Nuclear Operating Company

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September 28, 2009
U7-C-STP-NRC-090163

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
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South Texas Project
Units 3 and 4
Docket Nos. 52-012 and 52-013
Response to Request for Additional Information

Attached are the responses to the NRC staff questions included in Request for Additional Information (RAI) letter number 301 related to Combined License Application (COLA) Part 2, Tier 2, Section 17.4S, Reliability Assurance Program. This submittal completes the response to this RAI letter.

The eight (8) attachments to this letter address the responses to the RAI questions listed below:

17.04-1
17.04-2
17.04-3
17.04-4
17.04-5
17.04-6
17.04-7
17.04-8

When a change to the COLA is indicated, it will be incorporated in the next routine revision of the COLA following NRC acceptance of the response.

There are no new commitments in this letter.

D091
NRO

If you have any questions, please contact me at (361) 972-7136, or Bill Mookhoek at (361) 972-7274.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 9/28/09

Scott Head
Manager, Regulatory Affairs
South Texas Project Units 3 & 4

jaa

Attachments:
1. RAI 17.04-1
2. RAI 17.04-2
3. RAI 17.04-3
4. RAI 17.04-4
5. RAI 17.04-5
6. RAI 17.04-6
7. RAI 17.04-7
8. RAI 17.04-8

cc: w/o attachment except*
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RAI 17.04-1

QUESTION:

SECY 95-132, Item E, states "An application for advanced reactor design certification or a combined license must contain: ... (3) a list of the structures, systems, and components designated as risk significant; and...." Section 19K ("PRA-Based Reliability and Maintenance") of the STP FSAR, Revision 2, identifies the risk-significant systems, structures, and components (SSCs) in scope of the Reliability Assurance Program (RAP), which includes the following common cause failures that were added to the plant-specific probabilistic risk assessment (PRA) under departure STD DEP 19.3-1 ("Evaluation of Common Cause Failures") (see Tables 19K-1 and 19K-2 of the STP FSAR):

- Cooling Water Divisions A, B, & C (CCF)
- Cooling Water Divisions A & B (CCF)
- Cooling Water Divisions B & C (CCF)
- Cooling Water Divisions A & C (CCF)
- HPCF System (CCF)
- RHR Core Flood System Failure (CCF)
- RHR Suppression Pool Cooling Failure (CCF)

However, it is not clear from Section 19K as to what specific SSCs (e.g., check valves RSW-F001A through F, motor-operated valves RSW-F013A through F) are associated with these risk-significant common cause failures. Therefore, the staff requests that the applicant identify in Section 19K of the STP FSAR the specific SSCs that are in scope of the RAP associated with these risk-significant common cause failures.

RESPONSE:

The specific components included in the common-cause failure (CCF) modeling described under Departure 19.3-1 are identified in the Standard Safety Analysis Report (SSAR), Appendix 19D.8, Section 19D.8.6. From Section 19D.8.6:

> *The largest contributors to RHR CCF are common-cause failure of the RHR pumps to start, and common-cause failure of the pump room air conditioners. Common-cause failure of the injection valves to open is also a significant contributor to RHR CCF.*
>
> *For the HPCF system, the most significant CCF contributors are common-cause failure of the pumps to start, and mispositioning (closed) of manual valve F005.*
>
> *The common-cause failure of all three divisions of RBCW is balanced among common cause failure of heat exchangers and common-cause failure of pumps (failing to run). Plugged strainers and temperature control valves failing closed also contribute to the RBCW interdivisional CCFs.*

Reactor Service Water (RSW) check valves, F001A through F, and the RSW pump discharge motor-operated valves (MOVs) F013A through F are not significant contributors to the overall results because each division of RSW has one pump operating and one pump in standby to support plant operation. Common cause failure of the RSW pump discharge MOVs to open would only apply to the standby trains. The RSW pump discharge MOVs for the operating RSW pumps do not position during plant transient or accident initiating events. Failure of the RSW check valves associated with the operating pumps would be included in a restart CCF term for pump restart after loss of offsite power.

Appendix 19K will be revised as shown on the following page to more clearly identify which systems, structures, and components (SSCs) are included in the risk-significant CCF terms.

