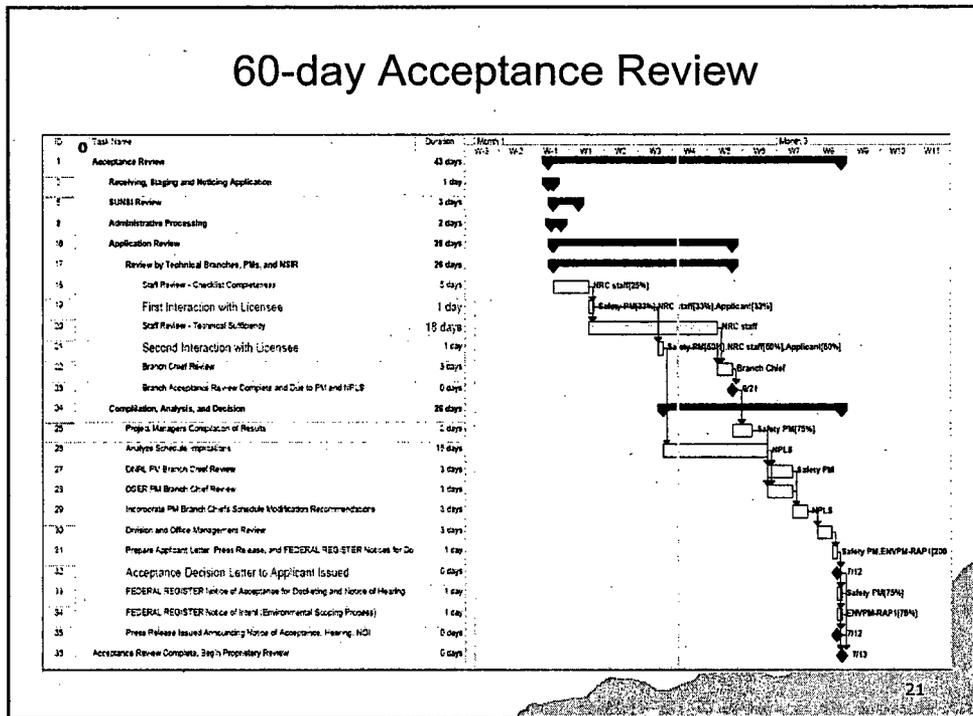
Because NRC resources are prescheduled to work on reviews at a particular time, late or inadequate RAI responses may significantly defer the ability of the NRC technical reviewer to work on the RAI response

EPM Solution Project View (Example Project)



NRC PMs will be closely monitoring project tasks and schedule consequences on effects from missed target dates

60-day Acceptance Review



NRC Challenges, Expectations and Solutions

- ◆ Receiving high quality applications
 - Increasing the Acceptance Review from 30 days to 60 days
 - ◆ Greater technical evaluation prior to accepting applications
 - Request applicant to address specific issues early to maintain optimum review schedule
 - ◆ Significant interactions with applicant during this time period
 - ◆ Published review schedule not determined until end of Acceptance Review period

NRC Challenges, Expectations and Solutions

- ◆ Requests for Additional Information (RAIs)
 - Robust RAI responses provided on schedules that support the overall review schedule
 - Applicants providing late or inadequate RAI responses may result in schedule delays greater than the duration of providing an adequate RAI response
 - ◆ Staff may be assigned to other reviews when applicant submits adequate RAI response
 - DC or RCOL RAI responses that are late or inadequate may delay the RCOL or other SCOL reviews
 - Solution is for applicants to submit robust RAI responses that support the overall schedule
 - ◆ Applicants should discuss RAI quality and scheduling issues early with the PM and NRC technical reviewers

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NRC Challenges, Expectations and Solutions

- ◆ Application Revisions
 - Traditionally applicants have revised the applications a large number of times, with mixed results:
 - ◆ Acceptably translating RAI responses found to be acceptable to the NRC
 - ◆ Inadvertently translating RAI responses found to be acceptable to the NRC using a revised and potentially unacceptable text, results in
 - Additional revision to the application and subsequent re-review of the additional application revision
 - ◆ Submitting a revised design not previously reviewed by the NRC, thereby
 - Requires a complete staff re-review for this portion of the application and any other affected portions of the application

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NRC Challenges, Expectations and Solutions

- ◆ Application Revisions (continued)
 - Concern exists with timing of revised application submittals to NRC staff and the availability of the staff to manage these reviews
 - ◆ Possible solution
 - Schedule application revision submittal schedule at time of application submission to assure technical staff availability
 - With all RAI response submit proposed application wording for early consideration as part of the RAI response
 - ◆ Resist changing application text that appears to be acceptable to staff

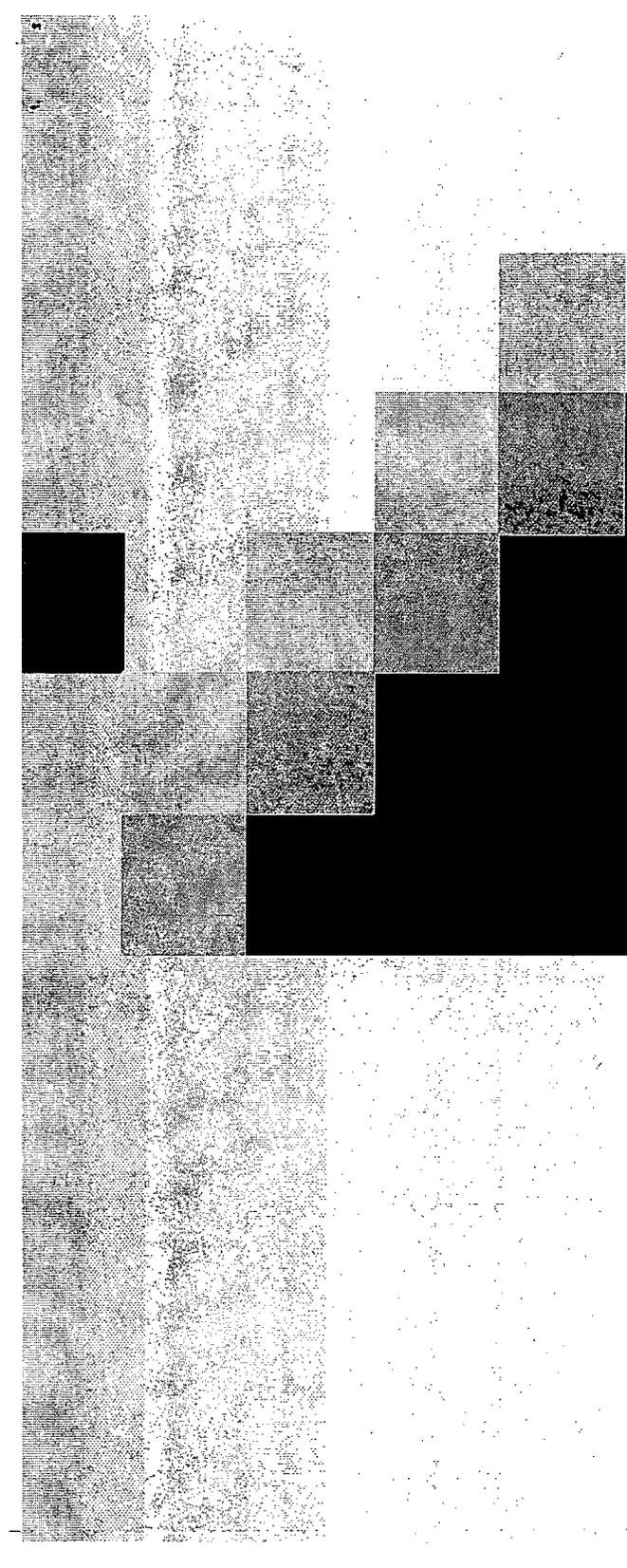
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NRC Challenges, Expectations and Solutions

- ◆ NRC Resources
 - Staff Requirement Memorandum dated November 16, 2006
 - "The staff should consider the following set of factors when making resource allocations and schedule decisions if and when actual licensing work exceeds the new reactor budget."
 - Solution
 - ◆ Detailed planning and scheduling using new server based project management tools
 - ◆ One-third of reviews plans to use contractor support
 - ◆ Uncertainty in application submittal schedules could affect timing of needed resources
 - RIS 2006-06 and RIS 2007-008 insights valuable, but some responses not specific
 - ◆ Quality of applications could affect needed level of effort and timing of reviews

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Questions and Discussion



Regulatory Requirements for AP1000 Offsite Power

AP1000 DCWG

Background Information

- EPRI Utilities Requirement Document (URD)
 - Chapter 11 provides requirements for electrical power
 - Passive plant ALWR not require 2 offsite sources
- NRC Staff Evaluation of URD
 - NRC Initial review documented in SECY 91-078
 - SECY made recommendations for offsite power
 - EPRI response (5/92) stated recommendations not applicable to passive ALWRs
- NRC SECY 94-084
 - Staff recommends evaluation of passive ALWR electrical distribution systems using RTNSS process as proposed in SECY
 - Commission approved recommendation in SRM, and re-affirmed in July 1995

Regulatory Treatment of Non-Safety Systems Process (RTNSS)

- Uses screening criteria including PRA considerations to identify non-safety related equipment that is important to:
 - maintaining initiating event frequencies at the baseline PRA levels
 - meeting NRC safety goal guidelines for core damage frequency (CDF) and Large Release Frequency (LRF)
 - CDF acceptance criterion is 10^{-4} per year
 - LRF criterion is 10^{-6} per year.
 - meeting NRC containment performance goal objectives
 - meeting NRC beyond design basis regulations

AP1000 Design & RTNSS

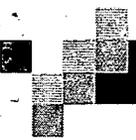
Plant / Goal	Core Damage Frequency ⁽¹⁾	Large Release Frequency	Containment Success Probability
NRC Safety Goal	1E-04	1E-06	90%
AP1000 Results At power (all) Shutdown (all)⁽²⁾	2.98E-07 2.11E-07	2.41E-08 3.53E-08	92% 83%

Notes: (1) At power and shutdown for internal/fire/flood events
 (2) Includes events with containment initially open

AP1000 Design & RTNSS

Initiating Event Category	Initiating Event Frequency	Core Damage Contribution	Percent Contribution
Loss of Offsite Power Initiating Event	1.20E-01⁽¹⁾	9.58E-10	0.4%

Note (1) Consistent with AP1000 design (one offsite power connection)



RTNSS Summary

- Complete loss of offsite power is only a small contribution to CDF
- PRA evaluation concluded that offsite power "...has a limited role in the plant risk profile since the plant safety-related systems do not depend on ac power."
- AC power is not RTNSS important at power
- AC power is RTNSS important during mid-loop operations
 - Short term availability controls specify that two ac power supplies (one non-safety offsite and one non-safety diesel generator) should be available

GDC 17 Requirements Evaluation

■ GDC 17

- AP1000 DCD §8.2.3 states “The AP1000 plant design supports an exemption to the requirement of GDC 17 for two physically independent offsite circuits by providing safety-related passive systems for core cooling and containment integrity, and multiple non-safety-related onsite and offsite electric power sources for other functions.”

- NRC documented their review of this topic in FSER section 8.2.3.2, “Conformance to Criteria (Partial Exemption from GDC 17 for AC Offsite Power Sources)”; “The AP1000 design does not require ac power sources to mitigate design-basis events...”

SRP / RG 1.206 Requirements Evaluation

SRP 8.2, “Offsite Power System” (Rev 4)

- “...the reviewer should examine the failure modes and effects analysis (FMEA) of the switchyard by the applicant to verify that no single event would simultaneously fail both offsite power circuits and would fail one offsite circuit for passive design.”

RG 1.206, C.III.1, Chapter 8, “Electric Power

- “For passive designs, the FMEA should ensure that a single event such as a breaker not operating during fault condition, a loss of control circuit power supply or fault in a switchyard bus does not cause failure of the single designated offsite line. “

SRP / RG 1.206 Requirements Evaluation

- An incoming offsite power circuit is connected to the switchyard through a single breaker, with a single control circuit power supply, feeding a single switchyard bus
- Failure of single breaker, control circuit power supply or fault in a switchyard bus would cause failure of the single designated offsite line, with no safety consequence
- An FMEA is not needed to identify what can be deduced by observation
- The higher loss of power probability is captured in the PRA for the certified AP1000 design

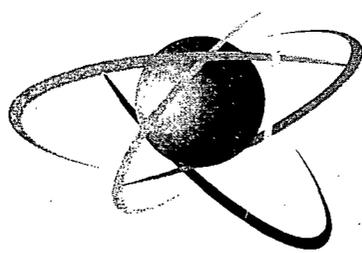
Summary

- NRC Staff & Commission have agreed
 - Electrical power distribution system for passive plants should be evaluated via RTNSS
 - Results of RTNSS evaluation determines if regulatory treatment is required
- AP1000 PRA
 - Concluded NRC safety goals are met without offsite power
 - PRA and D-RAP sections of NRC approved DCD state offsite power not risk significant
 - FSER strongly confirms
- AP1000 offsite power does not fall under RTNSS scope for at-power events
 - No additional regulatory treatment required
 - FMEA for single offsite source does not provide added benefit
 - Single failure can be postulated to lose source but event has no impact on plant safety
- AP1000 COL applications should not need to comply with offsite power requirements or guidance
 - Section 8.2 of RG 1.206
 - GDC-17

Path Forward on Offsite Power

- DCD and COLA FSAR Chapter 8 require close coordination
- Finality established during AP1000 Design Certification provides basis for COLA section development
- Multiple considerations impacting COLA development:
 - GDC-17 “partial” exemption under DC rule (Appendix D)
 - AP1000 Design Certification FSER
 - SRP Revision and RG-1.206 guidance
- Electrical system additions/changes in DCD Revision 16

Further detailed discussion needed



U.S. NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

Pre-Combined License Application Quality Assurance Audit

June 13, 2007

**Greg S. Galletti
Office of New Reactors**



Topic Areas

- Purpose of Pre-COL Audit
- Audit Scope
- Current Inspection Guidance
- Lessons Learned
- Questions



Purpose of Pre-COL Audit

- Verify QA processes applied to the development of the COLA
 - Support Acceptance Review by Staff.
 - Identify any programmatic issues that need to be addressed prior to completion of the COLA.



Audit Scope

- Review of QA programs (policies/procedures) applied to the development of the COLA.
- Review implementation of QA programs applied to the development of the COLA (sample approach).
- Review the QA controls implemented during early site activities (for applications not referencing and ESP).
- Review the 10 CFR Part 21 programs of the COLA developers.



Audit Scope (Con't)

- QA Elements
 - Design Control, Procurement Doct. Control, Control of Purchased Material, Equipment, and Services,
 - Nonconformance, Corrective Actions, Audits,
 - Training and Qualification, Document Control, Records,
 - ESP activities (Test Control, M&TE),
 - 10 CFR Part 21 program.



Current Inspection Guidance

- **IMC-2502 Pre-COL Review Guidance**
 - Inspection Procedure (IP) 35005 - “Pre-Docketing Combined License Quality Assurance Controls Inspection.”
 - IP 35004 – “Pre-Docketing Early Site Permit Quality Assurance Controls Inspection.”
 - IP 36100 – “Inspection of 10 CFR Part 21 and 10 CFR Part 55(e) Programs for Reporting Defects and Noncompliance.”



Lessons Learned

- Audit Communication
 - **Timing is crucial.** COLA must be sufficiently complete for the audit to assess all development processes.
 - Design process (incorporate by reference, departures from DCD, and site-specific engineering).
 - All contractors and scope of their involvement needs to be clearly identified.
 - Audit team will evaluate QA programs/processes **AND** implementation for COLA development.



Lessons Learned

- Audit Communication
 - Early interaction
 - Audit team will provide applicant with topics to be discussed during audit entrance meeting.
 - Audit team will provide applicant with list of documents necessary to support review.



Lessons Learned

- **Audit Efficiency**
 - Potential for early “pre-audit” preparation visit.
 - Revision to IPs to better define audit process and refine scope.
 - Determination of audit team compliment.
 - Effective connection between audit activities and post-submittal acceptance review.



Questions??

