November 8, 2007

MEMORANDUM TO: Michael Gartman, Acting Branch Chief
ESBWR/ABWR Projects Branch 2
Division of New Reactor Licensing
Office of New Reactors

FROM: Hossein Hamzehee, Chief **R/A**
PRA Licensing, Operations Support & Maintenance Branch 2
Division of Safety Systems and Risk Assessment
Office of New Reactors

SUBJECT: ACCEPTANCE REVIEW RESULTS FOR THE SOUTH TEXAS PROJECT COL APPLICATION (Project No. 0749)

Probabilistic Risk Assessment (PRA)Licensing, Operations Support & Maintenance Branch 2 (SPLB) has completed its acceptance review of the South Texas Project Units 3 and 4 Combined License application (COLA) submitted by STP Nuclear Operating Company (STPNOC). This review covered the following COLA Final Safety Analysis Report (FSAR) sections for which SPLB has primary/secondary review responsibilities and, in addition, applicable interface documentation referenced in the FSAR:

- FSAR Sections 19, 17.3, 17.4S, 17.6S
- Reference documentation
  - Advanced Boiling Water Reactor (ABWR) Design Control Document (DCD) Tier 1/2, Revision 4.0, Sections 19, 17.3

Completeness and Sufficiency

Based on this review, it is concluded that the application contains the information required by regulations. However, there are numerous technical adequacy issues that are identified in Enclosure 1.

During a teleconference discussion with the applicant, the applicant indicated that the plant-specific PRA is available for staff's review and audit. Therefore, SPLB concludes that the technical issues identified in Enclosure 1 can be resolved through the RAI process during the review of the STPNOC plant-specific PRA.

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Schedule

The estimated effort for the detailed technical review of the STP COLA SRP Sections 19, 17.3, 17.4S, 17.6S are generally consistent with the current pre-baseline EPM model, provided that the complete plant specific PRA (e.g., codes) is available for SPLB review.

Review Dependencies

N/A

Enclosure:
1. Table 1, "Safety Analysis Report Acceptance Review Results for NRG STP 3 & 4 ABWR COLA"

Schedule

The estimated effort for the detailed technical review of the STP COLA SRP Sections 19, 17.3, 17.4S, 17.6S are generally consistent with the current pre-baseline EPM model, provided that the complete plant specific PRA (e.g., codes) is available for SPLB review.

Review Dependencies

N/A

Enclosure:
1. Table 1, "Safety Analysis Report Acceptance Review Results for NRG STP 3 & 4 ABWR COLA"

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Table 1 – Safety Analysis Report Acceptance Review Results for NRG STP 3&4 ABWR COLA

FSER Chapter: 19	**Technical Branch:** SPLB (Primary)	**Technical Reviewer:** SPLB Staff									
Branch Chief: Hossein Hamzehee	**SRP Chapter:** 19,17.4,17.6	**Date:** 11/6/2007									
		Completeness and Technical Adequacy Which Form Basis for Acceptability for Docketing					**Changes to Planning Assumptions for Baseline Review Schedule**			**Review Dependencies Among Concurrent Reviews**	
1. Review Area/Topic		**2. Does COL section address the items required by regulation (refer to RG 1.206, Section C.IV.1)?**	**3. Is COL section technically sufficient for this review area/topic?**	**4. Can the technical deficiency be resolved through the RAI process?**	**5. If no, for either completeness or technical adequacy, identify deficiency (ies). This information will be needed for the technical review.**	**6. Is the identified technical deficiency related to a risk-significant SSC?**	**7. Are the pre-baseline review schedule and estimated staff-hours appropriate?**	**8. For each no, identify the change (or basis for change).**	**9. Identify the total review time in staff-hours.**	**10. Can the review of the area/topic be completed without the completion of a concurrent review?**	**11. For each no, identify which application (DCD or COLA) and section.**
Relevant Regulatory Requirements – RG 1.206 C.IV.1											
10 CFR 52.79(a)(18)	If the applicant seeks to use risk-informed treatment of SSCs in accordance with 10 CFR 50.69, and if so, contains the information required by 10 CFR 50.69(b)(2).	**N/A**									