Table 19K-4 Failure Modes and RAP Activities (Continued)

Component	Failure Mode/Cause	Recommended Maintenance	Test or Maintenance Interval	Basis	Unavailability, Failure Rate
Common Cause Failures					
RHR System (Shutdown Cooling & LPFL Modes)	Common mode failure	System walkdown to identify CCF type problems	R/M outage	Judgment	**
• Pumps	• Start and Run				
• Room Air Conditioners	• Start and Run				
• Injection MOVs	• Open				
HPCF System	Common mode failure	System walkdown to identify CCF type problems	R/M outage	Judgment	**
• Pumps	• Start and Run				
• Injection MOVs	• Open				
• F005	• Mispositioning	Position check	Quarterly		
RBCW System	Common mode failure	System walkdown to identify CCF type problems	R/M outage	Judgment	**
• Pumps	• Run				
RSW System	Common mode failure	System walkdown to identify CCF type problems	R/M outage	Judgment	**
• Pumps	• Run				
• Strainers	• Plug	Operation verification	Quarterly		
UHS System	Common mode failure	System walkdown to identify CCF type problems	R/M outage	Judgment	**
• Fans	• Run				
Emergency Diesel Generators	Common mode failure	Start up to full load	1 month	Tech Spec	**
	• Start and run				

** Contained in the plant-specific PRA documentation

RAI 17.04-2

QUESTION:

Section 19K ("PRA-Based Reliability and Maintenance") of the STP FSAR, Revision 2, identifies the risk-significant systems, structures, and components (SSCs) in scope of the Reliability Assurance Program (RAP). The following components are deleted from Tables 19K-1 and 19K-2 of Section 19K of the STP FSAR, suggesting that these components may no longer be in scope of the RAP:

- RCIC Pres Sensor PIS-Z605 Miscalibrated
- RCIC Flow Sensor FT-007-2 Miscalibrated
- RHR Flow Transmitters (CCF Miscalibration)
- Level 8 Sensors (CCF Miscalibration)

However, this seems inconsistent with Table 19K-4 ("Failure Modes and RAP Activities") of the STP FSAR, which includes these components in RAP through incorporation by reference to Table 19K-4 of the ABWR DCD, Revision 4. The staff requests that the applicant clarify whether these components are in scope of the RAP and, if necessary, revise Section 19K of the STP FSAR accordingly.

RESPONSE:

The instrumentation components deleted in Tables 19K-1 and 19K-2 were no longer risk-significant after incorporation of the common cause failures described in the response to RAI 17.04-1. Table 19K-4 will be modified as shown on the following page to be consistent with the Table 19K-1 and 19K-2 entries.

Table 19K-4 Failure Modes and RAP Activities (Continued)

Component	Failure Mode/Cause	Recommended Maintenance	Test or Maintenance Interval	Basis	Unavailability, Failure Rate
~~RCIC Flow Sensor FT-007-2~~	~~Sensor fails~~ ~~Miscalibration~~	~~Calibration of sensor~~ ~~Review calibration procedures for note about potential safety considerations~~	~~R/M outage~~ ~~R/M outage~~	~~Experience~~ ~~Judgment~~	†
~~RCIC Pressure Sensor PIS-Z605~~	~~Sensor fails~~	~~Calibration of sensor~~	~~R/M outage~~	~~Experience~~	†
	~~Miscalibration~~	~~Review calibration procedures for note about potential safety considerations~~	~~R/M outage~~	~~Judgment~~	
~~RHR Flow Meters~~	~~Common mode miscalibration~~	~~Review calibration procedures for note about potential safety considerations~~	~~Annual~~	~~Judgment~~	*
~~Level 2 Sensors~~	~~Common mode failure~~	~~Analyze Level 2 calibration data for trends of drifting or other CCF indications~~	~~R/M Outage~~	~~Judgment~~	*
~~Level 8 Sensors~~	~~Common mode miscalibration~~	~~Review calibration procedures for note about potential safety considerations~~	~~Annual~~	~~Judgment~~	*

* Not part of DCD (refer to SSAR).
† RCIC component failure rates are included within the system unavailability.

RAI 17.04-3

QUESTION

Section 19K ("PRA-Based Reliability and Maintenance") of the STP FSAR, Revision 2, identifies the risk-significant systems, structures, and components (SSCs) in scope of the Reliability Assurance Program (RAP). In Section 19K, the risk significance of the mentioned Circulating Water System (CWS) pump circuit breakers is described inconsistently in the report. For example, the CWS pump circuit breakers are risk-significant under Section 19K.7 and Table 19K-4, which incorporates by reference the CWS pump breakers, while the CWS pump circuit breakers are not risk-significant under Section 19K.11.13. The staff requests that the applicant clarify whether the CWS pump circuit breakers are risk-significant and revise Section 19K of the STP FSAR accordingly.

RESPONSE

Because the STP 3 & 4 circulating water system is a high power cycle heat sink (PCHS) design, trip of the circulating water pumps on detection of turbine building flooding is not required for flooding control, as described in Chapter 19R.5.3. Closure of the circulating water pump discharge motor operated valves is required to isolate flooding in the turbine building from the circulating water system.