ESBWR Operational Programs

Preservice and Inservice Inspection Programs Descriptions

June 13, 2007, ESBWR/AP1000
DCWG

Meeting Objectives

- Provide discussion regarding PSI/ISI program descriptions to demonstrate that:
 - The program descriptions will satisfy SECY-05-0197
 - The program description adequately addresses the COL items
- Obtain feedback from the NRC staff regarding the direction being taken by the ESBWR DCWG

PSI / ISI Program Description

- Program description in COLA based on DCD content with supplements as required to meet
 - SRP acceptance criteria
 - RG 1.206 (C.III.1)
- Development of the complete program, including implementing procedures, defined by milestones
 - Timely to allow NRC staff review before implementation
- Implementation milestones defined in COLA FSAR Section 13.4

PSI / ISI Program Description

- Program description in DCD Sections 5.2.4 and 6.6 based on ASME Section XI requirements for preservice and inservice inspection and pressure testing
 - ASME Section XI 2001 Edition with 2003 Addenda listed in DCD Table 1.9-21
- COLA FSAR will indicate PSI/ISI program development will be based on ASME Section XI Edition/Addenda approved in 10 CFR 50.55a
 - 12 months prior to fuel load

PSI / ISI Program Description

- System boundary / components subject to examination
 - Class 1 encompasses RCPB components (DCD 5.2.4.1)
 - Portions of systems that are in the RCPB are identified
 - Exclusions identified on a general basis
 - Classes 2 and 3 system boundaries identified (DCD 6.6.1)
 - RG 1.26 descriptions for Quality Groups B and C included
 - Exemptions would be per IWB/IWC/IWD-1220
 - No additional information planned for the COLA FSAR

PSI / ISI Program Description

- Accessibility requirements referenced back to ASME XI (DCD 5.2.4.2, 6.6.2)
 - Access for automated equipment for RPV inspections is provided
 - Remote access equipment not specifically identified
 - Platforms and ladders, removable insulation, provided as required
 - Restrictions on design of components requiring volumetric examination given in the DCD
 - COL Holder item in DCD 6.6.2 to be deleted (It. #32)
 - No additional information planned for the COLA FSAR

PSI / ISI Program Description

- Examination categories and methods (DCD 5.2.4.3, 6.6.3, 6.6.3.1)
 - Examination categories are in accordance with IWB/IWC/IWD-2500 for each item subject to inspection
 - Method of examination (IWB/IWC/IWD-2500) specified in the detailed program for each item
 - IWX-2500 specifies examination method for each category and each Code item no.
 - RG 1.150 applicability to the ESBWR is indicated in DCD Table 1.9-21
 - Commitment to be added to COLA FSAR to address RG 1.206 C.III.1, Section 5.2.4.1 – RG 1.150 examination procedures will meet Code requirements

PSI / ISI Program Description

- Inspection Intervals based on Inspection Program B, IWX-2412 (DCD 5.2.4.4, 6.6.4)
 - 120 month intervals
 - Up to 1 year variation allowed for refueling outage scheduling
 - No additional information planned for the COLA FSAR

PSI / ISI Program Description

- Evaluation of examination results (DCD 5.2.4.5, 6.6.5)
 - Evaluations conducted in accordance with IWX-3000
 - Repairs and replacements per IWA-4000
 - No additional information planned for the COLA FSAR

PSI / ISI Program Description

- System pressure test requirements (DCD 5.2.4.6, 6.6.6)
 - IWX-2500 specifies exam categories and Code items for which pressure testing is required
 - Pressure testing IAW IWX-5000 requirements
 - Limitations or requirements of the Technical Specifications will be considered in detailed program document and implementing procedures
 - No additional information planned for the COLA FSAR

PSI / ISI Program Description

- Code Exemptions (DCD 5.2.4.7, 6.6.8)
 - IWX-1220 specified for components exempt from inservice examination
 - No additional information planned for the COLA FSAR
- Augmented inspection requirements (DCD 6.6.7)
 - High energy piping between containment isolation valves – 100% volumetric exam each inspection interval
 - Examination of piping and components subject to erosion-corrosion as described in GL 89-08 is discussed
 - No additional information planned for the COLA FSAR

PSI / ISI Program Description

- Code Cases (DCD 5.2.4.8, 6.6.9)
 - Cases applicable for ESBWR design identified in DCD 5.2.1 and Table 5.2-1
 - No additional information planned for the COLA FSAR
- Request for Relief from Code Requirements (DCD 6.6.10)
 - Information added to the COLA to describe the process
 - No relief requests planned/required for COLA

PSI / ISI Program Description

- Preservice inspections (DCD 5.2.4, 6.6.3.1)
 - IWX-2200 provides requirements for preservice exams
 - ASME Section III provides requirements for Class 1 preservice examinations
 - All of the items selected for inservice examination are performed once for preservice examination
 - Exceptions as allowed by ASME Section XI
 - Per RG 1.206, a commitment will be added in the COLA for preservice of Class 1 components to ASME Section III, NB-5280

PSI / ISI Program - Summary

- The COLA FSAR descriptions will “fully describe” the PSI / ISI programs per SECY-05-0197
- ESBWR COLA FSAR approach
 - IBR DCD Material
 - Supplement DCD as required to complete description requested by RG 1.206 and SRP
- DCD COL Items addressed
 - 5.2.4 & 5.2.6-A (It. #22); 6.6, 6.6.2 & 6.6.11 (It. #30, #31, #32, #33)

Questions ?

June 13, 2007, ESBWR/AP1000
DCWG

Proposed Disposition of ESBWR DCD Rev 3, COL Holder Items
Preliminary Working Draft in Preparation for June 13 DCWG Meeting (6/1/07 version)

No.	COL Item	Description of COL Item in DCD Rev 3	Disposition	Basis
1	1.9 Table 1.9-21b (RG 1.8, 1.33, 1.94, 1.176)	ESBWR Compliance with Quality Related Regulatory Guides	A	Addressed in FSAR sections 17.1 - 17.6.
2	1.11 Table 1.11-1, A-36	<p>Control of Heavy Loads Near Spent Fuel Pool</p> <p>This issue is considered resolved through compliance with Standard Review Plan (SRP) Section 9.1.5 and NUREG-0612, consistent with the NRC resolution. As noted in Table 1.9-9, the ESBWR Standard Plant design complies with SRP Section 9.1.5, which references NUREG-0612.</p> <p>The equipment utilized in the ESBWR Overhead Heavy Load Handling (OHLH) Systems, described in Subsection 9.1.5, are designed with consideration of radioactivity release, criticality accidents, inability to cool fuel within the reactor vessel or within the spent fuel pool, or prevention of safe shutdown of the reactor. Descriptions of the designs of the reactor building crane and other overhead load handling systems can be found in Subsection 9.1.5.2.</p> <p>In addition, see Subsection 9.1.4.18 for the confirmatory spent fuel rack load drop analysis, which includes consideration of equipment maintenance procedures; equipment inspection; safe load paths and routing plans; heavy load handling operations controls; and operator qualification, training, and control.</p>	A	<p>This item will be addressed in the COL as part of the resolution to the COL item in 9.1.6. The COL Table 1.11 will address compliance by providing a reference to FSAR section 9.1.5.</p> <p>Note 2 in Table 1.11-1 of the DCD will be revised to state "COL applicant."</p>
3	1.11 Table 1.11-1, B-38 through B-43	<p>B-38 - Reconnaissance Level Investigations; B-39 - Transmission Lines; B-40 - Effects of Power Plant Entrainment on Plankton; B-41 - Impacts on Fisheries; B-42 - Socioeconomic Environmental Impacts; B-43 - Value of Aerial Photographs for Site Evaluation.</p> <p>Note (2) Combined Operating License applicant/holder shall complete activities required by this action plan item. Note (7) Environmental issue that is outside the scope of the DCD.</p>	A	These items will be addressed in the COLA. FSAR Table 1.11 will address compliance by providing a reference to the appropriate FSAR sections.

A = Address in the COL application

A/H = Some aspects of the item will be addressed in the COL application and other aspects will be addressed post-COL application.

H = Most aspects of the item will be addressed post-COL application.

**Proposed Disposition of ESBWR DCD Rev 3, COL Holder Items
Preliminary Working Draft in Preparation for June 13 DCWG Meeting (6/1/07 version)**

No.	COL Item	Description of COL Item in DCD Rev 3	Disposition	Basis
4	1.C Table 1C-1, GL 80-113, 81-07	80-113 Control of Heavy Loads Subsection 9.1.5 with COL Holder to supplement. See also Section 1.11 (Item A-36). 81-07 Control of Heavy Loads Subsection 9.1.5 with COL Holder to supplement. See also Section 1.11 (Item A-36).	A	This item will be addressed in the COLA as part of the resolution to the COL item in 9.1.6. FSAR Table 1C-1 will address compliance by providing a reference to FSAR section 9.1.5. In DCD Rev 4, change "Holder" to "applicant."
5	1C Table 1C-1, GL 89-04, 89-04s1	89-04 Guidance on Developing Acceptable Inservice Testing Program - COL Holder to supplement Subsections 3.9.6, 5.2.4, 6.3.3.9, and 6.6 89-04s1 Guidance on Developing Acceptable Inservice Testing Programs - Subsection 5.2.4 and Section 6.6	A	In DCD Rev 4, this item will be re-written to delete references to sections 5.2.4, 6.3.3.9, and 6.6. Also, the term "Holder" will be replaced by "applicant." This item will be addressed in the COLA as part of the resolution to the COL item in 3.9.9.3. FSAR Table 1C-1 will address compliance by providing a reference to FSAR section 3.9.6.
6	1C Table 1C-1, GL 89-13s1	89-13s1 Service Water System Problems Affecting Safety-Related Equipment - ESBWR has no safety-related service water. COL Applicant/Holder to address actions in Section II.D of Enclosure 1 for selected fire protection system makeup water source.	A	In DCD Rev 4, this item will be re-written as discussed in the response to RAI 20.0-1 and clarified as follows: The ESBWR has no safety-related service water. However, per GL 89-13 Supp 1 the requirements of this GL are applicable to the selected long-term makeup water source for the IP/PCC and spent fuel pools to the extent that the source uses untreated water that could be subject to the service water system problems described in the GL. See subsection 9.2.5. To support this and properly address the GL requirements, the following should be added to DCD section 9.2.5.1 in Rev 4 and addressed in COLA FSAR section 9.2.5: The requirements of Generic Letter 89-13 are applicable to the selected long-term makeup water source for the IC/PCC and spent fuel pools to the extent that the source uses untreated water that could be described in the GL. This item will be addressed in the COLA.

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7	1C Table 1C-1, GL 90-09	90-09 Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Action - COL Holder	A	This item will be addressed in the COLA as part of the resolution to the COL item in section 3.9.3.7.1. FSAR Table 1C-1 will address compliance by providing a reference to FSAR section 3.9.3.7.1. The term "Holder" will be changed to "applicant" in DCD Rev 4.
8	1C Table 1C-1, GL 96-05	96-05 Periodic Verification of Design-Basis Capability of Safety-Related Power-Operated Valves - COL Holder to supplement Subsection 3.9.6	A	This item will be addressed in the COLA as part of the resolution to the COL items in section 3.9.9.3. FSAR Table 1C-1 will address compliance by providing a reference to FSAR section 3.9.6.1. The term "Holder" will be changed to "applicant."
9	1C Table 1C-2, IEB 80-08	80-08 Containment Lines Penetration Welds - COL Applicant/Holder	A	<p>In DCD Rev 4, this item will be re-written as follows: Containment penetrations are designed to ASME Code Section III and Section XI requirements for design and accessibility of welds for in-service inspection to meet 10 CFR 50 Appendix A, General Design Criteria 16 (see subsections 3.1.2.7 and 3.1.4.10). The application of ASME Code Section XI to in-service examination of containment penetration welds is discussed in subsections 3.6.2.1.1 and 6.6.</p> <p>Additionally, the term "COL/Applicant/Holder" will be changed to "COL applicant" in DCD Rev 4.</p> <p>This item will be addressed in the COLA as part of the resolution to the COL item in 3.6 and 6.6. FSAR Table 1C-2 will address compliance by providing a reference to FSAR sections 3.6 and 6.6.</p>
10	1C Table 1C-2, IEB 81-01	81-01 Surveillance of Mechanical Snubbers - COL Holder	A	This item will be addressed in the COLA as part of the resolution to the COL item in 3.9.3.7.1. FSAR Table 1C will address compliance by providing a reference to FSAR section 3.9.3.7.1
11	3.5.1.1.1.2	Favorable turbine generator placement and orientation combined with quality assurance in design and fabrication, inspection and testing programs as provided in Section 10.2, and overspeed protection systems, provides an acceptably small risk from turbine missiles. The probability of turbine missile generation, P1, is less than the required value provided in Table 3.5-1. The COL holder will provide an evaluation of the probability of turbine missile generation which concludes that the probability of turbine missile generation, P1, is less than 1×10^{-5} per Subsection 10.2.5.	Delete in DCD Rev 4	The last sentence of the 2nd paragraph of DCD Section 3.5.1.1.1.2 describing this issue as a COL holder item will be deleted in DCD Revision 4 because DCD Section 10.2.5.1 already contains a COL item on this subject. This sentence will be replaced with the following: "See Section 10.2 for a discussion regarding turbine missile generation and analysis."

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12	3.9.9.1	<p>The first COL holder shall provide, at the time of application, the results of the vibration assessment program for the ESBWR prototype internals. These results shall include the following information specified in Regulatory Guide 1.20.</p> <p>USNRC Reg Guide 1.20 Criterion Subject C.2.1 Vibration Analysis Program C.2.2 Vibration Measurement Program C.2.3 Inspection Program C.2.4 Documentation of Results</p> <p>NRC review and approval of the above information on the first COL holder's docket shall complete the vibration assessment program requirements for prototype reactor internals.</p> <p>In addition to the information tabulated above, the first COL holder shall provide the information on the schedules in accordance with the applicable portions of position C.3 of Regulatory Guide 1.20 for non-prototype internals. Subsequent COL holders need only provide the information on the schedules in accordance with the applicable portions of position C.3 of Regulatory Guide 1.20 for non-prototype internals (Subsection 3.9.2.4).</p>	A/H	<p>FSAR Section 3.9.9.1 will provide either the results of the vibration assessment program or, in accordance with RG 1.206, describe the implementation program and provide a milestone (e.g., no later than six months after the submittal of the initial application) for when the results of the vibration assessment program for the ESBWR prototype internals will be completed. (RG 1.206 states that for a prototype reactor, if the applicant has not completed the flow-induced vibration testing of reactor internals at the time it files the COL application, the applicant should describe the implementation program, including milestones and completion dates.)</p>
13	3.9.9.2	<p>COL holders shall identify ASME Class 2 or 3 Quality Group D components that are subjected to loadings, which could result in thermal or dynamic fatigue and provide the analyses required by the Code, Subsection NB.</p>	Delete in DCD Rev 4	<p>We are currently considering an approach that would delete DCD Section 3.9.9.2 in DCD Revision 4. The following actions are being performed to determine if this approach is appropriate: (1) review piping systems to determine if there is a need to perform a Class I analysis for a Class 2 or 3 component, (2) review Tier 1 Table 3.1-1 to determine if this information is already the subject of an ITAAC.</p>

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14	3.9.9.3; Table 3.9-8	<p>COL holder shall provide a plan for the detailed pump and valve inservice testing and inspection program.</p> <p>This plan:</p> <p>(1) Includes baseline preservice testing to support the periodic inservice testing of the components required by technical specifications. Provisions are included to test the pumps, valves, and POVs in accordance with the O&M Code (Reference 3.9-5) and safety-related classification as necessary, depending on test results.</p> <p>(2) Provides a study to determine the optimal frequency for valve stroking during in-service testing.</p> <p>(3) Address the concerns and issues identified in Generic Letter 89-10; specifically, the method of assessment of the loads, the method of sizing the actuators, and the setting of the torque and limit switches.</p> <p>COL holder shall provide a plan for the detailed snubber inservice testing and inspection program in accordance with the ASME O&M Code (Reference 3.9.3.7.1(3)e.). This plan includes baseline preservice testing to support the periodic inservice testing of all snubbers covered by the plant-specific technical specifications.</p> <p>From Table 3.9-8: U40 Reactor Building HVAC System Valves (COL Phase) U77 Control Building HVAC System Valves (COL Phase) U98 Fuel Building HVAC System Valves (COL Phase)</p>	A/H	The PST/IST programs will be fully described in the FSAR and implementation dates provided in FSAR section 13.4.
15	3.9.9.4	COL holders shall make available to the NRC staff design specification and design reports required by the Code for vessels, pumps, valves and piping systems for the purpose of audit (Subsection 3.9.3).	H - some addressed in ITAAC	Further research of RG 1.206 and the associated SRP sections is needed to determine if a specific COL Item is needed for NRC audit of design specifications and design reports. For the RPV, Tier 1 Table 2.1.1-2, Item 2 identifies the Code certified stress report for RCPB components.
16	3.10.4-A	COL holders shall maintain the equipment qualification records including the reports (see Subsections 3.10.2.1 and 3.10.2.2) in a permanent file readily available for audit.	Delete in DCD Rev 4	The item is unnecessary because DCD section 3.10.2.1 states that test reports will be maintained available for audit. The quality assurance program (reference in section 17.5) requires that the records be maintained.