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10 CFR 52.79(a)(38)	For LWR designs, a description and analysis of design features for the prevention and mitigation of severe accidents (core-melt accidents), e.g., challenges to containment integrity caused by core-concrete interaction, steam explosion, high-pressure core melt ejection, hydrogen combustion, and containment bypass.	Y	Y	Y		N/A	Y			Y	
10 CFR 52.79(a)(46)	A description of the plant-specific PRA and its results.	**(SEE DETAILED REVIEW GUIDANCE BELOW)**									
10 CFR 52.79(d)(1)	In addition, the plant-specific PRA information must use the PRA information for the design approval and must be updated to account for site-specific design information and any design changes or departures.	Y[1]	Y	Y		N/A	Y			Y	
10 CFR 50.34(f)(1)(i) - additional TMI related requirements	Perform a plant/site-specific PRA, the aim of which is to seek such improvements in the reliability of core and containment heat removal systems as are significant and practical and do not impact excessively on the plant.	Y	Y	Y		N/A	Y			Y	
10 CFR 50.34(f)(1)(ii)(A) - additional TMI related requirements	A simplified AFWS reliability analysis using event-tree and fault-tree logic techniques.	Y	Y	Y		N/A	Y			Y	
10 CFR 50.34(f)(1)(iv) - additional TMI related requirements	Perform an analysis of the probability of a small-break LOCA caused by a stuck-open power-operated relief valve (PORV). If this probability is a significant contributor to the probability of small-break LOCAs from all causes, provide a description and evaluation of the effect on small-break LOCA probability of an automatic PORV isolation system that would operate when the RCS pressure falls after the PORV has opened. (PWRs only)	N/A									

10 CFR 50.34(f)(1)(vii) - additional TMI related requirements		Perform feasibility and risk assessment study to determine the optimum automatic depressurization system (ADS) design modifications that would eliminate the need for manual activation to ensure adequate core cooling. (BWRs only)	Y	Y	Y		N/A	Y			Y	
COL Items (See App. A: 19.3 Below)												
COL Application Guidance -- RG 1.206 C.I.19 Appendix A												
App. A: 19.0	**COL: 19.X**	**Probabilistic Risk Assessment and Severe Accident Evaluation**										
		Describe the purpose and objectives of the plant-specific PRA and severe accident evaluations.	Y	Y	Y		N/A	Y			Y	
		Address the requirements in 10 CFR Part 52 and 10 CFR Part 50, as well as the related Commission policies and positions.	Y	Y	Y		N/A	Y			Y	
		Address the objectives identified in Section C.I.19.2 of this guide.	Y	Y	Y		N/A	Y			Y	
		Identify the structure of Chapter 19.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1		**Probabilistic Risk Assessment**										
App. A: 19.1.1		**Uses and Applications of the PRA**										
App. A: 19.1.1.1		**Design Phase**										
		Describe the use of the PRA in the design phase.	Y	Y	Y		N/A	Y			Y	
		Include FSAR cross-references to specific program descriptions, as appropriate.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.1.2		**COL Application Phase**										
App. A: 19.1.1.2.1	**COL: 19.X**	**Use of PRA in Support of Licensee Programs**										
		Describe the use of the PRA in the COL application phase, and specifically, its use in support of other licensee programs.	Y	Y	Y		N/A	Y			Y	

		Include FSAR cross-references to specific program descriptions, as appropriate.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.1.2.2	COL: 19.X	**Risk-Informed Applications**										
		Identify and describe specific risk-informed applications being implemented during the COL application phase.	N/A									
		Include FSAR cross-references to specific program descriptions as appropriate.	N/A									
App. A: 19.1.1.3		**Construction Phase (See FSAR 17.4 DRAP)**										
App. A: 19.1.1.3.1	COL: 19.X	**Use of PRA in Support of Licensee Programs**										
		Describe the use of the PRA in the construction phase.	Y	Y	Y		N/A	Y			Y	
		Include FSAR cross-references to specific program descriptions, as appropriate.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.1.3.2	COL: 19.X	**Risk-Informed Applications**										
		Identify and describe specific risk-informed applications that will be implemented during the construction phase.	N/A									
		Include FSAR cross-references to specific program descriptions as appropriate.	N/A									
App. A: 19.1.1.4		**Operational Phase (See FSAR 17.6, Maintenance Rule)**										
App. A: 19.1.1.4.1	COL: 19.X	**Use of PRA in Support of Licensee Programs**										
		Describe the use of the PRA during plant operations to support of other licensee programs.	Y	Y	Y		N/A	Y			Y	
		Include FSAR cross-references to specific program descriptions, as appropriate.	Y	Y	Y		N/A	Y			Y	