COLA Part 2, Tier 2, Section 19K.7 will be modified as follows to clarify the importance of the circulating water pumps and breakers for the high PCHS of the STP 3 & 4 design. Changes are indicated by gray shading.

19K.7 Determination of "Important Structures, Systems and Components" for Flood Analysis

STP DEP T1 5.0-1
STP DEP 10.4-2
STP DEP 19R-1

The following site-specific supplement discusses the effects of the RSW pump house floods.

The flood analysis considers the potential for core damage from plant damage resulting from internal or external floods. *The important SSCs identified by this analysis are the ECCS rooms, RCW rooms,* Reactor Service Water (RSW) pump rooms and RSW electrical equipment rooms, *and* all *control and reactor building external water tight doors,* including the watertight barriers on the equipment access to the diesel generator rooms, *which prevent water from flowing into rooms other than the one with the leak or from external flood sources to the safety-related buildings;* redundant supply side *isolation valves on the* RSW *System,* prevent gravity drainage of the UHS basin, *which*

limits the amount of water spilled into the control building or RSW pump rooms*; circuit breakers that will trip RSW pumps, which also limits the amount of water spilled into the control building; isolation valves in the Circulating Water System (CWS);* ~~*circuit breakers that will trip CWS pumps*~~*; level switches in the turbine building condenser pit,* the *control building RCW rooms* and the RSW pump rooms*; sump pump operation; overfill lines in reactor building sumps on floor BIF; and room drain lines.*

RAI 17.04-4

QUESTION:

Section 17.4S.1.1.1 ("Program Formulation and Organizational Responsibilities") of the STP FSAR, Revision 2, states "As the ABWR design certification applicant, General Electric (GE) was initially responsible for formulating D-RAP (Reference 1)." Reference 1 in this statement does not correspond to any references in Section 17.4S.11 ("References"). The staff requests that the applicant correct this inconsistency in the STP FSAR.

RESPONSE:

The intent was to provide a regulatory reference, predating the March 2007 Standard Review Plan, that required design certification applicants to initially formulate the Design Reliability Assurance Program (D-RAP). Item E, Reliability Assurance Program, of Attachment 2 to SECY-95-132 is an appropriate reference for this requirement because it describes the regulatory initiatives going back to 1988, including SECY 89-13, that resulted in General Electric developing D-RAP for the ABWR. The reference will be clarified to specify Item E of Attachment 2 and also correct an editorial error to re-number the reference as 17.4S.11-1 vice 17.4S-1.

As a result of this RAI response, COLA Revision 3 Part 2, Tier 2, Section 17.4S will be revised as shown below with changes indicated by gray shading:

17.4S.11 References

17.4S.11-1 SECY 95-132, "Policy and Technical Issues Associated with the Regulatory Treatment of Non-Safety Systems (RTNSS) in Passive Plant Designs (SECY 94-084)," Attachment 2, Item E. Reliability Assurance Program

RAI 17.04-5

QUESTION:

Section 17.4S.1 ("Identification of Site-Specific SSCs for D-RAP") of the STP FSAR, Revision 2, states that the scope of the design reliability assurance program (D-RAP) will also include risk-significant systems, structures, and components (SSCs) not modeled in the probabilistic risk assessment (PRA). This is consistent with the recommendations provided in SECY 95-132. However, the interface responsibilities of the expert panel described under Section 17.4S.1.1.2 ("Reliability Assurance Interface Coordination") of the STP FSAR appear to only address risk-significant SSCs modeled in the PRA. An example of this is provided under the first bullet of Section 17.4S.1.1.2, which states: "The Plant Designer panel member maintains the design interface to ensure that any proposed design changes that involve risk significant SSCs modeled in the PRA are identified and periodically reviewed..."

The staff requests that the applicant also address in Section 17.4S.1.1.2 of the STP FSAR the interface responsibilities of the expert panel related to risk-significant SSCs in scope of D-RAP that are not modeled in the PRA.

RESPONSE:

FSAR Section 17.4S will be revised as requested to address interface responsibilities of the expert panel related to risk significant structures, systems and components not modeled in the STP 3 & 4 probabilistic risk assessment.

As a result of this RAI response, Revision 3 of COLA Part 2, Tier 2, Subsection 17.4S.1.1.2 will be revised as follows, with changes indicated by gray shading:

17.4S.1.1.2 Reliability Assurance Interface Coordination

Reliability assurance activity interface issues are coordinated through the expert panel since the organizations involved have representation on the panel. Specific interface responsibilities of the panel members are detailed in a controlling procedure. These interface responsibilities include the following:

- The Plant Designer panel member maintains the design interface to ensure that any proposed design changes that involve risk significant SSCs modeled in the PRA are identified and periodically reviewed with the expert panel at a frequency determined by the panel.