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17	3.10.4-B	<p>COL holders shall prepare a Dynamic Qualification Report (DQR) identifying all Seismic Category I electrical equipment and their supports. The DQR shall contain the following:</p> <ul style="list-style-type: none"> • A table or file for each system that is identified in Table 3.2-1 to be safety-related or having Seismic Category I equipment, shall be included in the DQR containing the MPL item number and name, the qualification method, the input motion, the supporting structure of the equipment, and the corresponding qualification summary table or vendor's qualification report • The mode of safety-related operation (i.e., active, manual active or passive) of the equipment along with the manufacturer identification and model numbers shall also be tabulated in the DQR. The operational mode identifies the instrumentation, device, or equipment— That performs the safety-related functions automatically,— That is used by the operators to perform the safety-related functions manually, or— Whose failure can prevent the satisfactory accomplishment of one or more safety-related functions. 	H	<p>The specific equipment listing and associated supports, qualification methods, vendor qualification reports and other as-built related items will not be available at the time of COL application. The content requirements of the DQR will be described in the DCD/COLA. This information will be assembled by a milestone provided in the COLA.</p>
18	3.11.4	<p>The gamma and beta doses in Appendix 3H are bounding values based on generic design considerations, and are to be revised and/or verified by the COL holder based upon the site specific equipment considerations (exact design, specific location, materials of construction and leakage characteristics).</p>	Delete in DCD Rev 4	<p>This COL holder item (contained in the last paragraph of DCD Section 3.11.4) will be deleted in DCD Revision 4. A COL item is not needed for this issue. Bounding values are identified in Appendix 3H; if changes to these values are needed, they would be handled via the FSAR change process.</p>
19	3.11.5-A	<p>COL holders shall prepare the EQD summarizing the qualification results for all equipment identified in Subsection 3.11.1. The EQD shall include the following:</p> <ul style="list-style-type: none"> • The test environmental parameters and the methodology used to qualify the equipment located in harsh environments shall be identified. • A summary of environmental conditions and qualified conditions for the equipment located in a harsh environment zone shall be presented in the System Component Evaluation Work (SCEW) sheets as described in Table I-1 of GE's Environmental Qualification Program (Reference 3.11-3). The SCEW sheets shall be compiled in the EQD. 	Delete in DCD Rev 4	<p>The EQD content description will be included in the text of DCD Rev 4. The EQD summarizing the qualification results will be developed as part of completing the verification of the basic configuration ITAAC for specific components.</p>

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20	3.11.5-B	COL holders shall record and maintain the results of the qualification tests in an auditable file in accordance with requirements of 10 CFR 50.49(j).	Delete in DCD Rev 4	Item is unnecessary since the requirement to maintain records is addressed in the regulations and the quality assurance program description referenced in FSAR section 17.5.
21	4.6.6.1	The COL applicant shall develop CRD and control rod removal maintenance procedures that include the provisions specified in Subsection 4.6.2.1.4.	Delete in DCD Rev 4	In DCD Rev 4, this item will be deleted and the third paragraph in section 4.6.2.1.4 revised as follows: "Maintenance procedures prohibit coincident removal of the control rod and CRD of the same assembly. In addition, contingency procedures address core and spent fuel cooling capability and mitigative actions during CRD replacement with fuel in the vessel."
22	5.2.4, 5.2.6-A	The development of the preservice and inservice inspection program plans is the responsibility of the Combined Operating License (COL) holder and shall be based on the ASME Code, Section XI, Edition and Addenda specified in Table 1.9-22. The ASME Code requirements discussed in this section are provided for information.	A/H	<p>This item will be re-written in DCD Rev 4 to read as follows: "The COL applicant will provide a description of the PSI/ISI program for the reactor coolant pressure boundary based on ASME Code Section XI."</p> <p>The approach to address this COL Item in the COLA FSAR will be to: (1) revise and supplement the program description in the DCD in Revision 4 to provide the information requested by RG 1.206, and (2) provide any additional program descriptive information in the COLA FSAR and the program implementation timing. The program implementation milestone will be defined in FSAR section 13.4.</p>
23	5.2.6-B	COL Holder Procedures: Operators will be provided with a procedure to determine the identified and unidentified leakage in order to establish whether the leakage rates are within the allowable Technical Specifications. Operators will be provided with procedures to assist in monitoring, recording, trending, determining the source of leakage, and evaluating potential corrective action.	A	<p>This item will be re-written in DCD Rev 4 in response to RAI 5.2-4, Suppl 2.</p> <p>Address in COLA as follows: Operators are provided with procedure(s) to determine the identified and unidentified leakage in order to establish whether the leakage rates are within the allowable Technical Specifications. These procedures assist operators in monitoring, recording, trending, determining the source of leakage, and evaluating potential corrective action. These procedures address the conversion of different parameter indications for identified and unidentified leakage (e.g., sump pump run time, sump level, condensate transfer rate) into common leak rate equivalents (e.g., volumetric or mass flow) and leak rate rate-of-change values. The plant procedures program is discussed in FSAR section 13.5.</p>

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No.	COL Item	Description of COL Item in DCD Rev 3	Disposition	Basis
24	5.3.1.6.4; 5.3.4B	The following will be identified by the COL holder: (1) specific materials in each surveillance capsule; (2) capsule lead factors; (3) withdrawal schedule for each surveillance capsule; (4) neutron fluence to be received by each capsule at the time of its withdrawal; and, (5) vessel end-of-life peak neutron fluence (Subsection 5.3.1.6.4).	A	<p>Re-write this item in DCD Rev 4 to read as follows: "The COL applicant will develop a description of the reactor vessel materials surveillance program. The description of the program will address: (1) specific materials in each surveillance capsule; (2) capsule lead factors; (3) withdrawal schedule for each surveillance capsule; (4) neutron fluence to be received by each capsule at the time of its withdrawal; and, (5) vessel end-of-life peak neutron fluence The program will be fully developed and implemented in accordance with the milestones defined by the COL applicant."</p> <p>This item will be addressed in the COLA by providing a description of the reactor vessel materials surveillance program and milestones for implementation in FSAR section 13.4.</p>

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No.	COL Item	Description of COL Item in DCD Rev 3	Disposition	Basis
25	6.1.3.1	<p>The COL Holder will</p> <ul style="list-style-type: none"> • Indicate the total amount of protective coatings and organic materials used inside the containment that do not meet the requirements of ASTM D 5144 and Regulatory Guide 1.54 as per section 6.1.2.1 and 6.1.2.2. • Evaluate the generation rate, as a function of time, of combustible gases that can be formed from these unqualified organic materials under DBA conditions. • Provide the technical basis and assumptions used for this evaluation. 	A/H	<p>Rewrite the COL item in DCD Rev 4 as follows: "The COL applicant will:</p> <ul style="list-style-type: none"> • Describe the approach to be taken to identify and quantify all organic materials that exist within the containment building in significant amounts that do not meet the requirements of ASTM D 5144 and Regulatory Guide 1.54 as per section 6.1.2.1 and 6.1.2.2. • Provide the milestone when evaluations will be complete to determine the generation rate, as a function of time, of combustible gases that can be formed from these unqualified organic materials under DBA conditions. • As part of these evaluations, provide the technical basis and assumptions used." <p>Address COL item 6.1.3.1 as follows: In the FSAR, insert a third paragraph under 6.1.2.3 of the DCD Rev 4 to read as follows: "The use of protective coatings and materials inside containment is controlled by the quality assurance program. For protective coatings and organic materials used inside the containment that do not meet the requirements of ASTM D 5144 and Regulatory Guide 1.54 as per above, an evaluation is performed to determine the generation rate, as a function of time, of combustible gases that can be formed from these unqualified organic materials under DBA conditions. These materials are either identified and approved prior to installation or are identified during surveys of the containment. The technical basis and assumptions used for this evaluation are documented and retained as quality records."</p> <p>In the FSAR, under the COL item 6.1.3.1, insert the following: "This COL item is addressed in section 6.1.2.3. Evaluations described will be completed before fuel load and the FSAR will be updated per 10 CFR 50.71(e) to incorporate the results of these evaluations."</p>
26	6.2.6.1.2	<p>After the initial ILRT, periodic ILRTs will be performed at intervals depending on whether Option A or Option B of 10 CFR 50 Appendix J is selected by the COL Holder.</p>	Delete in DCD Rev 4	<p>This item is addressed by the Containment Leak Rate Testing Program which is required to be developed by Technical Specification 5.5.9. Requirements to perform leak rate testing are defined in Technical Specifications.</p>

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27	6.2.8.4	The COL holder shall provide the missing information indicated in Tables 6.2-16 through 6.2-42.		
28	6.3.6.2	In accordance with the plant-specific Technical Specifications, Section 16.3.5, the COL Holder will perform a test every refueling in which each ECCS subsystem is actuated through the emergency operating sequence.	Delete in DCD Rev 4	Item is unnecessary since the requirement is implemented by the Technical Specifications.
29	6.3.6.3	For the initial core, the results for the limiting break for each bundle design as per Subsection 6.3.3.7 will be provided to the USNRC by the COL Holder.	A	This item will be re-written in DCD Rev 4 to read as follows: "If a COL applicant uses a different fuel bundle design than the design specified in the DCD, the COL applicant will provide the results for the limiting break analysis per section 6.3.3.7 based on the fuel bundle design selected." This item will be addressed in the COLA by stating that the design described in the DCD will be the design used in the plant.
30	6.6 Item 1	The development of the preservice and inservice inspection program plans will be the responsibility of the COL Holder, and is based on the ASME Code, Section XI, Edition and Addenda specified in accordance with 10 CFR 50.55a.	Delete in DCD Rev 4	Requirement in rule. Item also redundant to item 6.6.11. Rewrite this sentence to read: "A preservice and inservice inspection program for Class 2 and 3 components and piping is based on the ASME Code, Section XI, Edition and Addenda specified in accordance with 10 CFR 50.55a. The COL applicant will provide a description of this program in the application."
31	6.6 Item 2	The COL Holder specifies the Edition of ASME Code to be used, based on the date of issuance of the construction permit or license, per 10 CFR 50.55a.	Delete in DCD Rev 4	Requirement in rule. Also, item redundant to item 6.6.11. Rewrite this sentence to read: "The Edition of ASME Code to be used is based on the date of issuance of the COL, per 10 CFR 50.55a."
32	6.6.2	Responsibility for designing components for accessibility for preservice and inservice inspection is the responsibility of the COL Holder.	Delete in DCD Rev 4	This COL Holder is not necessary. The DCD already requires that items within the Class 2 and 3 boundaries are designed to provide access for the examinations required by IWC-2500 and IWD-2500. This requirement will be incorporated into the COLA through IBR. The sentence referring to the COL Holder item will be deleted in DCD Rev 4.

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33	6.6.11	The unit specific PSI/ISI Plan includes the detailed plant information and is the responsibility of the COL holder as per Subsection 6.6.10.	A/H	<p>This item will be re-written in DCD Rev 4 to read as follows: "The COL applicant will provide a description of the unit specific PSI/ISI programs for Class 2 and 3 components and piping that addresses the information requested in RG 1.206, C.III.1, section 6.6 that is not provided in DCD section 6.6.. The COL applicant will also provide a milestone for full program implementation."</p> <p>The approach to address this COL Item in the COLA FSAR will be to: (1) revise and/or supplement (in the COLA) the program description in the DCD in Revision 4 to provide the information requested by RG 1.206, and (2) provide a milestone for program implementation. The program implementation milestone will be defined in FSAR section 13.4.</p>
34	9.1.6-A-1	The COL Holder shall provide the NRC confirmatory dynamic and impact analyses of the fuel storage racks. Refer to Subsections 9.1.1.1, and 9.1.2.4, under subheading Dynamic and Impact Analysis.		
35	9.1.6-A-2	The COL Holder shall confirm the fuel storage racks are designed to provide sufficient natural convection coolant flow through the rack and fuel to remove decay heat without reaching excessive water temperatures (100°C; 212°F), refer to Subsections 9.1.1.1 and 9.1.2.5.		
36	9.1.6-B	The COL Holder shall provide the NRC confirmatory criticality analysis as required by Criticality Control refer to Subsections 9.1.1.1 and 9.1.1.2).		
37	9.1.6-C	The COL Holder shall provide the NRC confirmatory load drop analysis as required by Subsection 9.1.2.4.		

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38	9.1.6-D	<p>The COL Holder shall provide the NRC the following for confirmatory review:</p> <ul style="list-style-type: none"> • Fuel handling procedures. • Maintenance manuals and procedures for equipment used to move fuel. • Equipment inspection and test plans for equipment used to move fuel. • Personnel qualifications, training, and control programs for fuel handling personnel. • QA programs to monitor, implement, and assure compliance to fuel handling operations. 	A/H	<p>This item will be re-written in DCD Rev 4 to read as follows: "The COL applicant will describe in the application the programs that address the following:</p> <ul style="list-style-type: none"> • Fuel handling procedures • Maintenance manuals and procedures for equipment used to move fuel. • Equipment inspection and test plans for equipment used to move fuel. • Personnel qualifications, training, and control programs for fuel handling personnel. • QA programs to monitor, implement, and assure compliance to fuel handling operations." <p>Descriptions of fuel handling operating, maintenance, and testing procedures will be addressed in the COLA by referencing FSAR section 13.5, Plant Procedures. As described in section 13.5, procedures are developed prior to fuel load to allow sufficient time for plant staff familiarization and to allow NRC staff adequate time to review the procedures and to develop operator licensing examinations. Personnel qualifications and training will be addressed by referencing FSAR section 13.2, Operator Training Program. QA programs will be addressed in the COLA by referencing section 17.5, Quality Assurance Program. Implementation milestones for these programs will be defined in FSAR section 13.4.</p>

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No.	COL Item	Description of COL Item in DCD Rev 3	Disposition	Basis
39	9.1.6-E	<p>The COL Holder shall provide the NRC the following for confirmatory review:</p> <ul style="list-style-type: none"> • A listing of all heavy loads, heavy load handling equipment, and their associated heavy load attributes; • Heavy load handling safe load paths and routing plans including descriptions of automatic and manual interlocks and safety devices and procedures to assure safe load path compliance; • Heavy load handling equipment maintenance manuals and procedures; • Heavy load handling equipment inspection and test plans; • Heavy load personnel qualifications, training, and control programs; and • QA programs to monitor, implement, and assure compliance to heavy load handling operations. 	A/H	<p>Consistent with RG 1.206, C.III.1, section 9.1.5, this item will be re-written in DCD Rev 4 to read as follows: The application will provide a description of the program governing heavy loads handling and the schedule for implementation, including the following:</p> <ul style="list-style-type: none"> - A listing of all heavy loads and heavy load handling equipment outside the scope of loads described in the referenced certified design, and the associated heavy load attributes. (load weight and typical load path) - Heavy load handling safe load paths and routing plans including descriptions of automatic and manual interlocks and safety devices and procedures to assure safe load path compliance. - Heavy load handling equipment maintenance manuals and procedures. - Heavy load handling equipment inspection and test plans. - Heavy load handling personnel qualifications, training, and control programs. - Quality assurance (QA) programs to monitor, implement, and ensure compliance with the heavy load handling program. <p>This item will be addressed in the COLA by providing a description of the heavy loads program and a milestone for implementing the program.. The program description provided in the COLA will not include specific plans, procedures, maintenance manuals, and training manuals. Rather the description will describe the general content of these documents.</p>
40	9.3.9.2	<p>The hydrogen and oxygen demand requirements and supply systems are site dependent and shall be defined by the COL Applicant/Holder at the time of deployment, if implemented. The hydrogen supply system may be integrated with the generator hydrogen supply system (as described in Subsection 10.2.2.2.8).</p>	A	<p>Item will be addressed in COLA. The term "Applicant/Holder" will be replaced with "COL applicant."</p>
41	9.3.9.4	<p>The HWCS, if necessary, can be installed at the connection points provided. The COL Applicant/Holder shall provide the inspection and testing requirements at the time of deployment.</p>	A	<p>Item will be addressed in COLA. The term "Applicant/Holder" will be replaced with "applicant."</p>

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42	9.3.9.6	COL Holder will determine Oxygen and Hydrogen demand requirements and supply system, if HWC is implemented. COL Holder will furnish necessary information Test and Inspection when vendor information becomes available. [This is the COL roll-up item for 9.3.9.4]	A	This item will be addressed in the COLA. The term "Applicant/Holder" will be replaced with "applicant."
43	9.3.11.6	The COL Applicant/Holder shall determine if a Zinc Injection System is required based on the site-specific water quality requirements. COL Applicant/Holder will furnish necessary information on System Description, Test and Inspection when vendor information becomes available.	A	At this time, the COL applicant does not intend to implement a zinc injection system. The COLA will state that zinc injection is not currently required but that interface connections are provided to accommodate future installation should operating conditions warrant.
44	9.5.1.12	The COL licensee referencing the ESBWR Standard Plant conducts a compliance review of the as-built design against the assumptions and requirements stated in the FHA. Based on this review, the FHA is updated as necessary.	H	Some of this item will be addressed in COLA by referencing ITAAC 2.16.3. The assumptions not covered by this ITAAC will be addressed post-COL once the fire loading and other as-built information is available. A milestone for completing this review will be provided in the COLA.
45	9.5.4.6.B	The COL applicant shall describe the material and corrosion protection for the underground piping portion of the fuel oil transfer system. The COL applicant has responsibility to establish the procedural controls to ensure a minimum fuel oil capacity is maintained on site at all times.	A	This item will be addressed in the COLA by defining the corrosion protection for the piping and stating that procedural controls are established to ensure a minimum fuel oil capacity is maintained on site at all times.
46	9.A.6.1	Deviations from any approved penetration seal design shall be addressed by the COL Licensee.	Delete in DCD Rev 4	Item is unnecessary. The quality assurance program will address the handling as-found deviations.
47	10.2.5.1, 10A.2.5.1	The COL Holder will provide an evaluation of the probability of turbine missile generation using the criteria in accordance with NRC requirements such as in Reference 10.2-3 and NUREG-0933 item A37. (See Subsection 3.5.1.1.1.2.)	H	Probabilistic analysis is dependent on turbine design details, not available at COLA. Strategy: FSAR to make commitment to provide turbine missile probability report based on final turbine design from vendor. (Justify in FSAR 10.2.5.1.)
48	10A.4.10.1	The COL Holder will provide the general description, component description and system operation description for the turbine bypass system. (See subsections 10A.4.4.2.1, 10A.4.4.2.2, 10A.4.4.2.3, Figure 10A.4-4 and Figure 10A.4-8.)	NA	Not using DCD Section 10A in the COLA
49	10A.4.10.2	The COL Holder will provide circulating water system design data. (See Table 10A.4-3 and Figure 10A.4-1.)	NA	Not using DCD Section 10A in the COLA
50	10A.4.10.3	The COL Holder will provide condensate and feedwater system design data. (See Table 10A.4-5.)	NA	Not using DCD Section 10A in the COLA