App. A: 19.1.1.4.2	COL: 19.X	**Risk-Informed Applications**										
		Identify and describe specific risk-informed applications that have been implemented during the operational phase.	N/A									
		Include FSAR cross-references to specific program descriptions, as appropriate.	N/A									
App. A: 19.1.2		**Quality of PRA**										
App. A: 19.1.2.1	COL: 19.X	**PRA Scope**										
		Describe the scope of the PRA as discussed in Section C.I.19.3.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.2.2	COL: 19.X	**PRA Level of Detail**										
		Characterize the PRA's level of detail as discussed in Section C.I.19.4.	Y(1)	Y	Y		N/A	Y			Y	
App. A: 19.1.2.3	COL: 19.X	**PRA Technical Adequacy**										
		Describe the technical adequacy of the PRA as discussed in Section C.I.19.5.	Y(1)	Y	Y		N/A	Y			Y	
App. A: 19.1.2.4	COL: 19.X	**PRA Maintenance and Upgrade**										
		Describe the PRA maintenance and upgrading program as discussed in Section C.I.19.7.	Y(2)	Y	Y		N/A	Y			Y	
App. A: 19.1.3		**Special Design/Operational Features**										
App. A: 19.1.3.1	COL: 19.X	**Design/Operational Features for Preventing Core Damage**										
		Describe the key preventive features that are intended to minimize initiation of plant transients, arrest the progression of plant transients once they start, and prevent severe accidents.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.3.2	COL: 19.X	**Design/Operational Features for Mitigating the Consequences of Core Damage and Preventing Releases**										

		Describe the key mitigative features that are intended to arrest progression of the core damage event and maintain the integrity of the reactor vessel and containment pressure boundary.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.3.3	COL: 19.X	**Design/Operational Features for Mitigating the Consequences of Releases from Containment**										
		Describe the mitigating features that are intended to terminate releases from containment and minimize offsite doses/consequences.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.3.4	COL: 19.X	**Uses of the PRA in the Design Process**										
		Identify features and requirements introduced to reduce or eliminate the known weaknesses/vulnerabilities in current reactor designs.	Y	Y	Y		N/A	Y			Y	
		Indicate the effect of new design features and operational strategies on plant risk.	Y	Y	Y		N/A	Y			Y	
		Identify PRA-based insights and assumptions used to develop design requirements.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.4		**Safety Insights from the Internal Events PRA for Operations at Power**										
App. A: 19.1.4.1		**Level 1 Internal Events PRA for Operations at Power** (Describe the Level 1 internal events PRA for operations at power, including its results)										
App. A: 19.1.4.1.1	COL: 19.X	**Description of the Level I PRA for Operations at Power**										
		Describe the methodology used to develop the Level 1 PRA model.	Y	Y	Y		N/A	Y			Y	
		List the internal initiating events (including internal floods) that are addressed in the PRA.	Y	N	Y	**It is unclear whether a site-specific Internal Flooding analysis is completed and flooding analysis of RSW pump house is not completed per Commitment 19.9-10, #6.**	N/A	Y			Y	