- The Plant Designer panel member maintains the design interface to ensure that any proposed changes resulting in an increase in the deterministically established risk of an SSC not modeled in the PRA, are identified and periodically reviewed with the expert panel at a frequency determined by the panel.

RAI 17.04-6

QUESTION:

Section 17.4S.1.4 ("Methods of Analysis for Risk Significant SSC Identification") of the STP FSAR, Revision 2, states that the initial identification of the site-specific, risk-significant systems, structures, and components (SSCs) is based on the process described in Appendix 19K of the reference ABWR DCD. These risk-significant SSCs are included in the scope of the design reliability assurance program (D-RAP). STP's process for maintaining, revising, and establishing new risk rankings for modified design is based on the methodology described in Section 17.4S.1.4 of the STP FSAR, which includes probabilistic risk assessment (PRA) and deterministic techniques. The staff requests that the applicant address the following comments and, if necessary, revise Section 17.4S.1.4 of the STP FSAR accordingly. These comments are related to the methodology for maintaining, revising, and establishing new risk rankings in Section 17.4S.1.4 of the STP FSAR, Revision 2:

- Section 17.4S.1.4.1 ("PRA Risk Ranking") of the STP FSAR describes the methodology for identifying risk-significant SSCs using the PRA and provides the criteria for identifying these risk-significant SSCs (i.e., a Fussell Vesely, FV, importance greater than 0.005 or risk achievement worth, RAW, greater than 2.0). It is not clear from Section 17.4S.1.4.1 of the STP FSAR whether common cause failure basic events would also be subjected to the RAW criteria of 2.0.

- As D-RAP enters the detailed design, procurement, fabrication and construction phase, RAWs and FVs may exist for various PRA models (e.g., internal events, internal fire, and internal flood). Section 17.4S.1.4.1 of the STP FSAR does not address how the risk importance criteria (i.e., FV greater than 0.005 and RAW greater than 2.0) would be applied to the various PRA models that compute RAWs and FVs (e.g.. would the RAW/FV criteria be applied to each PRA model separately, or applied to the combined/integrated results of the PRA models).

- Section 17.4S.1.4 of the STP FSAR does not address the use of the following analyses to identify risk-significant SSCs:

    - The qualitative risk analyses (e.g., seismic margin analysis, SMA, and fire induced vulnerability evaluation, FIVE), and
    - The PRA models for which risk importance measures (e.g., RAW and FV) are not computed.

These analyses are important and should be considered for the identification of risk-significant SSCs in the scope of D-RAP. For example, SSCs under SMA are credited as part of the safe shutdown paths evaluated under the SMA. In addition to being capable of withstanding seismic events, these SSCs need to have high reliability and availability in order to perform their safe

shutdown functions. NEI 00-04 ("10 CFR 50.69 SSC Categorization Guideline") provides several acceptable approaches for using these analyses to identify risk-significant SSCs.

- As stated in Section 17.4S.1.4.1 of the STP FSAR, SSCs or functions having a FV importance greater than 0.005 or RAW greater than 2.0 would be included in the scope of D-RAP and subjected to the approved quality assurance program description (QAPD) referenced in Section 17.5S of the STP FSAR. This criterion is consistent with industry practices and guidance. However, the terms "PRA High" and "PRA Medium" used in Figure 17.4S-2 of the STP FSAR are not defined and no risk importance criteria are associated with these terms.

RESPONSE:

Common cause failures included in the Level 1 internal events model use the same screening criteria for Fussell-Vesely (FV), $\geq 1.0\%$, and Risk-Achievement Worth (RAW), ≥ 2.0, as independent events, as indicated in Table 19K-1.

The development of the list of risk-significant systems, structures, and components (SSCs) is described in Design Control Document (DCD) Appendix 19K, PRA Based Reliability and Maintenance, which forms initial input to the Design Reliability Assurance Program (D-RAP). Quantitative criteria were developed from the Level 1 internal events model only. Level 2 input, Seismic Margins Analysis (SMA) input, Fire Vulnerability Evaluation (FIVE) input, and Low Power and Shutdown (LPSD) input to D-RAP were developed qualitatively in Appendix 19K. Appendix 19K.11 summarizes the results from the individual elements of the PRA model of the ABWR and recommends maintenance, or maintenance and test intervals, for the important SSCs from these elements. The summary of results for the PRA and other analyses were used to determine the appropriate reliability and maintenance-related activities which are then summarized in Table 19K-4. These are inputs for the D-RAP. NEI 00-04 was not used in developing the screening criteria for the other models, such as SMA, FIVE and LPSD, included with the PRA. It can be seen from the above description that there is no integrated PRA Model to which the FV/RAW criteria is applied. D-RAP will continue to use this process during the design phase.