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No.	COL Item	Description of COL Item in DCD Rev 3	Disposition	Basis
51	11.2.6-1	The COL holder is responsible, initially and subsequently, for the identification of mobile/portable LWMS connections that are considered non-radioactive, but later become radioactive through interfaces with radioactive systems; i.e., a nonradioactive system becomes contaminated due to leakage, valving errors or other operating conditions in radioactive systems using the guidance and information in IE Bulletin 80-10 (May 6, 1980) (Reference 11.2-10).	A	Address in COLA. The word "Holder" will be replaced with "applicant" in DCD Rev 4.
52	11.2.6-2	The COL holder will include site-specific information in Section 11.2.1 describing how the implementation of operating procedures and design features for installation and operation of the mobile/portable LWMS will address the requirements of Part 20.1406 (Reference 11.2-9).	A	Address in COLA by referencing section 12.6 and 12.5. Section 12.6 discusses how the ESBWR design procedures for operation will minimize contamination of the facility and environment, facilitate decommissioning, and minimize the generation of radioactive waste, in compliance with 10 CFR 20.1406. To the extent practical, operation of the mobile LWMS will comply with the provisions described in 12.6. FSAR section 12.5 requires contamination control procedures to help assure compliance with 10 CFR Parts 20.1406 and 20.1701 and to prevent the unauthorized release of radioactive materials to unrestricted areas. The word "Holder" will be replaced with "applicant" in DCD Rev 4.
53	11.4.6-1	The COL holder is responsible for ensuring initial and future mobile system, structure and component operations comply with the requirements of NUREG-0800, Section 11.4 (Reference 11.4-1) Solid Waste Management Systems, Draft Rev. 3 – April 1996, including BTP - ETSB 11-3, Regulatory Guide 1.143 (Reference 11.4-3), Regulatory Guide 8.8 (Reference 11.4-4) and Regulatory Guide 8.10 (Reference 11.4-5).	A	Re-write COL item in DCD Rev 4 to read as follows: The COL applicant will ensure that mobile system, structure, and component operations and testing complies with the requirements of Regulatory Guide 1.143 (Reference 11.4-3) and Regulatory Guide 8.8 (Reference 11.4-4). Address item in COLA.
54	11.4.6-2	The COL holder is responsible for evaluating initial, and future, mobile systems per the guidance and information in IE Bulletin 80-10, May 6, 1980 for the express purpose of identifying and rectifying connections that are considered as nonradioactive, but could become radioactive through interfaces with radioactive systems, i.e., a non-radioactive system that could become contaminated due to leakage, valving errors or other operating conditions in radioactive systems.	A	Re-write COL item in DCD Rev 4 to read as follows: " The COL applicant will evaluate mobile system compliance with the guidance and information in IE Bulletin 80-10..." Address item in COLA.

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55	11.4.6-3	The COL holder will have a Process Control Program and it will include classifying waste as A, B, C per 10 CFR 61.55 (Reference 11.4-16).	A	Re-write COL item in DCD Rev 4 to read as follows: The COL applicant shall have a Process Control Program per 10 CFR 20, Appendix G and 40 CFR 190 including waste classification as A, B, and C per 10 CFR 61.55 and 10 CFR 61.56. Address in COLA by referring to the PCP program description and provide milestone for program implementation.
56	11.4.6-4	The COL holder is responsible for developing and maintaining programs identified in the administrative controls section of the TS per the requirements of Title 10 Code of Federal Regulations Part 50.36a (Reference 11.4-11), as described in the Standard Review Plan 11.4 (Reference 11.4-1), Draft Rev 3 – April 1996, Section-III.9.	Delete in DCD Rev 4	Delete in DCD Rev 4 because the requirement is addressed in Technical Specifications.
57	11.4.6-5	The COL holder is responsible for testing new and subsequent mobile systems. These tests should include provisions of Regulatory Guide 8.8 (Reference 11.4-4), as applicable.	Delete in DCD Rev 4	Delete in DCD Rev 4 because the item is redundant to item 11.4.6-1.
58	11.4.6-6	The inclusion of a temporary storage facility and an overall site management plan per NUREG-0800 Standard Review Plan 11.4 (Reference 11.4-1), Draft Rev 3-April 1996, Appendix 11.4-A may be required.	A	Address in COLA by stating that the utility does not plan to establish any temporary storage facilities to support new plant operation at the site.
59	11.4.6-7	The COL holder is responsible to include site-specific information in Section 11.4.1 describing how the implementation of operating procedures and design features for installation and operation of the mobile/portable SWMS will address the requirements of Part 20.1406 (Reference 11.4-7). Specifically the operational procedures and design of the mobile/portable SWMS should minimize, to the extent practicable, contamination of the facility and the environment, facilitate decommissioning, and minimize the generation of radioactive wastes. This information may be placed into Section 12.6 provided applicable referencing is included in Subsection 11.4.1.	A	Re-write in DCD Rev 4 to read as follows: "The COL applicant will include site specific information in Section 11.4.1 describing how the ...". Address in COLA by referencing section 12.6 and 12.5. Section 12.6 discusses how the ESBWR design procedures for operation will minimize contamination of the facility and environment, facilitate decommissioning, and minimize the generation of radioactive waste, in compliance with 10 CFR 20.1406. To the extent practical, operation of the mobile LWMS will comply with the provisions described in 12.6. FSAR section 12.5 requires contamination control procedures to help assure compliance with 10 CFR Parts 20.1406 and 20.1701 and to prevent the unauthorized release of radioactive materials to unrestricted areas.

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No.	COL Item	Description of COL Item in DCD Rev 3	Disposition	Basis
60	11.4.6-8	Should a COL holder compact waste using a third party service, the estimated annual shipped waste volume provided in Table 11.4-2 will be considered for waste volume reduction depending on the type and level of waste and the waste compacting equipment and resulting compaction performance.	A	Re-write this COL item in DCD Rev 4 to read as follows: The COL applicant will require that the estimated annual shipped waste volume provided in Table 11.4-2 be considered for waste volume reduction if waste is compacted using a third party service. This volume reduction will consider the type and level of waste and the waste compacting equipment and resulting compaction performance. Address in COLA by referencing note in Table 11.4-2.
61	11.4.6-9	Waste will be classified as A, B, or C and meet the requirements of the waste treatment facility or repository per 10 CFR 61.55 (Reference 11.4-16) and 61.56 (Reference 11.4-17).	Delete in DCD Rev 4	Delete in DCD Rev 4 by combining it with item 11.4.6-3.
62	11.4.6-10	The COL holder is responsible to ensure that mobile systems comply with the guidance of Regulatory Guide 1.143 (Reference 11.4-3) Revision 2, November 2001.	Delete in DCD Rev 4	Delete in DCD Rev 4 because the item is redundant to 11.6.4-1 regarding compliance to RG 1.143.
63	11.4.6-11	The COL holder is responsible for the mobile transport of radwaste, including compliance with 10 CFR 20 Appendix G (Reference 11.4-9) and 40 CFR 190 (Reference 11.4-18).	Delete in DCD Rev 4	Solid waste transport addressed in PCP in COLA item 11.4.6.3. The scope of a PCP is to assure that radioactive waste will be handled, shipped, and disposed of in a safe manner in accordance with regulations and approved site or vendor procedures. Also, do not need a COL Item to require compliance with regulations.
64	11.4.6-12	As mobile waste processes are selected for use, during the design stage before installation of final hook-up and connection with the permanent plant SWMS systems, the issues of IE Bulletin No. 80-10 (Reference 11.4-5), dated May 6, 1980, will be evaluated by the COL holder for the express purpose of ensuring that systems considered as non-radioactive, but could become radioactive through interfaces with radioactive systems, remain non-radioactive.	Delete in DCD Rev 4	Item will be deleted in DCD Rev 4 by combining it with item 11.4.6-2 as both involve measures to address cross-contamination issues of IEB 80-10.
65	11.5.7-1	11.5.7.1 The derivation of each Subsystem's Lower Limit of Detection is to be determined by the COL Holder based on site specific conditions and operating characteristics of each installed effluent radiation monitoring subsystem.	A	Item will be addressed in COLA by referencing the ODCM program description that defines the methodology for determining LLDs. ODCM program implementation will be defined in FSAR section 13.4. Replace the term "Holder" with "applicant" in DCD Rev 4.

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No.	COL Item	Description of COL Item in DCD Rev 3	Disposition	Basis
66	11.5.7-2	The COL Holder will also develop an ODCM that contains the methodology and parameters used for calculation of offsite doses resulting from gaseous and liquid effluents. The COL Holder will address operational setpoints for the radiation monitors and address programs for monitoring and controlling the release of radioactive material to the environment, which eliminates the potential for unmonitored and uncontrolled release. The ODCM will include planned discharge flow rates.	A	This item will be re-written in DCD Rev 4 to include the response to RAI 11.5-23. Additionally, the term "Holder" will be replaced with "applicant" in DCD Rev 4. Item will be addressed in COLA by referencing ODCM program description and implementation milestone in section 13.4.
67	11.5.7-3	In addition, the COL Holder is responsible for the site-specific program aspects of the process and effluent monitoring and sampling per ANSI N13.1 (Reference 11.5-13) and Regulatory Guides 1.21 (Reference 11.5-9) and 4.15 (Reference 11.5-10).	A	In DCD Rev 4, re-write the item to read as follows: "In addition, the COL applicant is responsible for site-specific program aspects of the process and effluent monitoring and sampling as specified in Table 11.5-5, per..." Item will be addressed in COLA by referencing ODCM program description and implementation milestone in section 13.4.
68	11.5.7-4	The COL Holder is responsible for addressing 10 CFR 50, Appendix I (Reference 11.5-8) guidelines for maximally exposed offsite individual doses and population doses via liquid and gaseous effluents.	A	Item will be addressed in COLA by referencing ODCM program description. In DCD Rev 4, replace the term "Holder" with "applicant."
69	11.5.7-5	The COL Holder is responsible for the sensitivities, frequencies and basis for each gaseous and liquid samples.	A	Item will be addressed in COLA by referencing ODCM program description and implementation milestone in section 13.4. In DCD Rev 4, replace the term "Holder" with "applicant."
70	Table 11.5-2	Activity levels are expected to be at the subsystem's lower limit of detection (LLD). The derivation of each LLD is to be determined by the COL Holder based on site-specific conditions and operating characteristics of each installed effluent radiation monitoring subsystem. See Section 12.2 for expected activity of various processes and effluents.	A	Item will be addressed in COLA by referencing the ODCM program description that defines the methodology for determining LLDs. ODCM program implementation will be defined in FSAR section 13.4. In DCD Rev 4, replace the term "Holder" with "applicant."
71	Table 11.5-4	Activity levels are expected to be at the subsystem's lower limit of detection (LLD). The derivation of each LLD is to be determined by the COL Holder based on site-specific conditions and operating characteristics of each installed effluent radiation monitoring subsystem. See Section 12.2 for expected activity of various processes and effluents.	A	Item will be addressed in COLA by referencing the ODCM program description that defines the methodology for determining LLDs. ODCM program implementation will be defined in FSAR section 13.4. In DCD Rev 4, replace the term "Holder" with "applicant."

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No.	COL Item	Description of COL Item in DCD Rev 3	Disposition	Basis
72	Table 11.5-5, Item No. 11	The COL Holder will provide design of wastewater effluent systems that monitor the storm, the cooling system tower blow down and sanitation wastes. See Subsection 9.2.4 for additional information.	Delete in DCD Rev 4	Holder Items in this table will be deleted in DCD Rev 4. Grab sampling, similar to existing plants, will be implemented for the storm, the cooling system tower blow down and sanitation wastes. Table 11.5-5 already specifies grab sampling requirements for these effluent points.
73	Table 11.5-5, Item No. 14	The COL Holder will provide design of wastewater effluent systems that monitor the storm, the cooling system tower blow down and sanitation wastes. See Subsection 9.2.4 for additional information.	Delete in DCD Rev 4	Holder Items in this table will be deleted in DCD Rev 4. Grab sampling, similar to existing plants, will be implemented for the storm, the cooling system tower blow down and sanitation wastes. Table 11.5-5 already specifies grab sampling requirements for these effluent points.
74	12.2.4.1	As discussed in Subsection 12.2.1.1.2, the COL holder will determine exact placement and duration of residence for the Cf-252 startup source and holder in the SFP.	Delete in DCD Rev 4	Existing text in DCD Rev 3 adequate – “The source and source holder is removed from the reactor during the first refueling outage and moved to a designated location in the spent fuel pool (SFP).” Already discussed with NRC staff via email on 4/9/07.
75	12.2.4.2	As discussed in Subsection 12.2.2.2, the COL applicant is responsible for ensuring that offsite dose (using site-specific parameters) due to radioactive airborne effluents complies with the regulatory dose limits in 10 CFR 50, Appendix I.	A	Will be addressed in the COLA.
76	12.2.4.3	As discussed in Subsection 12.2.2.4, COL applicant is responsible for ensuring that offsite dose (using site-specific parameters) due to radioactive liquid effluents complies with the regulatory dose limits in 10 CFR 50, Appendix I.	A	Will be addressed in the COLA.
7	12.3.7.1	Precise equipment definition and material selection are the COL holder’s responsibility (Subsection 12.3.1).	Delete in DCD Rev 4	Delete COL Holder item in DCD Rev 4 because the statement is unnecessary.
78	12.3.7.2	Airborne radiation monitoring operational considerations such as the procedures for operations and calibration of the monitors, as well as the placement of the portable monitors, are the COL holder’s responsibility (Subsection 12.3.4).	A	In DCD Rev 4, re-write COL item to read as follows: "Airborne radiation monitoring operational considerations such as the procedures for operations and calibration of the monitors, as well as the placement of the portable monitors, will be addressed by the COL applicant in the COLA radiation protection program description." Address item in COLA by referencing sections 12.5 (radiation protection program) and 13.5 (procedures) which contain requirements to develop radiation protection procedures.
79	12.3.7.3	Controlled access to “Very High Radiation Areas” is provided by the COL holder (licensee) (Subsection 12.3.1.3).	A	Address in COLA by referencing radiation protection program description in section 12.5. In DCD Rev 4, replace the term “Holder” with “applicant.”

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80	13.5.3.4	Calibration, inspection and testing procedures that require operator actions to be taken in the MCR or RSS shall be prepared as appropriate. The COL holder will ensure that all portions of the safety-related logic circuitry are adequately covered in the surveillance procedures as described in Generic Letter 96-01.	A	Item will be addressed in COLA. In DCD Rev 4, replace the term "Holder" with "applicant."
81	14.2.9.1	The COL holder will make a startup administrative manual available to the NRC 60 days prior to use that:(1) The responsibilities of the organization that will carry out the test program, methods and plans for providing the necessary manpower, and a description of the staff responsibilities, authorities and personnel qualifications for conducting the initial test program.(2) Delineates the development, review and approval of test procedures per Appendix C of RG 1.68. The site approved test procedures will be made available approximately 60 days before their intended use.(3) Delineates utilization of reactor operating and testing experience in the development of the test procedures.(4) Requires the development of plant operating and emergency procedures prior to fuel loading, and their application during the test program, consistent with section C.7 of RG 1.68.(5) Defines requirements for the test program schedule consistent with section C.5 of RG 1.68 and the test sequence, consistent with sections 1 through 5 in Appendix A of RG 1.68.(6) Defines requirements for the test methodology, prerequisites, initial conditions, acceptance criteria, and analysis techniques consistent with RG 1.68.	H	Will address as described in the item (i.e., make manual available 60 days prior to use)

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82	15.0.4.3	The MCPR operating limit, for the as-built initial core and each reload core fuel loading pattern, will be provided by the COL Licensee to the USNRC for information	A	<p>It is unnecessary to specify in a COL item a requirement to perform this analysis for future core reloads. Technical Specification 5.6.3 requires that the Core Operating Limits Reports be submitted at each reload. The DCD indicates which analyses are limiting and will be performed for different core loading patterns. This COL item will be re-written in DCD Rev 4 to read as follows: "For COL applicants using an initial core fuel load pattern that is different than those described in the DCD, the MCPR operating limit will be determined and included in the COLA."</p> <p>This item will be addressed in the COLA by incorporating by reference the initial core fuel load pattern and associated analysis described in the DCD.</p>
83	15.2.7	<p>The following potentially limiting AOs will be evaluated for the (COL Applicant) initial and (COL Holder) reload core designs:</p> <ul style="list-style-type: none"> • Loss of Feedwater Heating • Closure of One Turbine Control Valve • Generator Load Rejection with a Single Failure in the Turbine Bypass System • Inadvertent Isolation Condenser Initiation <p>COL Applicant; Confirm the applicability of assumptions listed in Subsection 15.2.0.</p>	A	<p>This item will be re-written in DCD Rev 4 to read as follows: "For COL applicants using an initial core load design that is different than described in the DCD and for core reload design changes, the following potentially limiting AOs will be evaluated:</p> <ul style="list-style-type: none"> • Loss of Feedwater Heating • Closure of One Turbine Control Valve • Generator Load Rejection with a Single Failure in the Turbine Bypass system • Inadvertent Isolation Condenser Initiation" <p>This COL item will be addressed in the COLA by incorporating by reference the initial core fuel load pattern and associated analysis described in the DCD.</p> <p>The COL item requirement to confirm the applicability of assumptions listed in Subsection 15.2.0 will be deleted in DCD Rev 4 because system requirements will be added to the DCD text in Rev 4 to eliminate the need to confirm these assumptions.</p>