		List the success criteria used to delineate accident sequences, discuss how they were determined, and identify any T-H codes used.	Y	Y	Y		N/A	Y			Y	
		Summarize the accident sequences modeled in the PRA.	Y	Y	Y		N/A	Y			Y	
		List the plant systems and associated functions that are included in the PRA model, and identify their interdependencies.	Y[3]	Y	Y		N/A	Y			Y	
		Identify the source of all numerical data, especially for numerical data that is based on expert judgment or expert elicitation.	Y	Y	Y		N/A	Y			Y	
		Identify the PRA software platform used to construct the model.	Y	Y	Y		N/A	Y			Y	
		State the truncation frequency used to solve the PRA model.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.4.1.2	**COL: 19.X**	**Results from the Level I PRA for Operations at Power**										
		State the mean core-damage frequency.	Y[4]	Y	Y		N/A	Y			Y	
		Describe the significant core damage sequences, and provide their mean annual occurrence frequencies.	Y[4]	Y	Y		N/A	Y			Y	
		Identify the significant internal initiating events, and provide their percent contributions to the total core-damage frequency.	Y[4]	Y	Y		N/A	Y			Y	
		Identify the significant functions, SSCs, and operator actions, and provide their risk achievement worths and Fussell-Vesely importance measures.	Y[4,5]	Y	Y		N/A	Y			Y	
		Identify the PRA assumptions and PRA-based insights.	Y	Y	Y		N/A	Y			Y	
		Discuss the results and insights from importance, sensitivity, and uncertainty analyses.	Y	Y	Y		N/A	Y			Y	

App. A: 19.1.4.2		**Level 2 Internal Events PRA for Operations at Power** (Describe the Level 2 internal events PRA for operations at power, including its results)										
App. A: 19.1.4.2.1	**COL: 19.X**	**Description of the Level 2 PRA for Operations at Power**										
		Discuss the interface with the core damage evaluation.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		Describe the severe accident physical processes/phenomena and modeling.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		List the success criteria used to delineate accident sequences, discuss how they were determined, and identify any T-H codes used.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		Define the accident classes/release categories.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		Characterize the containment ultimate pressure capacity, and explain how it was determined, identify any computer codes used.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		List the plant systems and associated functions that are included in the Level 2 model and identify their interdependencies.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
App. A: 19.1.4.2.2	**COL: 19.X**	**Results from the Level 2 PRA for Operations at Power**										
		State the mean large release frequency and mean conditional containment failure probability.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		Describe the significant large release sequences, and provide their mean annual occurrence frequencies.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		Identify the significant internal initiating events, and provide their percent contributions to the total large release frequency.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		Identify the significant functions, SSCs, and operator actions, and provide their RAWs and Fussell-Vesely importance measures.	**N**	**N**	**Y**	**RAW and FV are not provided, but they are not essential for Level 2 PRA**	**N/A**	**Y**			**Y**	
		Characterize the containment performance.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	

		Identify the PRA assumptions and PRA-based insights.	Y	Y	Y		N/A	Y			Y	
		Discuss the results and insights from importance, sensitivity, and uncertainty analyses.	N	N	Y	**Referenced document (SSAR 19.D5) does not provide the information. However, it is provided in the NRC Staff's SER for the ABWR (NUREG-1503, Section 19.1.3.5)**	N/A	Y			Y	
App. A: 19.1.4.3		**Level 3 Internal Events PRA for Operations at Power** (Describe the Level 3 internal events PRA for operations at power, including its results)										
App. A: 19.1.4.3.1	**COL: 19.X**	**Description of the Level 3 PRA for Operations at Power**										
		Discuss the interface with the containment analyses.	Y	Y	Y		N/A	Y			Y	
		Explain how the fission product source terms were developed, and identify any computer codes used.	Y	Y	Y		N/A	Y			Y	
		Describe the dose consequence modeling, including evacuation considerations, and identify any computer codes used.	Y	Y	Y		N/A	Y			Y	
		Describe how inputs to the calculation of offsite consequences were developed.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.4.3.2	**COL: 19.X**	**Results from the Level 3 PRA for Operations at Power**										
		State the mean prompt fatality risk and the mean latent cancer fatality risk.	N	N	Y	**The wrong reference is cited in the application. Table 19E.3.7 and Figure 19E.3-1 of the SSAR are for a generic site. The requisite information is provided, however, in Table 7.2-1 of the STP Environmental Report.**	N/A	Y			Y	
		Describe significant offsite consequence sequences, and provide their mean annual occurrence frequencies.	N	N	Y		N/A	Y			Y	