The qualitative risk analyses (e.g., SMA and FIVE) and PRA models for which risk importance measures are not available were evaluated in the ABWR DCD Appendix 19K. As part of D-RAP they will be addressed by the Expert Panel as shown in FSAR Figure 17.4S-1 (no revision to COLA Section 17.4S.1.4 is required to reflect this).

The term "PRA Medium" will be removed from Figure 17.4S-1 and from Figure 17.4S-2 (by deleting Figure 17.4S-2 since it only provided information already included in the text).

As a result of this RAI response COLA Revision 3 Part 2, Tier 2, Section 17.4S will be revised as follows with changes indicated by gray shading (Figure 17.4S-2 was simply deleted):

17.4S.1.2.2 Design Change Feedback

The design control and change processes provide feedback to the Risk Management organization via identification of components on the MED that are affected by a proposed change. Those affected SSCs with ~~medium or~~ high risk are given additional review in accordance with approved criteria to ensure there is no potential impact to the risk ranking of the affected components. If potential impact is identified then the Risk and Analysis Organization must concur in the change.

17.4S.1.4 Methods of Analysis for Risk Significant SSC Identification

The PRA and deterministic methods are described more fully below ~~(also refer to Figure 17.4S-2)~~.

17.4S.1.4.1 PRA Risk Ranking

A component's risk determination is based upon its impact on the results of the PRA. STP's PRA calculates both core damage frequency (CDF) and containment response to a core damaging event, including large early release frequency (LERF). The PRA models internal initiating events at full power, and also accounts for the risk associated with external events, including external flooding, seismic events, and fire, internal flooding, and events occurring during low power and shutdown. The PRA risk categorization of a component is based upon its Fussell-Vessely (FV) importance, which is the fraction of the CDF and LERF to which failure of the component contributes, and its risk achievement worth (RAW), which is the factor by which the CDF and LERF would increase if it were assumed that the component is guaranteed to fail. Specifically, PRA risk categorization to identify SSCs is based upon the following:

PRA Ranking	~~STPNOC~~ PRA Criteria
~~Greater than Low~~HIGH (Risk Significant)	Greater than Low FV ~~>~~ ≥ 0.005 or RAW ~~>~~ ≥ 2.0
~~Low~~LOW (Non-risk Significant)	FV < 0.005 and RAW < 2.0

17.4S.1.4.2 Deterministic Risk Ranking

The numerical values, after weighting, are summed; the maximum possible value is 100. Based on the sum, functions are categorized as follows:

SCORE RANGE	**CATEGORY**
~~100 – 71~~ 41	~~HSS~~ HIGH (Risk Significant)
~~70 – 41~~	~~MSS~~
40 – ~~21~~ 0	~~LSS~~ LOW (Non-risk Significant)
~~20 – 0~~	~~NRS~~

A function with a low categorization due to a low sum can receive a higher deterministic categorization if any one of its five questions received a high numerical answer. Specifically, a

weighted score of 25 on any one question results in a ~~HSS~~ HIGH categorization; ~~a weighted score of 15-20 on any one question results in a minimum categorization of MSS;~~ and a weighted score of 9-12 on any one question results in a minimum categorization of ~~LSS~~ LOW. This is done to ensure that a function with a significant risk in one area does not have that risk contribution masked because of its low risk in other areas.

17.4S.4 Maintenance Rule/Operational Programs

Many SSCs would meet the criteria to be in the MR program without considerations related to the RAP. In cases where the RAP identifies a high ~~or medium~~ risk SSC that would not otherwise have been in the MR program, then the SSC is added. For those SSCs already in the Technical Specifications (TS), Inservice Inspection (ISI), or Inservice Testing (IST) programs, their performance under these programs is factored into the performance monitoring accomplished under the MR program.

17.4S.5 Non-safety SSC Design/Operational Errors

The process for providing corrective actions for design and operational errors that degrade nonsafety-related SSCs within the scope of RAP is procedurally defined. All SSCs (safety-related or nonsafety-related) with risk significance ~~greater~~ other than "~~low~~LOW" are entered into the MR program as ~~High Safety Significance (HSS)~~ HIGH. The STPNOC MR program does not distinguish between a Maintenance Rule Functional Failure (MRFF) and a Maintenance Preventable Functional Failure (MPFF). Therefore, nonsafety-related SSCs that have experienced a MRFF attributable to a design or operating error (i.e. could not have been prevented by maintenance) are corrected using the corrective action process described in the QAPD of Section 17.5S. Under the STPNOC MR program, MRFFs require cause determination (may be an apparent cause determination) and corrective action is implemented to prevent recurrence.