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84	15.3.17 (15.3.1.3 15.3.5.3.2)	<p>The following potentially limiting infrequent events will be evaluated for the (COL Applicant) initial core and (COL Holder) subsequent reload core designs changes:</p> <ul style="list-style-type: none"> • Loss of Feedwater Heating With Failure of Selected Control Rod Run-In • Generator Load Rejection with Total Turbine Bypass Failure <p>COL Applicant: Confirm the applicability of the Startup control rod withdrawal error analysis to the initial core design. COL Holder: Confirm the applicability of the generic radiological dose assessment for misloaded fuel bundles to the site meteorological characteristics</p>	A	<p>This item will be re-written in DCD Rev 4 to read as follows: “For COL applicants using an initial core load design that is different than described in the DCD and for core reload design changes, the following potentially limiting infrequent events will be evaluated:</p> <ul style="list-style-type: none"> • Loss of Feedwater Heating With Failure of Selected Control Rod Run-In • Generator Load Rejection with Total Bypass Failure <p>For initial core designs different than described in the DCD, the COL applicant will confirm the applicability of the startup control rod withdrawal error analysis in the DCD to the initial core design.”</p> <p>This COL item will be addressed in the COLA by incorporating by reference the initial core design and associated analysis described in the DCD.</p> <p>The COL item requiring reconfirmation of site meteorological characteristics will be deleted in DCD Rev 4 because it is redundant to COL items in Chapter 2 that confirm meteorological characteristics and unnecessary for subsequent core reload analyses.</p>
85	15.5.8 (15.5.6)	The COL Applicant will provide a reanalysis of the SBO event for the specific initial and (COL Holder) reload core designs.	A	<p>This item will be re-written in DCD Rev 4 to read as follows: “For COL applicants using an initial core load design that is different than described in the DCD and for core reload design changes, the SBO event will be reanalyzed.”</p> <p>This COL item will be addressed in the COLA by incorporating by reference the initial core design and associated analysis described in the DCD</p>
86	17.0 Table 17.0-1	Compliance With Quality Assurance Related Regulatory Guides	A	Duplicate of 1.9-21b items. Will address in COLA FSAR sections 17.1 - 17.6.

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No.	COL Item	Description of COL Item in DCD Rev 3	Disposition	Basis
87	17.4.13	<p>Operational reliability assurance activities shall be incorporated into the COL holder's programs, with the following requirements:</p> <ul style="list-style-type: none"> • The objectives of operational reliability assurance activities shall be integrated into the QA program, developed to implement 10 CFR 50, Appendix B. This program shall address failures of non-safety-related, risk-significant SSCs that result from design and operational errors in accordance with SECY 95-132, Item E. • Establish PRA important measures, the expert panel process, and deterministic methods to determine the site-specific list of risk-significant SSCs under the scope of the D-RAP. • Evaluate and maintain the reliability of risk-significant SSCs as identified in the D-RAP. The holder may cite, for example, reliability analysis, cost-effective maintenance enhancements, such as condition monitoring and using condition-directed maintenance as well as time directed or planned periodic maintenance. • Use the Maintenance Rule (10 CFR 50.65) program to monitor the effectiveness of the COL applicant's maintenance activities needed for operational reliability assurance. • Consider all SSCs that are in the scope of the D-RAP as high-safety-significant (HSS) within the scope of the Maintenance Rule program, or provide Expert Panel justification for any exceptions. • Reliability Database - Historical data on equipment performance as available. The compilation and reduction of this data provides the plant with source of component reliability information. Data used in PRA fault-tree analyses may also be a viable initial source. • Surveillance and Testing - Establishes the level of performance or condition being maintained for SSCs within the scope of the RAP and identifies declining trends in between surveillances prior to performance or condition degrading to unacceptable levels undetected (or failure) to the extent possible. • Maintenance Plan - This plan describes the nature and frequency of maintenance activities to be performed on plant equipment. The plan includes the selected SSCs identified in the D-RAP. 	A	Item to be addressed in COLA.

A = Address in the COL application

A/H = Some aspects of the item will be addressed in the COL application and other aspects will be addressed post-COL application.

H = Most aspects of the item will be addressed post-COL application.

**Proposed COLA FSAR Content to Address ISI Program Description
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RG 1.206 Section	RG 1.206 Information Request	DCD Section	COLA FSAR Disposition
<p>5.2.4 5.2.4.1</p>	<p>Inservice Inspection and Testing of Reactor Coolant Pressure Boundary <i>Inservice Inspection and Testing Program</i></p> <p>Discuss the inservice inspection and testing program for the NRC Quality Group A components of the RCPB (ASME Code, Section III, Code Class 1 components) that complies with the requirements of 10 CFR 50.55a. Provide sufficient detail to show that the inservice inspection program meets the requirements of Section XI of the ASME Code. Because the inservice inspection program is an operational program as discussed in SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," issued October 2005, the applicant must describe the program and its implementation in sufficient scope and level of detail for the staff to make a reasonable assurance finding on its acceptability. Provide descriptive information on the following:</p>	<p>5.2.4</p>	<p>DCD provides for each of the areas or subjects discussed in RG 1.206 except as noted in the discussion below for each item; as noted below, information will be added to the COLA FSAR in the appropriate locations to provide the requested program description.</p> <p>Implementation milestones will be provided in COLA FSAR 13.4.</p>
	<p>System boundary subject to inspection. Discuss components (other than steam generator tubes) and associated supports to include all pressure vessels, piping, pumps, valves, and bolting.</p> <p>Because the ISI and IST are operational programs, as discussed in SCY-05-0197, the programs and their implementation milestones should be fully described and reference any applicable standards. Fully described should be understood to mean that the program is clearly and sufficiently described in terms of the scope and level of detail to allow for a reasonable assurance finding of acceptability.</p>	<p>5.2.4.1</p>	<p>DCD describes the RCPB in general terms, and identifies exclusions and exemptions from ISI. Inservice testing of components to the ASME OM Code is described in COLA FSAR section 3.9.6.</p> <p>Implementation milestones will be provided in COLA FSAR 13.4.</p> <p>No additions to the COLA FSAR are required.</p>
	<p>Accessibility. Describe provisions for access to components and identify any remote access equipment needed to perform inspections.</p>	<p>5.2.4.2</p>	<p>DCD indicates the RCPB components are designed to meet Code requirements for accessibility. Certain individual component's access provisions are discussed, and general provisions for piping, pumps, valves and component supports are indicated. Provision for remote access to RPV welds and bottom head welds is described.</p> <p>No additions to the COLA FSAR are required.</p>

**Proposed COLA FSAR Content to Address ISI Program Description
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RG 1.206 Section	RG 1.206 Information Request	DCD Section	COLA FSAR Disposition
	<p>Examination categories and methods. Discuss the methods, techniques, and procedures used to meet ASME Code requirements. For performing ultrasonic testing not covered by the ASME Code, Section XI, Appendix VIII, the applicant should address the issues/concerns identified in Regulatory Guide 1.150, "Ultrasonic Testing of Reactor Vessel Welds During Pre-service and Inservice Examinations," to ensure that the ultrasonic testing methods, techniques, and procedures used for ASME Code examinations are consistent with those recommended in the regulatory guide. Detailed procedures for performing the examinations need not be provided because such information may not be available at the time of COL application. However, the applicant should make a commitment to provide sufficient information to demonstrate that the procedures to be used for examinations will meet the Code requirements. Such information should be provided to the staff at a pre-determined time agreed upon by both parties. The applicant may need to work with the NRC staff during the review to agree on an appropriate method (e.g., ITAAC, license condition, FSAR update) to ensure that the as-built plant is consistent with the design reviewed during the licensing process.</p>	5.2.4.3	<p>DCD discussion indicates examination categories will be included in the ISI Program document as required by IWB-2500. Examination methods and techniques are described in DCD 5.2.4.3.2. Procedures are not discussed, however, FSAR 13.5 generally discusses procedures and procedure development, including maintenance and surveillance procedures.</p> <p>Table 1.9-21 indicates RG 1.150 is applicable to the ESBWR design. Discussion of conformance with RG 1.150 will be provided, either in this section of the COLA FSAR or in FSAR Section 1.9, in a table equivalent to DCD Table 1.9-21. This conformance discussion will include the commitment to provide sufficient information to demonstrate that the procedures to be used for reactor vessel weld examinations will meet the Code requirements, as requested in RG 1.206.</p>
	<p>Inspection intervals. Discuss program scheduling in compliance with the ASME Code.</p>	5.2.4.4	<p>DCD describes the inspection intervals for ISI.</p> <p>No additions to the COLA FSAR are required.</p>
	<p>Evaluation of examination results. Discuss provisions for evaluation of examination results to include evaluation methods for detected flaws and repair procedures for components that reveal defects.</p>	5.2.4.5	<p>DCD describes the evaluation of examination results with appropriate reference to ASME Section XI requirements.</p> <p>No additions to the COLA FSAR are required.</p>
	<p>System pressure tests. Describe system pressure tests and correlated technical specification requirements.</p>	5.2.4.6	<p>System pressure test requirements based on ASME Section XI are described in DCD section 5.2.4.6.</p> <p>Otherwise, no additions to the COLA FSAR are required.</p>
	<p>Code exemptions. Identify any components that are exempted from the examination requirements in ASME Code, Section XI.</p>	5.2.4.7	<p>As indicated in the DCD, a complete list of components exempt from Code requirements will be provided in the detailed ISI Program document.</p> <p>No additions to the COLA FSAR are required.</p>

**Proposed COLA FSAR Content to Address ISI Program Description
Working Draft in Preparation for June 13 DCWG Meeting**

RG 1.206 Section	RG 1.206 Information Request	DCD Section	COLA FSAR Disposition
	Relief requests. Discuss any requests for relief from ASME Code requirements that the applicant finds impractical because of limitations of component design, geometry, or materials of construction.		Information will be added to the COLA FSAR, in Section 6.6 (see 6.6.10 below) discussing the use of requests for relief from ASME Code requirements, as necessary. There are no specific requests for relief to be discussed in the COLA FSAR for the COL application submittal.
	ASME Code Cases. Identify ASME Code Cases that have been invoked.	5.2.4.8	DCD discusses use of Code Cases in Section 5.2.1, and presents Code Cases for use in design and testing in Table 5.2-1. Section 5.2.4.8 refers to the table in the DCD. No additional information is required for the COLA FSAR.
	Provide details of the inservice inspection program including information on areas subject to examination, method of examination, and extent and frequency of examination.	N/A	These details requested are addressed in the above discussions of DCD section 5.2.4 content. Additional information will be provided in the COLA FSAR as discussed above.
5.2.4.2	Preservice Inspection and Testing Program Describe the preservice examination program that meets the requirements of Subarticle NB-5280 of Section III, Division I, of the ASME Code. Because the preservice inspection program is an operational program, as discussed in SECY-05-0197, the program and its implementation milestones should be fully described and reference any applicable standards. Fully described should be understood to mean that the program is clearly and sufficiently described in terms of the scope and level of detail to allow for a reasonable assurance finding of acceptability.		The COLA FSAR will include a commitment to perform preservice inspections in accordance with ASME Section III, NB-5280. Implementation milestones for the PSI and ISI programs will be provided in COLA FSAR 13.4.
6.6	Inservice Inspection of Class 2 and 3 Components In this section, discuss the inservice inspection program for Quality Group B and C components (i.e., Class 2 and 3 components in Section III of the ASME Code). Describe the implementation of this program.	6.6	Section 6.6 of the DCD describes the ASME Class 2 and 3 preservice and inservice inspection requirements based on ASME Code Section XI. Implementation milestones are provided in COLA FSAR Section 13.4.
6.6.1	Components Subject to Examination COL applicants that reference a certified design do not need to include additional information.	6.6.1	DCD indicates the Class 2 and Class 3 systems within the boundary, and identifies portions of the systems within the Class 2 and 3 boundaries subject to ISI (IAW RG 1.26). No additions to the COLA FSAR are required.

**Proposed COLA FSAR Content to Address ISI Program Description
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RG 1.206 Section	RG 1.206 Information Request	DCD Section	COLA FSAR Disposition
6.6.2	<p>Accessibility</p> <p>COL applicants that reference a certified design do not need to include additional information.</p>	6.6.2	<p>DCD indicates the Classes 2 and 3 components are designed to meet Code requirements for accessibility. Certain Class 2 component's access provisions are discussed, and general provisions for piping, pumps, valves and component supports are indicated.</p> <p>DCD revisions will be made to remove the statement regarding requirements of the COL Holder as indicated in the "Proposed Disposition of ESBWR DCD Rev 3, COL Holder Items" table, line item no. 32.</p> <p>No additions to the COLA FSAR are required.</p>
6.6.3	<p>Examination Techniques and Procedures</p> <p>Indicate the extent to which the inspections will adopt the examination techniques and procedures described in Section XI of the ASME Code. Describe any special examination techniques and procedures that the inspection might use to meet the ASME Code requirements.</p>	6.6.3	<p>Examination methods and techniques are described in DCD 6.6.3.2. DCD 6.6.3.2.4 discusses alternative techniques as allowed by IWA-2240.</p> <p>Procedures are not discussed, however, FSAR 13.5 generally discusses procedures and procedure development, including maintenance and surveillance procedures.</p> <p>No additions to the COLA are required.</p>
6.6.4	<p>Inspection Intervals</p> <p>Indicate that the applicant will develop an inspection schedule for Class 2 system components in accordance with the guidance of ASME Code Section XI, Subarticle IWC-2400, and whether the applicant will develop a schedule for Class 3 system components according to Subarticle IWD-2400.</p>	6.6.4	<p>DCD describes the inspection intervals for ISI for both Class 2 and Class 3 components.</p> <p>No additions to the COLA FSAR are required.</p>
6.6.5	<p>Examination Categories and Requirements</p> <p>Indicate that the inservice inspection categories and requirements for Class 2 components are in agreement with Section XI and IWC-2500 of the ASME Code. Indicate the extent to which inservice inspection categories and requirements for Class 3 components are in agreement with Section XI, Subarticle IWD-2500.</p>	6.6.3.1	<p>DCD discussion indicates examination categories will be included in the ISI Program document as required by IWC-2500 and IWD-2500 and indicates method of examination for each item in the program will be listed in the program.</p> <p>No additions to the COLA FSAR are required.</p>

**Proposed COLA FSAR Content to Address ISI Program Description
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RG 1.206 Section	RG 1.206 Information Request	DCD Section	COLA FSAR Disposition
6.6.6	<p>Evaluation of Examination Results</p> <p>Indicate that the evaluation of Class 2 component examination results will comply with the requirements of Article IWA-3000 of Section XI of the ASME Code. Describe the method for evaluating examination results for Class 3 components and indicate the extent to which these methods are consistent with requirements in Article IWD-3000 of Section XI. In addition, indicate that repair procedures for Class 2 components will comply with the requirements of Article IWC-4000 of Section XI. Describe the procedures for repair of Class 3 components and indicate the extent to which these procedures are in agreement with Article IWD-4000 of Section XI.</p>	6.6.5	<p>DCD describes the evaluation of examination results with appropriate reference to ASME Section XI requirements; IWC-3000 for Class 2 items, and IWD-3000 for Class 3 items. (RG 1.206 refers to IWA-3000 for Class 2 exam results evaluation).</p> <p>Repair of components will be done in accordance with IWA-4000 as indicated in the DCD (RG 1.206 refers to IWC/IWD-4000, which no longer exist in Section XI).</p> <p>Procedures are not discussed, however, COLA FSAR 13.5 generally discusses procedures and procedure development, including maintenance procedures.</p> <p>No additions to the COLA FSAR are required.</p>
6.6.7	<p>System Pressure Tests</p> <p>Indicate that the program for Class 2 system pressure testing will comply with the criteria of ASME Code Section XI, Article IWC-5000. Also indicate whether the program for Class 3 system pressure testing will comply with the criteria in Article IWD-5000.</p>	6.6.6	<p>System pressure test requirements based on ASME Section XI are described in DCD section 6.6.7.</p> <p>No additions to the COLA FSAR are required.</p>
6.6.8	<p>Augmented Inservice Inspection to Protect against Postulated Piping Failures</p> <p>Provide an augmented inservice inspection program for high-energy fluid system piping between containment isolation valves or, where no isolation valve is used inside containment, between the first rigid pipe connection to the containment penetration or the first pipe whip restraint inside containment and the outside isolation valve. This program should contain information concerning areas subject to examination, method of examination, and extent and frequency of examination.</p>	6.6.7	<p>DCD describes the requirements for augmented ISI for piping between containment isolation valves, and makes reference to other subsections of 6.6 for accessibility, examination and procedure requirements for the augmented inspections.</p> <p>No additions to the COLA FSAR are required.</p>

**Proposed COLA FSAR Content to Address ISI Program Description
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RG 1.206 Section	RG 1.206 Information Request	DCD Section	COLA FSAR Disposition
NA		6.6.8	<p>Code Exemptions As indicated in the DCD, certain components are exempt from Code requirements; as indicated for Class 1 components in DCD Section 5.2.4.7 a complete list will be provided in the detailed ISI Program document which will be implemented as described in FSAR 13.4.</p> <p>No additions to the COLA FSAR are required.</p>
NA		6.6.9	<p>Code Cases See discussion above for DCD 5.2.4.8 for Code Cases.</p> <p>No additional information is required for the COLA FSAR.</p>
NA		6.6.10	<p>Plant Specific PSI/ISI Program Information In the COLA the DCD text will be revised in Rev. 4 with the following, or similar:</p> <p>6.6.10.1 Relief Requests. The specific areas where the applicable ASME Code requirements cannot be met are identified. Should relief requests be required, they will be developed through the regulatory process and submitted to NRC for approval in accordance with 10CFR50.55a(g)(5). The relief requests include appropriate justifications and proposed alternative inspection methods.</p> <p>6.6.10.2 Code Edition. The latest edition and addenda of the ASME Boiler and Pressure Vessel Code approved in 10 CFR 50.55a(b) on the date 12 months before fuel load, is incorporated into the inservice inspection program. (See Table 1.9-203).</p> <p>6.6.10.3 Program Implementation. The milestones for preservice and inservice inspection program implementation are defined in FSAR section 13.4.</p>

ESBWR COL Holder Items

Chapter 9 – Heavy Loads

Heavy Loads – Safe Load Paths

Safe load paths	RG 1.206 C.III.1 9.1.5	Heavy load safe load paths and routing plans including descriptions of automatic and manual interlocks and safety devices and procedures to assure safe load paths.	<ul style="list-style-type: none"> ■ COLA to provide approach regarding compliance with safe load path guidance recommended in section 5.1.1 of NUREG-0612. ■ Safe load paths will be defined for movement of heavy loads to minimize the potential for a load drop on irradiated fuel in the reactor vessel or spent fuel pool or on safe shutdown equipment.
	SRP 9.1.5, I.3	Compliance with general programmatic guidelines for design, operation, testing, maintenance, and inspection as specified in Section 5.1.1 of NUREG-0612 – 5.1.1(1)	<ul style="list-style-type: none"> ■ Paths will be defined clearly in procedures and equipment layout drawings. ■ Neither procedures nor drawings will be provided in the COLA. ■ Interlocks are described in the DCD. ■ Summarize general requirements in COLA.