		Identify significant functions, SSCs, and operator actions, and provide their RAWs and Fussell-Vesely importance measures.	**N/A**	**N /A**		**This is optional information and will not be provided by STP.**						
		Identify the PRA assumptions and PRA-based insights.	**N**	**N**	**Y**	**The referenced documentation does not provide the required information.**	**N/A**	**Y**			**Y**	
		Discuss the results and insights from importance, sensitivity, and uncertainty analyses.	**N /A**	**N /A**		**This is optional information and will not be provided by STP.**						
App. A: 19.1.5		**Safety Insights from the External Events PRA for Operations at Power**										
App. A: 19.1.5.1		**Seismic Risk Evaluation** (Describe the seismic risk evaluation for operations at power, including its results)										
App. A: 19.1.5.1.1	**COL: 19.X**	**Description of the Seismic Risk Evaluation**										
		Describe the seismic analysis methodology and approach, including any screening and bounding analyses.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		Describe the site-specific seismic hazards analysis, and identify the source(s) of information used.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		Describe the SSC fragility analysis, including the use of information about similar components and information developed from expert opinion or expert elicitation.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		Describe the seismic risk accident sequence and system modeling, and identify any computer codes used.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
App. A: 19.1.5.1.2	**COL: 19.X**	**Results from the Seismic Risk Evaluation**										
		State the mean core-damage frequency, large release frequency, conditional containment failure probability due to seismic events.	**N/A**[6]									

		Describe the significant core-damage, large release, and offsite consequence (optional) sequences, and provide their mean annual occurrence frequencies.	N/A[6]									
		Identify the significant functions, SSCs, and operator-actions, and provide their risk achievement worths and Fussell-Vesely importance measures.	N/A[6]									
		Identify the PRA assumptions and PRA-based insights.	N/A[6]									
		Discuss the results and insights from importance, sensitivity, and uncertainty analyses.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.5.2		**Internal Fires Risk Evaluation** (Describe the internal fire risk evaluation for operations at power, including its results)										
App. A: 19.1.5.2.1	COL: 19.X	**Description of the Internal Fire Risk Evaluation**										
		Describe the internal fire analysis methodology and approach, including the use of any screening or bounding analyses.	Y	Y	Y		N/A	Y			Y	
		Explain how the fire initiation frequencies were estimated.	Y	Y	Y		N/A	Y			Y	
		Describe the propagation of fires, and identify any computer codes used.	Y	Y	Y		N/A	Y			Y	
		Describe the fire damage modeling, and identify the specific fire-induced failure modes considered in the evaluation.	Y	Y	Y		N/A	Y			Y	
		Describe the plant response analysis and modeling.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.5.2.2	COL: 19.X	**Results from the Internal Fire Risk Evaluation**										
		State the mean core-damage frequency, large release frequency, and conditional containment failure probability due to internal fire events.	Y	Y	Y		N/A	Y			Y	

		Describe the significant core-damage, large release, and offsite consequence (optional) sequences, and provide their mean annual occurrence frequencies.	Y	Y	Y		N/A	Y			Y	
		Identify the significant functions, SSCs, and operator actions, and provide their risk achievement worths and Fussell-Vesely importance measures.	Y	Y	Y		N/A	Y			Y	
		Identify the PRA assumptions and PRA-based insights.	Y	Y	Y		N/A	Y			Y	
		Discuss the results and insights from importance, sensitivity, and uncertainty analyses.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.5.3		Other External Event (External Flood)	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.5.4		Other External Event (Tornado Strikes)	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.6		**Safety Insights from the PRA for Other Modes of Operation**										
App. A: 19.1.6.1	**COL: 19.X**	**Description of the Low-Power and Shutdown Operations PRA**										
		Identify and describe the other (non-full-power) modes of operation addressed in the risk evaluation.	Y	Y	Y		N/A	Y			Y	
		If the evaluation of some modes is incorporated into the evaluations of other modes, describe the methods used to conduct the grouping and bounding analyses.	Y	Y	Y		N/A	Y			Y	
		Describe the methodology used to develop the low-power and shutdown PRA models.	N	N	Y	**PRA is available for review/only loss of operating train of RHR quantified**	N/A	Y			Y	
		List the initiating events (internal and external) that are addressed in the PRA.	N	N	Y	**PRA is available for review/only loss of operating train of RHR quantified**	N/A	Y			Y	