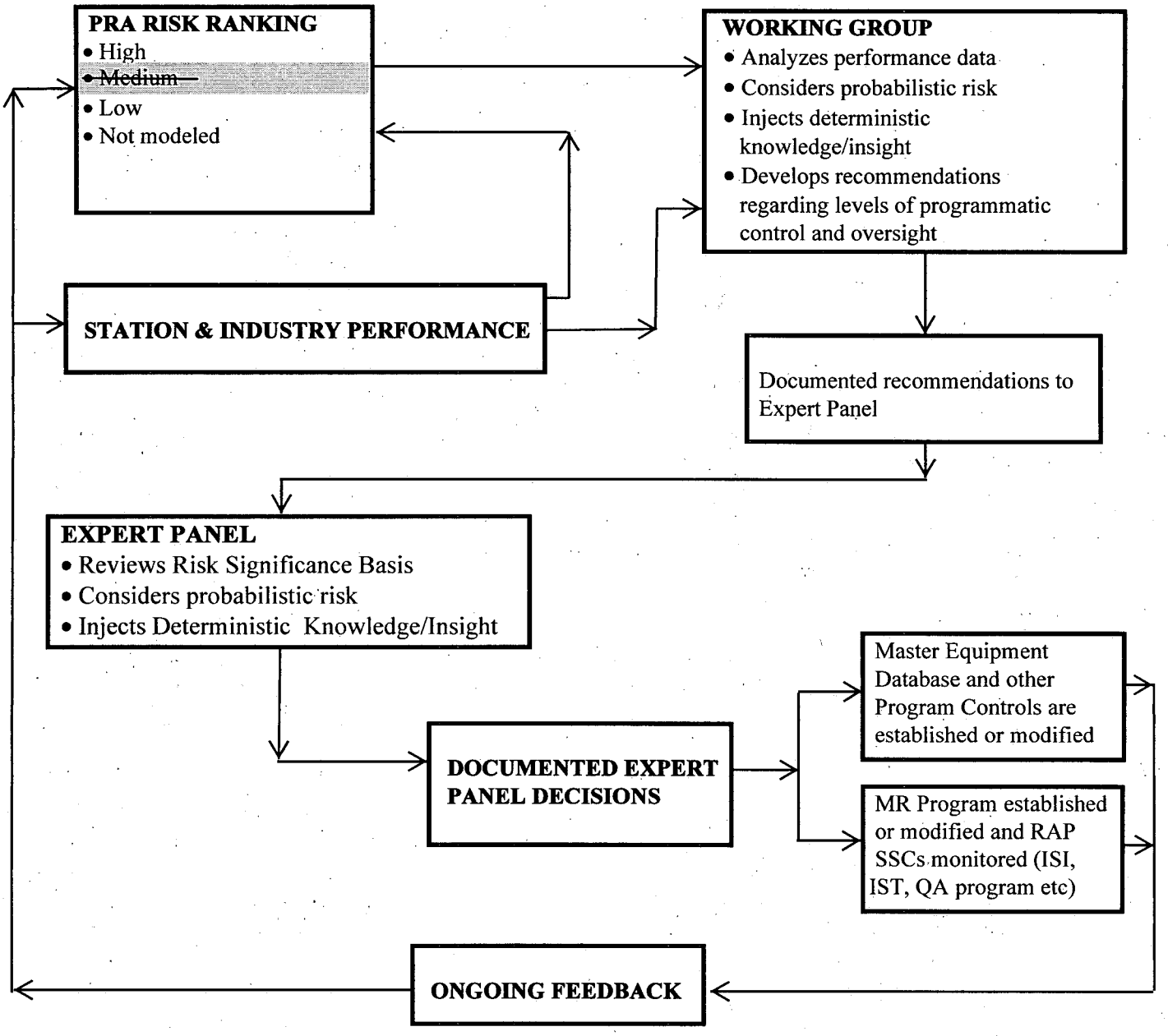

Figure 17.4S-1 Reliability Assurance Process

Note 1: Maintenance Rule program implemented 30 days prior to fuel load

Note 2: Working group(s) are chaired by an Expert Panel member

RAI 17.04-7

QUESTION:

As stated in Section 17.3.1 of the reference ABWR DCD, the results of Appendix 19K can be used as a "starting point" for the design reliability assurance program (D-RAP). Section 17.4S.1 ("Identification of Site-Specific SSCs for D-RAP") of the STP FSAR, Revision 2, states that the "initial" identification of the site-specific, risk-significant systems, structures, and components (SSCs) during the STP combined license application (COLA) preparation is based on the process described in Appendix 19K of the reference ABWR DCD. As D-RAP enters the detailed design, procurement, fabrication and construction phase, it is important, however, to ensure that the list of risk-significant SSCs in scope of the D-RAP is sufficiently complete, because these SSCs are subjected to reliability assurance activities under the approved quality assurance program description (QAPD) referenced in Section 17.5S of the STP FSAR.