**Description of Proposed ESBWR COLA Response to Heavy & Light (Refueling) Loads COL Holder Items
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The following table represents the proposed approach to addressing COL Holder items and their associated regulatory guidance regarding the heavy and light (refueling) loads program. Applicable COL Holder items are #2, #4, #38, and #39 from the table¹ provided previously.

Table 1 – Proposed Resolutions for Light Loads (Refueling) COL Holder Item 9.1.6-D			
Issue	Regulatory Document	Criteria	Proposed Response for COLA Content
Procedures and Administrative Controls	RG 1.206, C.III.1, 9.1.4	Describe the operational procedures governing fuel handling, including administrative controls	<p>The COLA will reference section 13.5 of the FSAR which require development of fuel handling procedures prior to fuel load to allow sufficient time for plant staff familiarization and to allow NRC staff adequate time to review the procedures and to develop operator licensing examinations. This section states, in part, that:</p> <ul style="list-style-type: none"> Fuel handling operations, including receipt of fuel, identification, fuel movement, storage and shipment, are performed in accordance with written procedures. Fuel handling procedures address, for example, the status of plant systems required for refueling; inspection of replacement fuel, control rods; designation of proper tools; proper conditions for spent fuel movement and storage; proper conditions to prevent inadvertent criticality; proper conditions for fuel cask loading and movement; and status of interlocks, reactor trip circuits and mode switches. These procedures provide instructions for use of refueling equipment, actions for core alterations, monitoring core criticality status, and accountability of fuel and partial or complete refueling operations. <p>As part of normal plant operations, the fuel-handling equipment is inspected for operating conditions before each refueling operation. During the operational testing of this equipment, procedures are followed that will affirm the correct performance of the fuel-handling system interlocks. Other maintenance and test procedures will be developed based on manufacture's requirements.</p> <p>Personnel qualifications and training for fuel handlers will be addressed by referencing FSAR section 13.2, Operator Training Program, which incorporates NEI 06-13.</p> <p>In accordance with Part III of the QADP, other specific quality program controls will be applied to the fuel handling equipment as appropriate, targeted at those characteristics or critical attributes that render the equipment a significant contributor to plant safety.</p>
	SRP 9.1.4, III.3	The SAR description of operating and test procedures is reviewed for whether load proof-testing, design-rated load testing, nondestructive testing, preventive checks, and attachment of the load ensure reliable load-handling operations	

¹ Proposed Disposition of ESBWR DCD Rev 3, COL Holder Items, Preliminary Working Draft in Preparation for June 13 DCWG Meeting (6/1/07 version)

**Description of Proposed ESBWR COLA Response to Heavy & Light (Refueling) Loads COL Holder Items
Preliminary Draft Material in Preparation for the June 13, 2007, DCWG Meeting**

Table 2 – Proposed Resolutions for Heavy Loads COL Holder Items: Table 1.11-1, A-36; Table 1C-1, GL 80-113, 81-07; 9.1.6-E

Issue	Regulatory Document	Criteria	Proposed Response for COLA Content
Listing of Heavy Loads and Equipment Outside of DCD Scope	<p>RG 1.206 C.III.1, 9.1.5</p> <p>SRP, 9.1.5, I.3</p>	<p>A listing of all heavy loads and heavy load handling equipment outside the scope of loads described in the referenced certified design and the associated heavy load attributes (load weight and typical load path).</p> <p>Compliance with general programmatic guidelines for design, operation, testing, maintenance, and inspection as specified in Section 5.1.1 of NUREG-0612. – 5.1.1(4) and (5).</p>	<p>Heavy loads outside the scope of DCD: Still evaluating; none identified to date.</p> <p>Heavy load handling equipment outside the scope of the DCD:</p> <ul style="list-style-type: none"> • Special Lifting Devices: The COLA will state that for special lifting devices, the guidelines of ANSI N14.6 are implemented as specified with the following exceptions/clarifications (from GG Unit 1 FSAR): <ul style="list-style-type: none"> - The acceptance criteria of paragraph 5.5.2 are applied to fabrication and repair welds only. - The acceptance criteria for inservice inspection shall be limited to “No Cracks.” - The use of later editions of ASME Section V may be used to permit the use of advanced NDE technology. - For the Dryer/Separator Strongback the requirement to routinely examine the load bearing welds every 5th refueling outage by nondestructive examination (NDE) (Magnetic Particle or Liquid Penetrant) will not be used. The lifting device shall be examined visually and dimensionally. The visual and dimensional examination shall be performed prior to the initial lift each outage. Any cracks in the coating or dimension out of tolerance shall require magnetic particle or liquid penetrant examination of the suspect welds and/or additional welds as required by Design Engineering. • Other Lifting Devices: The COLA will state that slings used for heavy load lifts meet the requirements specified for slings in ANSI B30.9 with the following clarification. Since dynamic loads constitute a small percentage of the total load imposed on slings, the sling’s ratings are expressed in terms of maximum static load only (from NA FSAR).

**Description of Proposed ESBWR COLA Response to Heavy & Light (Refueling) Loads COL Holder Items
Preliminary Draft Material in Preparation for the June 13, 2007, DCWG Meeting**

Table 2 – Proposed Resolutions for Heavy Loads COL Holder Items: Table 1.11-1, A-36; Table 1C-1, GL 80-113, 81-07; 9.1.6-E

Issue	Regulatory Document	Criteria	Proposed Response for COLA Content
Safe Load Paths	<p>RG 1.206 C.III.1, 9.1.5</p> <p>SRP, 9.1.5, I.3</p>	<p>Heavy load handling safe load paths and routing plans including descriptions of automatic and manual interlocks and safety devices and procedures to assure safe load path compliance.</p> <p>Compliance with general programmatic guidelines for design, operation, testing, maintenance, and inspection as specified in Section 5.1.1 of NUREG-0612 – 5.1.1(1).</p>	<p>COLA to provide approach regarding compliance with safe load paths guidance recommended in section 5.1.1 of NUREG-0612. Safe load paths will be defined for movement of heavy loads to minimize the potential for a load drop on irradiated fuel in the reactor vessel or spent fuel pool or on safe shutdown equipment. Paths will be defined clearly in procedures and equipment layout drawings. Neither procedures nor drawings will be provided in the COLA. Interlocks are described in the DCD. Summarize general requirements as follows:</p> <ol style="list-style-type: none"> 1. When heavy loads must be carried directly over spent fuel pool, reactor vessel or safe shutdown equipment, procedures will limit time and height load is carried. 2. When heavy loads could be carried (i.e., no physical means to prevent) but are not required to be carried directly over spent fuel pool, reactor vessel or safe shutdown equipment, procedures will define an area over which loads shall not be carried so that if load is dropped, it will not result in damage to spent fuel or operable safe shutdown equipment or compromise reactor vessel integrity. 3. Where intervening structures are shown to provide protection, no load travel path is required. 4. Defined safe load paths will follow, to the extent practical, structural floor members. 5. When heavy loads movement is restricted by design or operational limitation, no safe load path is required. 6. Supervision is present during heavy load lifts to enforce procedural requirements.
Procedures	<p>C.III.1, 9.1.5 (heavy loads)</p> <p>SRP, 9.1.5, I.3</p>	<p>Heavy load handling equipment maintenance manuals and procedures</p> <p>Compliance with general programmatic guidelines for design, operation, testing, maintenance, and inspection as specified in Section 5.1.1 of NUREG-0612 – 5.1.1(2).</p>	<p>COLA to provide a summary description of the procedure requirements. Reference will be provided to FSAR section 13.5, Plant Procedures, which requires the development of administrative procedures to control heavy loads prior to fuel load to allow sufficient time for plant staff familiarization and to allow NRC staff adequate time to review the procedures and to develop operator licensing examinations. References to applicable standards are provided in DCD Table 9.1-5 and under the COLA section 9.1.5 response to heavy loads requirements of section 5.1.1 of NUREG-0612. COLA will require heavy loads procedures to address:</p> <ol style="list-style-type: none"> 1. Equipment identification 2. Required equipment inspections and acceptance criteria prior to performing lift and movement operations 3. Approved safe load paths and exclusion areas 4. Safety precautions and limitations 5. Special tools, rigging hardware, and equipment required for the heavy load lift 6. Rigging arrangement for the load 7. Adequate job steps and proper sequence for handing the load

**Description of Proposed ESBWR COLA Response to Heavy & Light (Refueling) Loads COL Holder Items
Preliminary Draft Material in Preparation for the June 13, 2007, DCWG Meeting**

Table 2 – Proposed Resolutions for Heavy Loads COL Holder Items: Table 1.11-1, A-36; Table 1C-1, GL 80-113, 81-07; 9.1.6-E

Issue	Regulatory Document	Criteria	Proposed Response for COLA Content
Inspection and Testing	RG 1.206 C.III.1, 9.1.5 SRP, 9.1.5, I.3	Heavy load equipment inspection and test plans Compliance with general programmatic guidelines for design, operation, testing, maintenance, and inspection as specified in Section 5.1.1 of NUREG-0612 – 5.1.1(6)	The COLA will state that cranes addressed in this section are inspected, tested, and maintained in accordance with section 2-2 of ANSI B30.2, section 11.2 of ANSI B30.11, or sections 16-1.2.1 and 16-1.2.3 of ANSI B30.16 with the exception that tests and inspections may be performed prior to use for infrequently used cranes. Prior to making a heavy load lift, an inspection of the crane is made in accordance with the above applicable standards.
Training and Qualification	RG 1.206 C.III.1, 9.1.5 SRP, 9.1.5, I.3	Heavy load handling personnel qualifications, training, and control programs Compliance with general programmatic guidelines for design, operation, testing, maintenance, and inspection as specified in Section 5.1.1 of NUREG-0612 – 5.1.1(3)	The COLA will define the commitment to ANSI B30.2 for training and qualification of crane operators including the following: <ol style="list-style-type: none"> 1. Complete knowledge testing of the crane to be operated in accordance with the applicable ANSI crane standard. 2. Complete practical testing for the type crane to be operated. 3. Supervisor signatory authority on the practical operating examination. 4. Meet applicable physical requirements for crane operators as defined in the applicable crane standard.
Quality Assurance	RG 1.206 C.III.1, 9.1.5	Quality Assurance (QA) programs to monitor, implement, and ensure compliance with the heavy load handling program.	Procedures for control of heavy loads are developed in accordance with FSAR section 13.5. Procedures developed in accordance with section 13.5 are consistent with the provisions of Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)" In accordance with Part III of the QADP, other specific quality program controls will be applied to the heavy load handling program, targeted at those characteristics or critical attributes that render the equipment a significant contributor to plant safety.

**Description of Proposed ESBWR COLA Response to Heavy & Light (Refueling) Loads COL Holder Items
Preliminary Draft Material in Preparation for the June 13, 2007, DCWG Meeting**

Table 2 – Proposed Resolutions for Heavy Loads COL Holder Items: Table 1.11-1, A-36; Table 1C-1, GL 80-113, 81-07; 9.1.6-E

Issue	Regulatory Document	Criteria	Proposed Response for COLA Content
Safety Evaluations	RG 1.206 C.III.1, 9.1.5	For heavy loads outside the scope of loads described in the referenced certified design that are handled by non-single-failure-proof handling systems, provide a safety evaluation demonstrating that the consequences of potential load drops are acceptable with respect to releases of radiation through mechanical damage to fuel, maintenance of an acceptable margin to criticality, prevention of damage that could uncover fuel, and prevention of damage that alone could cause a loss of an essential safety function.	No heavy loads identified to date that are outside the scope of the certified design.
Milestone	RG 1.206, C.III.1, 13.4	COL applicants should provide schedules for implementation of operational programs	The COLA will define a milestone when the heavy loads program will be fully implemented consistent with the procedures milestone discussed in section 13.5 [which requires the development of administrative procedures prior to fuel load to allow sufficient time for plant staff familiarization and to allow NRC staff adequate time to review the procedures and to develop operator licensing examinations].

ESBWR COL Holder Items Chapter 12

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Chapter 12 COL Holder Items

COL Item	Description of COL Holder Items in DCD Rev 3	Disposition/Basis
#74 - 12.2.4.1	As discussed in Subsection 12.2.1.1.2, the COL holder will determine exact placement and duration of residence for the Cf-252 startup source and holder in the SFP.	Delete in DCD Rev 4 - Existing text in DCD Rev 3 adequate – “The source and source holder is removed from the reactor during the first refueling outage and moved to a designated location in the spent fuel pool (SFP).” Discussion with NRC PM [Marlayna Vaaler] in April 2007 on this topic. She and reviewer agreed that the exact location of the source in the SFP was not necessary just that the source would be properly stored in the SFP.
#75 - 12.2.4.2	As discussed in Subsection 12.2.2.2, the COL applicant is responsible for ensuring that offsite dose (using site-specific parameters) due to radioactive airborne effluents complies with the regulatory dose limits in 10 CFR 50, Appendix I.	Will address in COLA
#76 - 12.2.4.3	As discussed in Subsection 12.2.2.4, COL applicant is responsible for ensuring that offsite dose (using site-specific parameters) due to radioactive liquid effluents complies with the regulatory dose limits in 10 CFR 50, Appendix I.	Will address in COLA

Chapter 12 COL Holder Items

COL Item	Description of COL Holder Items in DCD Rev 3	Disposition/Basis
#77 - 12.3.7.1	Precise equipment definition and material selection are the COL holder's responsibility (Subsection 12.3.1).	Delete COL Holder item in DCD Rev 4 because the statement is unnecessary. Reference DCD section 12.3.1.2 for equipment layout and sections 5.2.3.1 and 6.1 regarding material selection.
#78 - 12.3.7.2	Airborne radiation monitoring operational considerations such as the procedures for operations and calibration of the monitors, as well as the placement of the portable monitors, are the COL holder's responsibility (Subsection 12.3.4).	In DCD Rev 4, re-write COL item to read as follows: "Airborne radiation monitoring operational considerations such as the procedures for operations and calibration of the monitors, as well as the placement of the portable monitors, will be addressed by the COL applicant in the COLA radiation protection program description." Address item in COLA by referencing sections 12.5 (radiation protection program) and 13.5 (procedures) which contain requirements to develop radiation protection procedures.
#79 - 12.3.7.3	Controlled access to "Very High Radiation Areas" is provided by the COL holder (licensee) (Subsection 12.3.1.3).	Address in COLA by referencing radiation protection program description in section 12.5. In DCD Rev 4, replace the term "Holder" with "applicant."

Referenced DCD Sections

5.2.3.1 *Material Specifications*

This subsection discusses the specifications for pressure-retaining ferritic materials, nonferrous metals and austenitic stainless steels, including weld materials, that are used for each component (e.g., vessels, piping, pumps, and valves) of the reactor coolant pressure boundary. The adequacy and suitability of the ferritic materials, stainless steels, and nonferrous metals specified for the above applications are also discussed.