		List the success criteria used to delineate accident sequences, discuss how they were determined, and identify any T-H codes used.	N	N	Y	PRA is available for review/only loss of operating train of RHR quantified	N/A	Y			Y	
		Summarize the accident sequences modeled in the PRA.	N	N	Y	PRA is available for review/only loss of operating train of RHR quantified	N/A	Y			Y	
		List the plant systems and associated functions that are included in the PRA model.	N	N	Y	PRA is available for review/only loss of operating train of RHR quantified	N/A	Y			Y	
		Identify the source of all numerical data, especially for numerical data that is based on expert judgment or expert elicitation.	N	N	Y	PRA is available for review/only loss of operating train of RHR quantified	N/A	Y			Y	
		Identify the PRA software platform used to construct the model.	N	N	Y	PRA is available for review/only loss of operating train of RHR quantified	N/A	Y			Y	
		State the truncation frequency used to solve the PRA model.	N	N	Y	PRA is available for review/only loss of operating train of RHR quantified	N/A	Y			Y	
App. A: 19.1.6.2	COL: 19.X	**Results from the Low-Power and Shutdown Operations PRA**										
		Provide the total mean core-damage frequency.	N	N	Y	PRA is available for review/only loss of operating train of RHR quantified	N/A	Y			Y	
		For each plant operating state, describe the significant core-damage, large release, and offsite consequence (optional) sequences, and provide their mean annual occurrence frequencies.	N	N	Y	PRA is available for review/only loss of operating train of RHR quantified	N/A	Y			Y	
		For each plant operating state, identify the significant initiating events, including both internal and external events, and provide their percent contributions to the total core-damage frequency and the large release frequency.	N	N	Y	PRA is available for review/only loss of operating train of RHR quantified	N/A	Y			Y	

		For each plant operating state, identify the significant functions, SSCs, and operator actions, and provide their risk achievement worths and Fussell-Vesely importance measures.	N	N	Y	**PRA is available for *review/only loss of* operating train of RHR quantified**	N/A	Y			Y	
		Identify the PRA assumptions and PRA-based insights.	N	N	Y	**PRA is available for review/only loss of operating train of RHR quantified**	N/A	Y			Y	
		Discuss the results and insights from importance, sensitivity, and uncertainty analyses.	N	N	Y	**PRA is available for review/only loss of operating train of RHR quantified**	N/A	Y			Y	
App. A: 19.1.7		**PRA-Related Input to Other Programs and Processes**										
App. A: 19.1.7.1	**COL: 19.X**	**PRA Input to Design Programs and Processes**										
		Discuss PRA-based insights identified during the design development that ensure the assumptions made in the PRA will remain valid for the as-to-be-built, as-to-be-operated plant.	Y	Y	Y		N/A	Y			Y	
		Include assumptions regarding SSC and operator performance and reliability, ITAACs, interface requirements; COL action items; plant features, design and operational programs, and other factors.	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.7.2 C.I.17.6		PRA Input to the Maintenance Rule Implementation	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.7.3		PRA Input to the Reactor Oversight Process	Y	Y	Y		N/A	Y			Y	
App. A: 19.1.7.4 C.I.17.4		PRA Input to the Reliability Assurance Program	Y	N	Y	**No site-specific importance measures provided for risk-significant SSCs** **Were all PRA models (e.g., Internal, Shutdown, Flooding, Fire, Seismic, External Events) considered in the risk**	N/A	Y			Y	