The staff requests that the applicant provide a plan in the STP FSAR for performing the following activities that are described in Section 17.4S.1 ("Identification of Site-Specific SSCs for D-RAP") of the STP FSAR. This ensures that the list of risk-significant SSCs is sufficiently complete to support D-RAP program activities during the detailed design, procurement, fabrication and construction phase.

• Identify the risk-significant SSCs not modeled in the probabilistic risk assessment (PRA).

• Implement STP's process for maintaining, revising, and establishing new risk rankings that is described in Section 17.4S.1.4 ("Methods of Analysis for Risk Significant SSC Identification") of the STP FSAR, which could introduce additional SSCs to the scope of D-RAP (i.e., the deterministic risk ranking process and the lower risk importance threshold criteria relative to that used in Appendix 19K of the reference ABWR DCD could introduce additional SSCs to the scope of D-RAP).

• Establish and utilize an expert panel with STP representation to: (a) augment PRA techniques in the risk ranking of SSCs using deterministic techniques, operating experience and expert judgment; and (b) validate and finalize the list of risk-significant SSC.

RESPONSE:

Chapter 17.4S of the STP 3 & 4 FSAR was developed to address each line item required by NUREG 0800 "Standard Review Plan," Section 17.4 "Reliability Assurance Program (RAP)" for a Combined License (COL) application. In addition, Chapter 17.4S fully addresses the COL Applicant Items for RAP specified in DCD Subsection 17.3.13 "COL License Information." A significant amount of detail is provided in FSAR 17.4S describing the plan to meet RAP objectives.

STPNOC contends that additional plan details beyond those currently provided in FSAR Section 17.4S fall into the realm of implementing plans that are not appropriately included in the FSAR. While the objectives of RAP and the criteria to judge RAP acceptance are fairly rigidly defined, flexibility in implementation is not precluded by the SRP and exercising such flexibility should not be encumbered by needed changes to the FSAR where unnecessary detail was provided. This position is supported by the ABWR DCD which provides Design Reliability Assurance Program (D-RAP) ITAAC (Tier 1 Table 3.6) calling for inspections of the design reliability assurance program to ensure objectives have been met. As with other Tier 1 ITAAC, STPNOC intends to work closely with the NRC to plan and coordinate timely inspection and closeout of the D-RAP ITAAC.

With respect to the three bulleted items specifically referenced in the RAI Question:

1st Bullet:
The ABWR DCD, Section 19K.11.15, identified the Reactor Water Cleanup (CUW) System isolation valves as being risk-significant and these components were not modeled in the DCD PRA. These valves are also not modeled in the STP 3 & 4 plant-specific PRA and a justification for this is documented in the PRA program. No other risk-significant SSCs for STP 3 & 4 have been identified that are not modeled in the plant-specific PRA model. The Expert Panel may identify a risk-significant SSC using the deterministic risk ranking criteria described in FSAR subsection 17.4S.1.4.2 that is not already modeled. In this case, the SSC would be considered for addition to the model or a documented justification provided for not modeling the SSC in the PRA. In any event, the SSC would be added to the Maintenance Rule program as a high risk SSC.

2nd Bullet:
STPNOC agrees that it is important to ensure that the list of risk-significant SSCs in the scope of the D-RAP program is complete and updated when necessary and progress to that end has been made. Specifically:

- the DCD PRA has been reconstituted
- site-specific information and departures that modify the DCD PRA have been incorporated into the plant-specific PRA and
- the plant-specific PRA is currently being used for PRA risk ranking by the STP Unit 3 & 4 PRA group to evaluate design departures from the DCD and site-specific design not in the scope of the DCD
- the expert panel is being established as described in the response to RAI 17.04-8

Use of the PRA for risk ranking has resulted in additions and deletions to the DCD list of risk-significant SSCs provided in Appendix 19K to the DCD. For example, the Tier 1 departure to the RCIC pump/turbine has resulted in removing some SSCs from RAP and the site-specific UHS design has resulted in adding the cooling tower fans to RAP. The UHS design proposed for STP Units 3 & 4 was reviewed and, as a result, added to the reconstituted PRA model. The

results indicate that the UHS design is adequate (i.e., no significant increase in core damage frequency).