Table 5.2-4 lists the principal pressure-retaining materials and the appropriate material

Radiation Field Buildup

The primary long-term source of radiation fields in most BWRs is Co^{60} , which is formed by neutron activation of Co^{59} . Corrosion products are released from corroding and wearing surfaces as soluble, colloidal, and particulate species. The formation of Co^{60} takes place after the corrosion products precipitate, adsorb, or deposit on the fuel rods. Subsequent re-entrainment in the coolant and deposition on out-of-core stainless steel surfaces leads to buildup of the activated corrosion products (such as Co^{60}) on the out-of-core surfaces. The deposition may occur either in a loosely adherent layer created by particle deposition, or in a tightly adherent corrosion layer incorporating radioisotopes during corrosion and subsequent ion exchange. Water chemistry influences all of these transport processes. The key variables are the concentration of soluble Co^{60} in the reactor water and the characteristics of surface oxides. Thus, the radiation in the

ESBWR

COL Holder Items

Chapter 11

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Meeting Objectives

- Discuss approach to deleting/combining DCD Chapter 11 COL Holder items in DCD Rev 4
- Provide an overview of the approach presented at the March '07 NRC-NEI meeting regarding:
 - The scope and content of the ODCM and PCP program descriptions
 - The level of detail of mobile waste system description
- Present a more detailed discussion regarding:
 - ODCM and PCP program descriptions to demonstrate that:
 - The program descriptions will satisfy SECY-05-0197
 - The program descriptions adequately address the COL items
 - Mobile waste system description planned for the COLA
- Obtain feedback from the NRC staff regarding the direction being taken by the ESBWR DCWG

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Deleting/Combining COL Holder Items

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Chapter 11 COL Holder Items Deleted or Combined

COL Holder Item	Description	Basis
11.4.6-4	The COL holder is responsible for developing and maintaining programs identified in the administrative controls section of the TS per the requirements of Title 10 Code of Federal Regulations Part 50.36a	Delete because the requirement is addressed in Technical Specifications
11.4.6-9	Waste will be classified as A, B, or C and meet the requirements of the waste treatment facility or repository per 10 CFR 61.55 and 61.56.	Delete in DCD Rev 4 by combining it with item 11.4.6-3

COL Item 11.4.6-3 [revised from DCD Rev 3]: The COL applicant will develop a description of the Process Control Program addressing the requirements of 10 CFR 20, Appendix G and 40 CFR 190 including waste classification as A, B, or C per 10 CFR 61.55 and 10 CFR 61.56. The COL applicant will provide a milestone for full program implementation.

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Chapter 11 COL Holder Items Deleted or Combined

COL Holder Item	Description	Basis
11.4.6-5	The COL holder is responsible for testing new and subsequent mobile systems. These tests should include provisions of Regulatory Guide 8.8 (Reference 11.4-4), as applicable.	Delete because item is redundant to item 11.4.6-1.
11.4.6-10	The COL holder is responsible to ensure that mobile systems comply with the guidance of Regulatory Guide 1.143 (Reference 11.4-3) Revision 2, November 2001.	Delete because item is redundant to item 11.4.6-1.

COL item 11.4.6-1 [revised from DCD Rev 3]: The COL applicant will ensure that mobile system structure, and component operations and testing comply with the requirements of Regulatory Guide 1.143 (Reference 11.4-3) and Regulatory Guide 8.8 (Reference 11.4-4).

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Mobile Waste Systems

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Mobile Waste Systems Review of March '07 NRC-NEI Discussion

- Mobile (site-specific) systems
 - Demonstrate compliance with RG 1.143
 - Applicable codes and standards
 - Material for pressure retaining components
 - Seismic design for building and equipment
 - Measures to prevent cross-contamination
 - Features to reduce contamination
 - Pressure testing requirements
 - Ongoing inspection and testing

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Mobile Waste Systems Review of March '07 NRC-NEI Discussion

Table 11.2-1
Equipment Codes (from Table 1, RG 1.143)

Component	Design and Construction	Materials ¹	Welding	Inspection and Testing
Pressure Vessels and Tanks (>15 psig)	ASME Code BPVC Div. 1 or Div. 2	ASME Code Section II	ASME Code Section IX	ASME Code Section VIII, Div. 1 or Div. 2
Atmospheric Tanks	API 650	ASME Code ³ Section II	ASME Code Section IX	API 650
0-15 psig Tanks	API 620	ASME Code ⁵ Section II	ASME Code Section IX	API 620
Heat Exchangers	TEMA STD. 6th Edition; ASME Code BPVC Section VIII, Div. 1 or Div. 2	ASTM B379-98 or ASME Code Section II	ASME Code Section IX	ASME Code Section VIII, Div. 1 or Div. 2
Piping and Valves	ANSI/ASME B31.3 ^{5,6}	ASME Code Section II ⁷	ASME Code Section IX	ANSI/ASME B31.3
Pumps	API 610; API 674; API 675; ASME BPVC Section VIII, Div. 1 or Div. 2	ASTM A571-84 (1997) or ASME Code Section II	ASME Code Section IX	ASME BPVC Code ² Section III, Class 3
Flexible Hoses and Hose Connections for MRWF ⁸	ANSI/ANS-40.37	ANSI/ANS-40.37	ANSI/ANS-40.37	ANSI/ANS-40.37

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Mobile Waste Systems

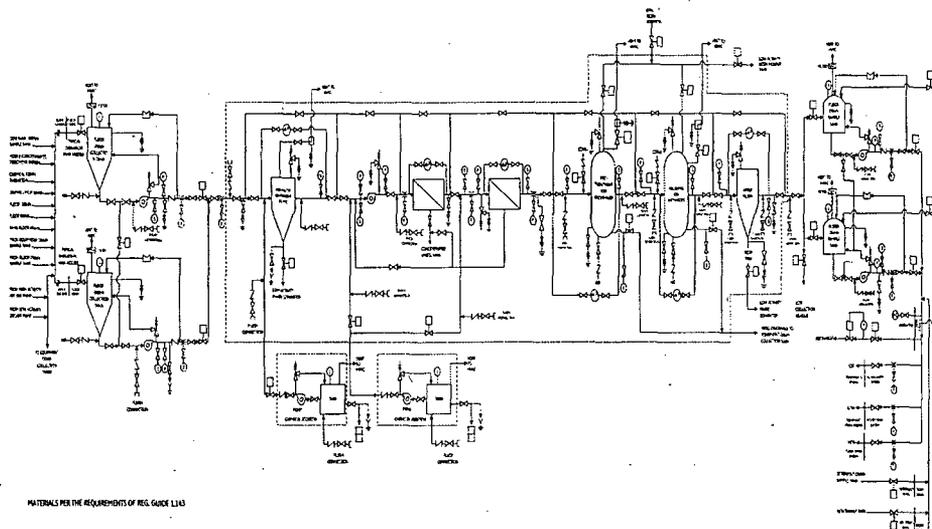
Review of March '07 NRC-NEI Discussion

- Mobile (site-specific) systems – COLA design description level-of-detail
 - Define design and operational parameters
 - System/component capacities and minimum DFs
 - Provide process flow diagrams (no P&IDs)
 - Sources of flow
 - Bypass routes to non-radioactive systems
 - Key components
 - Key instrumentation
 - System interfaces
 - Sampling points
 - Discharge paths

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Mobile Waste Systems - Example Process Flow Diagram - Preliminary Draft



MATERIALS PER THE REQUIREMENTS OF REG. GUIDE 1.143

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ODCM Program Description

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ESBWR Chapter 11 COL Holder Items - ODCM

- 11.5.7-1 – Define LLDs
- 11.5.7-2 – Develop ODCM
 - Include methodology and parameters used for calculation of offsite doses resulting from gaseous and liquid effluents
 - Address operational setpoints for the radiation monitors
 - Address programs for monitoring and controlling the release of radioactive material to the environment, which eliminates the potential for unmonitored and uncontrolled release.
 - Include planned discharge flow rates
- 11.5.7-3 - Site-specific program aspects of the process and effluent monitoring and sampling per ANSI N13.1 and Regulatory Guides 1.21 and 4.15

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ESBWR Chapter 11 COL Holder Items - ODCM (Continued)

- 11.5.7-4 - Address 10 CFR 50, Appendix I guidelines for maximally exposed offsite individual doses and population doses via liquid and gaseous effluents
- 11.5.7-5 - Sensitivities, frequencies and basis for each gaseous and liquid samples
- New – Address dose from N-16 shine [will not discuss today – in progress]

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March 07 NRC-NEI Meeting - ODCM

- Program description in COLA
- Develop complete program, including implementing procedures, by defined milestone to allow NRC staff review before actual implementation – use a License Condition as appropriate
- Implementation milestone defined in COLA FSAR Section 13.4

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March 07 NRC-NEI Meeting - ODCM (Continued)

- Program description for ODCM
 - Sampling and analysis requirements
 - Instrumentation requirements
 - Radiological environmental monitoring requirements

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March 07 NRC-NEI Meeting - ODCM (Continued)

- Examples of items not included in ODCM program description:
 - Implementing procedures and references
 - Instrumentation setpoints, manufacturers and model numbers
 - Offsite radiological environmental sampling and monitoring locations for COLA sites with no existing plant

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March 07 NRC-NEI Meeting - ODCM (Continued)

- Develop complete ODCM approximately one year prior to fuel load
- Consider incorporating new plant ODCM into existing plant ODCM (for GG and NAPS)
- Control ODCM per TS administrative requirements

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ODCM Program Description – Planned Contents

- Chapter 1 – Introduction
- Chapter 2 – Liquid Effluent Controls
- Chapter 3 – Gaseous Effluent Controls
- Chapter 4 – Radiological Environmental Monitoring Program
- Chapter 5 – Total Dose Determinations
- Chapter 6 - Potential Doses to Members of the Public Due to Their Activities Inside the Site Boundary
- Chapter 7 – Reports
- Chapter 8 - Meteorological Models
- Chapter 9 - Methods and Parameters for Calculation of Gaseous Effluent Pathway Dose Factors
- Chapter 10 - Definitions

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ODCM Program Description

- Equations and methods to be used in the ODCM are based on those presented in:
 - NUREG-1302
 - NUREG-0133
 - Regulatory Guide 1.109
 - Regulatory Guide 1.111
 - Regulatory Guide 1.113
 - Regulatory Guide 1.21
 - Regulatory Guide 4.15

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Liquid/Gaseous Effluent Controls Example of Typical Control

2.1 LIMITS OF OPERATION

The following Liquid Effluent Controls implement requirements established by the Design Control Document (DCD). Terms printed in all capital letters are defined in Chapter 10.

2.1.1 Liquid Effluent Monitoring Instrumentation Control

In accordance with Technical Specification 5.5.3, the radioactive liquid effluent monitoring instrumentation channels shown in Table 2-1 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits specified in Section 2.1.2 are not exceeded. The alarm/trip setpoints of these channels shall be determined in accordance with Section 2.3.

2.1.1.1 Applicability

This limit applies at all times.

COL 11.5.7.2 – Address programs for monitoring and controlling the release of radioactive material to the environment, which eliminates the potential for unmonitored and uncontrolled release.

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Liquid/Gaseous Effluent Controls

Example of Typical Control

2.1.2 Liquid Effluent Concentration Control

In accordance with Technical Specifications 5.5.3, the concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS shall be limited to ten times the concentrations specified in 10 CFR 20, Appendix B, Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the

TS Limits: Limitations on the concentrations of radioactive material released in liquid effluents to unrestricted areas, conforming to ten times the concentration values in Appendix B, Table 2, Column 2 to 10 CFR 20.1001-20.2402

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Liquid/Gaseous Effluent Controls

Setpoint Methodology

2.3.2 Setpoints for Radioactive Waste System Discharge Monitors

2.3.2.1 Overview of Method

LIQUID WASTE MANAGEMENT SYSTEM effluent line radioactivity monitors are intended to provide alarm and automatic termination of release prior to exceeding the limits specified in Section 2.1.2 at the point of release of the diluted effluent into the UNRESTRICTED AREA. Therefore, their alarm/trip setpoints are established to ensure compliance with the following equation (equation adapted from Addendum to Reference 1):

$$\frac{c \cdot f}{F + f} \leq TF \cdot C_{ECL}$$

where:

C_{ECL} = The Effluent Concentration Limit corresponding to the mix of radionuclides in setpoint in the effluent being considered for discharge in $\mu\text{Ci/ml}$

COI. 11.5.7-1 – Define I.E.D.s – will depend on selected instrumentation
COI. 11.5.7-2 – Setpoints – setpoint methodology will be provided in the program description but the actual setpoint will not be calculated until specific instrument is procured

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Liquid/Gaseous Effluent Controls

Setpoint Methodology

$$\frac{c \cdot f}{F + f} \leq TF \cdot C_{ECL} \quad (2.1)$$

COL 11:5.7-2: Include planned discharge flow rates

where:

C_{ECL}	=	The Effluent Concentration Limit corresponding to the mix of radionuclides in setpoint in the effluent being considered for discharge, in $\mu\text{Ci/ml}$.
c	=	The $\mu\text{Ci/ml}$ of the radioactivity monitor measuring the concentration of radioactivity in the effluent line prior to dilution and subsequent release. The setpoint represents a concentration that, if exceeded, could result in concentrations exceeding the limits of Section 2.1.2 in the UNRESTRICTED AREA.
f	=	The effluent flowrate at the location of the radioactivity monitor, in gpm
F	=	The dilution stream flowrate that can be assured prior to the release point to the UNRESTRICTED AREA in gpm . A predetermined dilution flowrate must be assured for use in the calculation of the radioactivity monitor setpoint.
TF	=	The tolerance factor selected to allow flexibility in the establishment of a practical monitor setpoint that could accommodate effluent releases at concentrations higher than the ECL values stated in 10 CFR 20, Appendix B.

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Liquid/Gaseous Effluent Controls

Example of Typical Control

→ 2.1.1.2 Actions

With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above control, immediately suspend the release of radioactive liquid effluents monitored by the affected channel, declare the channel inoperable, or change the setpoint to a conservative value.

With less than the minimum number of radioactive liquid effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 2-1. Restore the INOPERABLE instrumentation to OPERABLE status within 30 days, or if unsuccessful, explain in the next Radioactive Effluent Release Report, per Technical Specification 5.6.3 why this inoperability was not corrected in a timely manner.

This control does not affect shutdown requirements or MODE changes.

→ 2.1.1.3 Surveillance Requirements

Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL

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Liquid/Gaseous Effluent Controls

Example of Typical Control

Table 2-3. Radioactive Liquid Waste Sampling and Analysis Program

Liquid Release Type	Sampling and Analysis Requirements			
	Sampling FREQUENCY	Minimum Analysis FREQUENCY	Type of Activity Analysis	MINIMUM DETECTABLE CONCENTRATION (MDC) ($\mu\text{Ci/ml}$)
A. BATCH RELEASES				
1. Waste Monitor Tank	Prior to each Batch	Prior to each Batch	PRINCIPAL GAMMA EMITTERS	5×10^{-7}
2. Drainage of System	Prior to one Batch	Monthly	Dissolved and Entrained Gases	1×10^{-3}

COI 11.5.7-2 - Address programs for monitoring and controlling the release of radioactive material to the environment, which eliminates the potential for unmonitored and uncontrolled release.

COI 11.5.7-3 - Regulatory Guides 1.21

COI 11.5.7-5 - Sensitivities, frequencies and basis for each gaseous and liquid samples

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Liquid/Gaseous Effluent Controls

Example of Typical Control

COI 11.5.7-4 - Address 10 CFR 50, Appendix I guidelines for maximally exposed offsite individual doses and population doses via liquid and gaseous effluents

2.1.3 Liquid Effluent Dose Control

In accordance with Technical Specifications 5.5.2, the dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released to UNRESTRICTED AREAS shall be limited:

- a. During any calendar quarter to less than or equal to 0.75 mrem to the total body and to less than or equal to 2.5 mrem to any organ, and
- b. During any calendar year to less than or equal to 3 mrem to the total body and to less than or equal to 10 mrem to any organ.

2.1.3.4 Basis

This control is provided to implement the requirements of Sections II.A, III.A and IV.A of Appendix 1, 10 CFR Part 50. The limits stated in section 2.1.3 implement the guides set forth in Section II.A of Appendix 1. The ACTIONS stated in Section 2.1.3.2 provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix 1 to assure that the releases of radioactive material in liquid effluents will be kept "as low as is reasonable achievable." Also, for fresh water sites with drinking water supplies that

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Liquid/Gaseous Effluent Controls

Dose Calculations

2.4 LIQUID EFFLUENT DOSE CALCULATIONS

The following sub-sections present the methods required for liquid effluent dose calculations. Applicable site-specific pathways and parameter values for the calculation of D_i , A_{ir} , and CF_{iv} are summarized in Table 2-5.