						significance determination						
App. A: 19.1.7.5		PRA Input to the Regulatory Treatment of Nonsafety-Related Systems Program	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
App. A: 19.1.7.N		19.1.7.N PRA Input to [Other Program or Process]	**N/A**									
App. A: 19.1.8	**COL: 19.X**	**Conclusions and Findings**										
		Provide a conclusion that the PRA has been used as discussed in Section C.I.19.2.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		Provide a conclusion that the results of the PRA support the decision to issue the COL.	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
App. A: 19.2		**Severe Accident Evaluation**										
App. A: 19.2.1		**Introduction**										
App. A: 19.2.2	**COL: 19.X**	**Severe Accident Prevention**										
		Deterministic evaluation ATWS	**N**	**N**	**Y**	**Can't locate**	**N/A**	**Y**			**Y**	
		Deterministic evaluation of Mid-Loop Operations	**N/A**	**N/A**								
		Deterministic evaluation SBO	**N**	**N**	**Y**	**Can't locate**	**N/A**	**Y**			**Y**	
		Deterministic evaluation Fire Protection	**N**	**N**	**Y**	**Can't locate**	**N/A**	**Y**			**Y**	
		Deterministic Intersystem LOCA	**N**	**N**	**Y**	**Can't locate**	**N/A**	**Y**			**Y**	
		Describe other Severe Accident Preventive Features	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
App. A: 19.2.3	**COL: 19.X**	**Severe Accident Mitigation**										
		Provide an Overview of the Containment Design	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	
		Describe Severe Accident Progression, both In-and Ex-Vessel	**Y**	**Y**	**Y**		**N/A**	**Y**			**Y**	

		Describe Severe Accident Mitigation Features for External Reactor Vessel Cooling, Hydrogen Generation and Control, Core Debris Coolability, High-Pressure Melt Ejection, Fuel-Coolant Interactions, Containment Bypass, Equipment Survivability, and Other Severe Accident Mitigation Features	Y	Y	Y		N/A	Y			Y	
App. A: 19.2.4		**Containment Performance Capability**										
		Address the containment performance goals identified in SECY-93-087 and SECY-90-016, as approved by the associated SRMs.	Y	Y	Y		N/A	Y			Y	
App. A: 19.2.5		**Accident Management**										
		Describe those actions taken during the course of an accident by the plant operating and technical staff to (1) prevent core damage, (2) terminate the progress of core damage if it begins and retain the core within the reactor vessel, (3) maintain containment integrity as long as possible, and (4) minimize offsite releases.	N	N	Y	**Actions are not discussed in SSAR 19D.7 or 19E.2, as stated in the COL application.**	N/A	Y			Y	
App. A: 19.2.6	COL: 19.X	**Consideration of Potential Design Improvements Under 10 CFR 50.34(f)**										
		Describe how the requirement of 10 CFR 50.34(f) (1) (i) has been met.	N	N	Y	**However, SSAR 19P refers to Attachment A of the "Technical Support Document of the ABWR," which was provided to the staff via a memo to R. W. Borchardt in December 1994. A SAMDA submittal is contained in this technical support document.**	N/A	Y			Y	
App. A: 19.2.6.1		Introduction	N	N	Y	**FSAR 19A.2.1 is missing and a plant-specific SAMA was not submitted. However, generic information is available in the**	N/A	Y			Y	

						Technical Support Document of the ABWR.						
App. A: 19.2.6.2		Estimate of Risk for Design	N	N	Y	FSAR 19A.2.1 is missing and a plant-specific SAMA was not submitted. However, generic information is available in the Technical Support Document of the ABWR.	N/A	Y			Y	
App. A: 19.2.6.3		Identification of Potential Design Improvements	N	N	Y	FSAR 19A.2.1 is missing and a plant-specific SAMA was not submitted. However, generic information is available in the Technical Support Document of the ABWR. In addition to design improvements, training and procedures have to be addressed.	N/A	Y			Y	
App. A: 19.2.6.4		Risk Reduction Potential of Design Improvements	N	N	Y	FSAR 19A.2.1 is missing and a plant-specific SAMA was not submitted. However, generic information is available in the Technical Support Document of the ABWR. In addition to design improvements, training and procedures have to be addressed.	N/A	Y			Y	
App. A: 19.2.6.5		Cost Impacts of Candidate Design Improvements	N	N	Y	FSAR 19A.2.1 is missing and a plant-specific SAMA was not submitted. However, generic information is available in the Technical Support Document of the ABWR. In addition to design	N/A	Y			Y	