3rd Bullet (a):
The deterministic risk ranking process to be performed under the cognizance of the expert panel is described in FSAR Subsection 17.4S.1.4.2 Deterministic Risk Ranking. STPNOC's plans for establishing the procedures, convening the expert panel and implementing the deterministic risk ranking process is described in the response to RAI 17.04-8.

3rd Bullet (b):
The list of risk-significant SSCs will be subject to update right up to the time of transition to the Maintenance Rule program prior to fuel load. A final validated list of SSCs will exist at that time. Once the transition to the Maintenance Rule Program is complete, changes to the list of D-RAP SSCs will no longer be made.

No COLA revision is required as a result of this RAI response.

RAI 17.04-8

QUESTION:

Sections 17.4S.6 ("Procedure Control") and 17.4S.1.2.4 ("Engineering Design Controls for SSC Identification") of the STP FSAR, Revision 2, describe the controls for procedures and instructions used for developing, coordinating, and implementing reliability assurance program (RAP) activities. As such, the RAP activities described in the STP FSAR should be prescribed by detailed procedures and accomplished in accordance with these procedures.

The staff requests that the applicant provide a plan in the STP FSAR to develop procedures for implementation of the RAP activities described in the STP FSAR.

RESPONSE:

Chapter 17.4S of the STP 3 & 4 FSAR was developed to address each line item required by NUREG 0800 "Standard Review Plan," Section 17.4 "Reliability Assurance Program (RAP)" for a Combined License (COL) application. In addition, Chapter 17.4S fully addresses the COL Applicant Items for RAP specified in DCD Subsection 17.3.13 "COL License Information." A significant amount of detail is provided in FSAR 17.4S describing the plan to meet RAP objectives. This includes the content of RAP implementing procedures in the following Subsections:

17.4S.1.1.2 Reliability Assurance Interface Coordination
17.4S.1.1.3 Risk and Reliability Organization Input to the Design Process
17.4S.1.2.4 Engineering Design Controls for SSC Identification
17.4S.1.2.5 Alternative Design
17.4S.2 Procurement, Fabrication, Construction, and Test Specifications
17.4S.3 Quality Assurance Implementation
17.4S.5 Non-safety SSC Design/Operational Errors
17.4S.6 Procedure Control

STPNOC contends that additional plan and procedural details, beyond those currently provided in FSAR Section 17.4S, fall into the realm of implementing plans and procedures that are not appropriately included in the FSAR. While the objectives of RAP and the criteria to judge RAP acceptance are fairly rigidly defined, flexibility in implementation is not precluded by the SRP and exercising such flexibility should not be encumbered by needed changes to the FSAR where unnecessary detail was provided. This position is supported by the ABWR DCD which provides Design Reliability Assurance Program (D-RAP) ITAAC (Tier 1 Table 3.6) calling for inspections of the design reliability assurance program to ensure objectives have been met. As with other Tier 1 ITAAC, STPNOC intends to work closely with the NRC to plan and coordinate timely inspection and closeout of the D-RAP ITAAC.

STPNOC understands the importance of a detailed D-RAP program that is proceduralized and implemented. Progress has been made in a number of important areas including:

- As part of the STP Unit 3 & 4 Engineering, Procurement and Construction Contract, the Engineering Technical Specification (ETS) (U7-PROJ-G-SPEC-ETS-001) was approved and issued on 02-25-09. Subsection 2.1.11 "D-RAP and Use of PRA Results" of the ETS, contractually obligates STPNOC's Contractor(s) to support the development and implementation of D-RAP including:
  - providing expert panel member(s)
  - supporting development and verification of the Probabilistic Risk Assessment (PRA) model for STP 3 & 4
  - providing the initial input information necessary to establish an engineering database for all SSCs considered as candidates for the Plant Reliability System Engineering Database
  - supporting defined interfaces
  - listing and providing a description of those activities required to maintain the plant at the required level of reliability
- Designation of Westinghouse as the lead contractor for D-RAP based in part upon familiarity with the D-RAP process during the AP-1000 design certification process.

The current plans call for development of a D-RAP coordinating procedure to identify the organizational responsibilities, interfaces and total set of procedures necessary to collectively implement D-RAP. Development and approval of this procedure is targeted for early November, 2009. STPNOC will accomplish development and approval of this procedure under the cognizance of the D-RAP Expert Panel or, as a minimum, an Expert Panel working group under the direction of one or more Expert panel members. The full Expert Panel will be established in October of 2009.

Following approval of the D-RAP coordinating procedure, the current goal is to have the D-RAP program proceduralized by year end 2009 and implemented under the cognizance of the full Expert Panel during the first quarter of 2010.

No COLA revision is required as a result of this RAI response.