2.4.1 Calculation of Dose

For the purpose of implementing Section 2.1.3, the dose to the maximum exposed individual due to radionuclides identified in liquid effluents released to UNRESTRICTED AREAS will be calculated as follows (equation from Reference 1, page 15):

$$D_i = \sum_r A_{ir} \sum_{j=1}^m \Delta t_j \cdot C_{ij} \cdot F_i$$

COL Item 11.5.7-2: Methodology and parameters used for calculation of offsite doses resulting from gaseous and liquid effluents; Operational setpoints for the radiation monitors

Liquid/Gaseous Effluent Controls

Example of Typical Control

Table 3-1. Radioactive Gaseous Effluent Monitoring Instrumentation

Instrument	OPERABILITY Requirements		
	Minimum Channels Operable	Applicability	ACTION
1. GASEOUS RADWASTE SYSTEM			
a. Gaseous Radwaste Discharge (WGS-JE-RE017)	1	During releases	45
b. Effluent System Flowrate Monitor (Later)	1	During releases	46
2. Turbine Building			

Liquid/Gaseous Effluent Controls

Example of Typical Control

3.1.4 Control on Gaseous Effluent Dose to a Member of the Public

In accordance with Technical Specifications 5.5.2, the dose to a MEMBER OF THE PUBLIC from I-131, I-133, H-3, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released to areas at and beyond the SITE BOUNDARY shall be limited to the following:

- a. During any calendar quarter: Less than or equal to 5 mrem to total body, and
- b. During any calendar year: Less than or equal to 15 mrem to any organ.
- c. A Dose rate \leq 1500 mrem per year to any organ.

This limit applies at all times.

3.1.4.2 Actions

With the calculated dose from the release of I-131, I-133, tritium, or radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluents exceeding any of the above limits, prepare and submit to the Nuclear Regulatory Commission within 30 days a special report which

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Liquid/Gaseous Effluent Controls

Example Dose Factors

Table 3-5. Dose Factors for Exposure To A Semi-Infinite Cloud of Noble Gases

Nuclide	γ - Body (K) (mrem/y) per ($\mu\text{Ci}/\text{m}^3$)	β - Skin (L) (mrem/y) per ($\mu\text{Ci}/\text{m}^3$)	γ - Air (M) (mrad/y) per ($\mu\text{Ci}/\text{m}^3$)	β - Air (N) (mrad/y) per ($\mu\text{Ci}/\text{m}^3$)
Kr-83m	7.56 E-02	0.00 E+00	1.93 E+01	2.88 E+02
Kr-85m	1.17 E+03	1.46 E+03	1.23 E+03	1.97 E+03
Kr-85	1.61 E+01	1.34 E+03	1.72 E+01	1.95 E+02
Kr-87	5.92 E+03	9.73 E+03	6.17 E+03	1.03 E+04
Kr-88	1.47 E+04	2.37 E+03	1.52 E+04	2.93 E+03
Kr-89	1.66 E+04	1.01 E+04	1.73 E+04	1.06 E+04
Kr-90	1.56 E+04	7.29 E+03	1.63 E+04	7.83 E+03
Xe-131m	9.15 E+01	4.76 E+02	1.56 E+02	1.11 E+03
Xe-133m	2.51 E+02	9.94 E+02	3.27 E+02	1.48 E+03
Xe-133	2.94 E+02	3.06 E+02	3.53 E+02	1.05 E+03
Xe-135m	3.12 E+03	7.11 E+02	3.36 E+03	7.39 E+02
Xe-135	1.81 E+03	1.86 E+03	1.92 E+03	2.46 E+03
Xe-137	1.42 E+03	1.22 E+04	1.51 E+03	1.27 E+04
Xe-138	8.83 E+03	4.13 E+03	9.21 E+03	4.75 E+03
Ar-41	8.84 E+03	2.69 E+03	9.30 E+03	3.28 E+03

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Radiological Effluents Monitoring Program (REMP)

Example of Typical Control

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

4.1 LIMITS OF OPERATION

4.1.1 Radiological Environmental Monitoring

The Radiological Environmental Monitoring Program (REMP) shall be conducted as specified in Table 4-1.

4.1.1.1 Applicability

This control applies at all times.

COL 11.5.7.2 – Address programs for monitoring and controlling the release of radioactive material to the environment, which eliminates the potential for unmonitored and uncontrolled release.

4.1.1.2 Actions

4.1.1.2.1 With the REMP not being conducted as specified in Table 4-1, submit to the Nuclear Regulatory Commission (NRC), in the Annual Radiological Environmental Operating

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Radiological Effluents Monitoring Program (REMP)

Example of Typical Requirements

Table 4-1. Radiological Environmental Monitoring Program

Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations (Note 1)	Sampling and Collection Frequency	Type and Frequency of Analysis
3. WATERBORNE			
Surface (Note 5)	One sample upstream. One sample downstream.	Composite sample over 1-month period (Note 6).	Gamma isotopic analysis monthly; composite for tritium analysis quarterly (Note 4).
Drinking	Two samples at each of the one to three nearest water treatment plants that could be affected by discharges from the facility. Two samples at a control location.	Composite sample of river water near intake at each water treatment plant over a 2-week period when I-131 analysis is performed, monthly composite otherwise; and grab sample of finished water at each water treatment plant	I-131 analysis on each sample when the dose calculated for the consumption of the water is greater than 1 mrem per year. Composite for gross beta and gamma isotopic analysis monthly. Composite for tritium

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Radiological Effluents Monitoring Program (REMP)

Example of Typical Requirements - Minimum Detectable Concentrations

Table 4-3. Values for the Minimum Detectable Concentration (MDC)

Analysis	Minimum Detectable Concentration (MDC) (Note 1)					
	Water (pCi/l)	Airborne Particulate or Gases (pCi/m ³)	Fish (pCi/kg, wet)	Milk (pCi/l)	Grassy or Leafy Vegetation (pCi/kg, wet)	Sediment (pCi/kg, dry)
Gross Beta	4.00 E+00	1.00 E-02				
H-3	2.00 E+03 (Note 2)					
Mn-54	1.50 E+01		1.30 E+02			
Fe-59	3.00 E+01		2.60 E+02			
Co-58	1.50 E+01		1.30 E+02			
Co-60	1.50 E+01		1.30 E+02			
Zn-65	3.00 E+01		2.60 E+02			
Zr-95	3.00 E+01					
Nh-95	1.50 E+01					

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Radiological Effluents Monitoring Program (REMP)

Example of Typical Requirement - Reference to RG 4.15

4.1.3 Interlaboratory Comparison Program

Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program that satisfies the requirements of Regulatory Guide 4.15 (Reference 7).

4.1.3.1 Applicability

This control applies at all times.

COJ 11-5.7.3 - Regulatory Guide 4.15

4.1.3.2 Actions

With analyses not being performed as required by Section 4.1.3, report the corrective actions taken to prevent a recurrence in the Annual Radiological Environmental Operating Report.

This control does not affect shutdown requirements or MODE changes.

4.1.3.3 Surveillance Requirements

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ODCM - Other Information/Requirements

- Total dose calculations to support Technical Specifications
- Total dose to public from activities inside the site boundary
- Required reports, e.g. Annual Radiological Environmental Operating Report

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ODCM - Conclusions

- COL Holder items will be adequately addressed
- The ODCM program description will “fully describe” the program per SECY-05-0197
- Milestone for full program implementation is timely enough to allow NRC staff review prior to fuel load

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Questions ?

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PCP Program Description

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Process Control Program (PCP)

- ESBWR DCD COL Holder Items:
 - 11.4.6-3 - Have a Process Control Program that will include classifying waste as A, B, or C per 10 CFR 61.55
 - 11.4.6-4 - Develop and maintain programs identified in the administrative controls section of the Technical Specifications
 - 11.4.6-9 - Waste will be classified as A, B, or C and meet the requirements of the waste treatment facility or repository per 10 CFR 61.55 and 61.56
 - 11.4.6-11 - Responsible for the mobile transport of radwaste, including compliance with 10 CFR 20 Appendix G and 40 CFR 190

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March 07 NRC-NEI Meeting - PCP

- Program description for the Process Control Program (PCP)
 - 10 CFR §61.55 and §61.56
 - 10 CFR §20.2006
 - 10 CFR §20, Appendix G
 - RG 1.206
 - SRP 11.4
 - Existing plant PCPs, when available

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Process Control Program (PCP)

- The Process Control Program (PCP) describes the administrative and operational controls used for the solidification of liquid or wet radioactive wastes and the dewatering of wet radioactive wastes, and the packaging of dry waste. Its purpose is to assure that the final disposal waste product meets applicable Federal, State and Disposal Site waste form requirements for burial at a 10CFR61 licensed Low Level Waste (LLW) disposal site.

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PCP – Areas Addressed

- **Dry Waste Management**
- **Liquid and Wet Radioactive Waste Disposal**
- **Mixed Waste Disposal**
- **Radioactive Waste Oil Disposal**
- **Radioactive Waste Interim Storage**

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PCP – Defines Requirements

- Requirements for:
 - Boundary Conditions/Acceptance Criteria
 - Dewatering
 - Dry Waste
 - Free Standing Liquid
 - High Integrity Container
 - Liquid and Mixed Radioactive Waste
 - Solidification/Stabilization

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PCP - Administration of the PCP and Support Documents

- PCP Administration
- PCP Revision Reports to the NRC
- PCP Audit Process
- PCP Revision Record Retention Requirements
- Periodic Cross-Checks & Comparisons
- PCP Implementing Procedure Requirements

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PCP – Approval Process for QA Approved Suppliers

- **Technical Review and Approval**
 - Before vendors can provide PCP related services, they are evaluated against the plant PCP and approved by designated management
- **QA Supplier Evaluation**
 - Upon meeting the requirements of the technical review, a supplier is evaluated for incorporation into the QA Supplier program in accordance with the requirements of the plant Quality Assurance Program
- **QA Approved Supplier Program**
 - All vendors approved to provide PCP related services are included in the QA Approved Suppliers List

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PCP – Solidification Process Description

- **Waste Characterization**
- **Mixed Waste Characterization**
- **Minimum Solidification Acceptance Criteria**
- **Representative Waste Sample**
- **Bench Scale Test Solidification**
- **Full Scale Solidification**
- **Product Verification of Full Scale Solidification**

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PCP – Dewatering Process Description

- **Dewatering Mechanical Filters (e.g., cartridge, bag, membrane)**
- **Dewatering Slurries**
- **Dewatering Process Requirements**
- **Product Verification**

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PCP

- **What will not be in the COLA:**
 - **Specific procedures or references to specific procedures**
 - **A reference to a specific vendor topical report**
 - **Disposal site waste acceptance criteria**

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PCP - Conclusions

- COL Holder Items will be adequately addressed
- The PCP program description will “fully describe” the program per SECY-05-0197
- Milestone for full program implementation is timely enough to allow NRC staff review prior to fuel load

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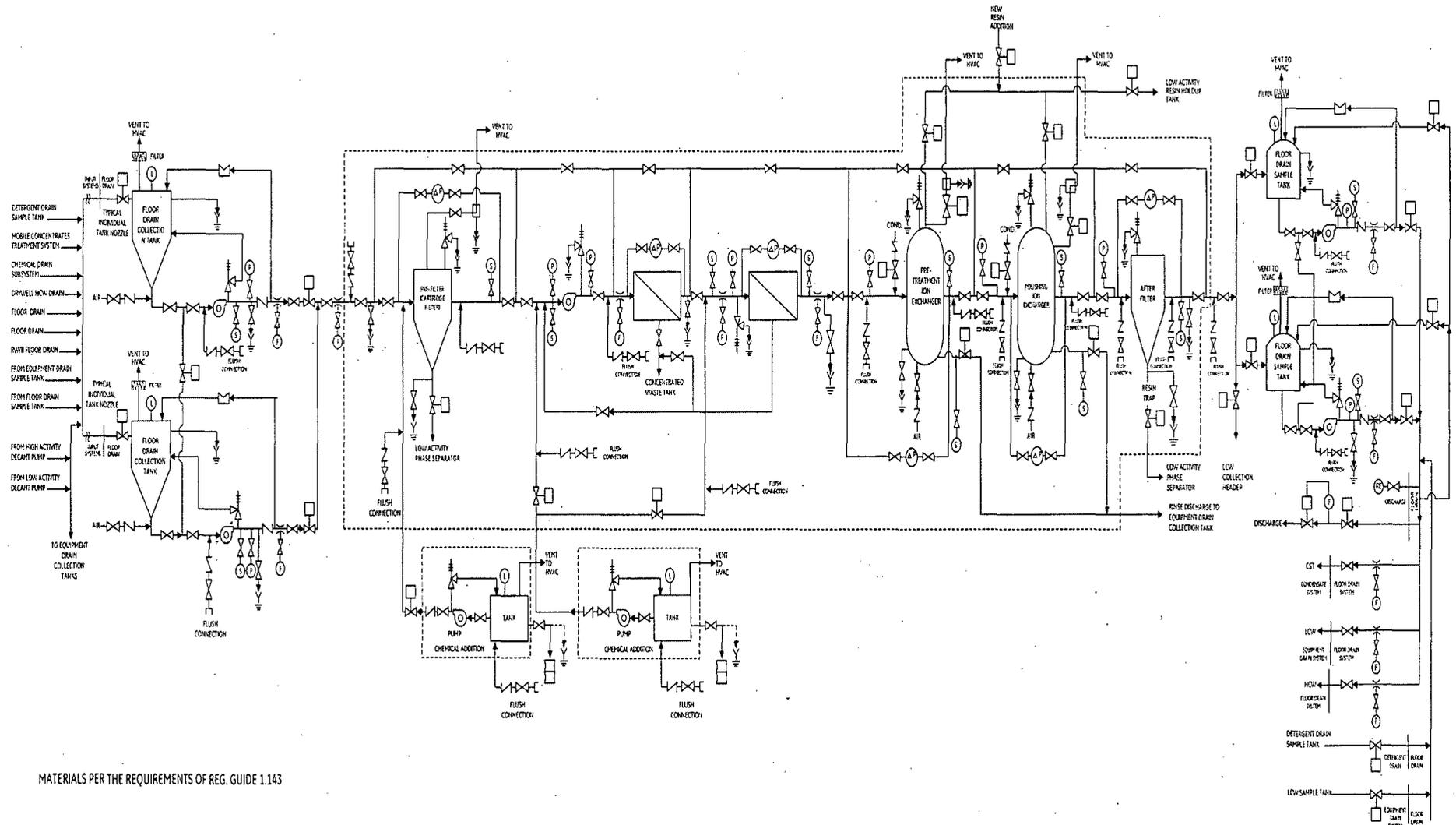
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Questions ?

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Mobile Waste Systems - Example Process Flow Diagram - Preliminary Draft



MATERIALS PER THE REQUIREMENTS OF REG. GUIDE 1.143

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Summary of NRC Policy and Guidance on COL Information Items That Cannot be Resolved before Issuance of a COL

- I. **SECY-05-0197, Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Test, Analyses, and Acceptance Criteria, Oct. 28, 2005.**
 - a. For operational programs, an ITAAC should not be necessary if the program and its implementation are fully described in the application and found acceptable by the NRC at the COL stage. The burden is on the applicant to provide the necessary and sufficient programmatic information for approval of the COL without ITAACs.
 - b. The staff has concluded that a COL applicant can fully describe all operational programs and their implementation, with the exception of EP. However, under certain circumstances, a particular application may need to be addressed with an ITAAC. COL applicants are responsible for identifying such circumstances.
 - c. Fully described should be understood to mean that the program is clearly and sufficiently described in terms of the scope and level of detail to allow reasonable assurance finding of acceptability. Required programs should always be described at a functional level and at an increased level of detail where implementation choices could materially and negatively affect program effectiveness and acceptability.
 - d. The implementation milestones of all operational programs should be fully described in the FSAR, and identify those that need to be implemented before fuel is brought onto the site.
 - e. License conditions for implementing operational programs should include a schedule to facilitate NRC inspections, major or key milestones (sources on site, fuel onsite, fuel load, startup, first rad waste shipment, etc.), and periodic updates of the implementation schedule after issuance of the COL.
- II. **Regulatory Guide 1.206 (Draft) - C.III.4.3 Combined License Information Items That Cannot Be Resolved Before the Issuance of a License**
 - a. For each COL action or information item that is not resolved, whether it is derived from the design certification or an ESP, the COL application should justify why that item is not resolved.
 - b. The COL applicant should identify, in Chapter 1 of the FSAR portion of the COL application, the COL information items that cannot be resolved completely before the COL is issued.
 - c. The COL applicant should provide sufficient information on these items to support the NRC licensing decision and also propose a method for ensuring the final closure of the item following issuance of the COL.

- d. The following four situations could support issuance of the COL before the complete resolution of a COL information item:
- (1) The COL information is found to be completely redundant to an inspection, test, analysis, and acceptance criterion (ITAAC) from the referenced certified design that will be included in the COL.
 - (2) The COL applicant proposes a new ITAAC to resolve the COL information item.
 - (3) The COL applicant proposes a condition to the license or identifies an existing license condition for COL information items (e.g., the operational programs discussed in Section C.IV.4). The license condition should include implementation schedules to allow the coordination of activities with the NRC construction inspection program.
 - (4) The COL applicant describes in its application (e.g., within the appropriate section of the FSAR) the proposed approach to addressing a COL information item in sufficient detail to support the NRC licensing finding and includes the requirements for updating the affected document (e.g., the FSAR update process) or otherwise informing the NRC staff of the final disposition of the COL information item.
- e. The NRC recommends that COL applicants carefully review COL information items that cannot be resolved completely until after the issuance of a COL. The COL applicant should consider approaches, such as those listed above, to ensure that all COL information items can be resolved sufficiently to support issuance of the COL.
- f. For COL information items that are not resolved prior to issuance of the license, closure either through ITAACs or another approach (i.e., license conditions) would be subject to the NRC's construction inspection program.