						improvements, training and procedures have to be addressed.						
App. A: 19.2.6.6		Cost-Benefit Comparison	N	N	Y	FSAR 19A.2.1 is missing and a plant-specific SAMA was not submitted. However, generic information is available in the Technical Support Document of the ABWR. In addition to design improvements, training and procedures have to be addressed.	N/A	Y			Y	
App. A: 19.2.6.7		Conclusions	N	N	Y	FSAR 19A.2.1 is missing and a plant-specific SAMA was not submitted. However, generic information is available in the Technical Support Document of the ABWR. In addition to design improvements, training and procedures have to be addressed.	N/A	Y			Y	
App. A: 19.3		Open, Confirmatory, COL Action Items Identified as Unresolved (see Note 7)										
App. A: 19.3.1		Resolution of Open Items										
App. A: 19.3.2		Resolution of Confirmatory Items										
App. A: 19.3.3		Resolution of COL Action Items										

Note/Comment

1. FSAR section 19.2 states that the PRA analysis has been updated and supplemented with site-specific information. Table 19.2-2 lists the PRA Assessments presented by STP between the ABWR certified design and STP ABWR design.
   The following are identified as having potential impacts on the PRA assessment, and the availability of the information for staff review.

ABWR Certified Design	STP Design	PRA Information for Review
RCIC –Terry Turbine	RCIC-Weir Turbine	No numerical values from delta-PRA assessment are provided.
CTG Electrical tie to 6.9 KV	CTG Electrical tie to 13.8 KV	No numerical values from update review are provided.
RBSW&RBCW 3 divisions	RBSW & RBCW 3 divisions with STP plant specific data	No numerical values from update review are provided. Updated fault trees are not provided in Fig. 19D.6-XX (there is no Fig. 19D in SSAR).
Only 6.9Kv, ESF Bus fed from UAT and RAT	Two medium voltage systems 13.8Kv/4.6 KV	It was not clear if the update of fault trees on Fig 19.D.6-11, 12, and 13 was completed. No updated information on fault tress is provided.
Control Building	Control Building Annex	Delta-PRA assessment was performed but no numerical values of Fire PRA ignition sources data sheets are provided
Generic design of UHS	STP specific design on UHS	No numerical values from update review are provided.
3 variable speed Motor Driven Reactor Feedwater pumps	4 variable speed Motor Driven Reactor Feedwater Pumps	No numerical values from update review are provided.
Single unit	Dual unit	Impact on fire protection system was performed. No information of impacting on other systems (i.e., cross-ties) is provided.
One battery, one charger, one main panel per division	One battery, two chargers, isolation breaker, DC bus per division	No delta-PRA assessment was performed
Below Grade ?		No numerical values from update review are provided.
Essential multiplexing system (EMS)	Revised EMS	No numerical values from update review are provided.
SLU Architecture	STP SLU Architecture	No numerical values from update

		review are provided. No updated information on fault tress is provided
Three electrical divisions	Four electrical divisions	It was not clear that if the impact of delta-PRA assessment on the addition of the fourth electrical division was performed.

2. It is not clear what procedure is in place for the development of plant specific PRA in this application (COL Acceptance Review version).
3. System inter-dependency was not provided.
4. STP plant specific quantitative values are not provided.
5. No quantitative values are provided in Tables 19K-1, 19K-2, and 19K-3.
6. STP does not perform seismic PRA analysis, use results from Seismic Capacity and Margin analysis instead
7. COL item 19.4 – Confirmation of Seismic Capacities Beyond the Plant Design Basis
   STP has addressed the seismic analysis and results in FSAR 19.4.3, 19H, and 19I. The generic analysis in DCD is bounding. Therefore, STP should be able to provide COL resolution prior to COL approval.

   COL item 19.19b – Housing of ACIWA Equipment
   STP should be able to address the seismic requirement of ACIWA prior to COL approval. In section 19.9.21 of ABWR DCD, It states that the capability of the building housing the ACIWA equipment must be included in the plant-specific PRA.

   COL item 19.30 – PRA Update
   STP states that a delta-PRA was performed for those site characteristics that were not bound by the design PRA results. However, there was no information provided for these analyses.

Generic comments:

1. Departure STD DEP 19.3-1 was missing in the Departures report.
2. Table 19.1S-1, "Cross-Reference TO RG 1.206 Requirements", Title of first column: "FSAR Chapter/Section" - it should be "RG 1.206 Section"