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Your ref: Docket No. 52-006
Our ref: DCP_NRC_002921

June 18, 2010

Subject: AP1000 Response to Request for Open Item (SRP 3)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 5. This RAI response is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in this response is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

Enclosure 1 provides the response for the following proposed Open Item(s):

RAI-SRP3.8.6-SEB1-02 R2

Questions or requests for additional information related to the content and preparation of this response should be directed to Westinghouse. Please send copies of such questions or requests to the prospective applicants for combined licenses referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Very truly yours,

/KOR

Robert Sisk, Manager
Licensing and Customer Interface
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/Enclosure

1. Response to Request for Additional Information on SRP Section 3

D063
NRO

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ENCLOSURE 1

Response to Request for Additional Information on SRP Section 3

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP3.8.6-SEB1-02
Revision: 2

Question:

DCD Rev. 16, Section 3.8.6.2 through 3.8.6.4 has been revised to remove the COL information requirements for the Passive Containment Cooling System Water Storage Tank Examination, As-Built Summary Report, and In-Service Inspection of Containment Vessel. Westinghouse is requested to place these items back in Section 3.8.6. Even if these items are identified elsewhere in the DCD, it is important to have a complete representation in DCD Section 3.8.6 "Combined License Information" which is intended to summarize the required information to be developed from the combined license applicant, that are discussed in the prior DCD Sections 3.8.1 through 3.8.5.

If your response to this request for additional information will reference Revision 17 to the AP1000 DCD, please provide an exact reference.

Follow up Question (Revision 1)

The staff reviewed the Westinghouse response to RAI-SRP 3.8.6-SEB1-02, transmitted in their letter dated February 19, 2009. Westinghouse provided an explanation why three COL Information Items in DCD Section 3.8.6 were removed. The staff finds that the explanations given for removal of the COL Information Items are acceptable except for one of the COL Information Items which was included in DCD Rev. 15, subsection 3.8.6.2. This COL Information Item previously stated that: "The Combined License applicant will examine the structures supporting the passive containment cooling storage tank on the shield building roof during initial tank filling as described in subsection 3.8.4.7." The justification for removing this COL Information Item, given by Westinghouse, is that there is an ITAAC which already addresses the need to perform this examination. The concern with the ITAAC is that it does not fully capture the examination requirements contained in DCD subsection 3.8.4.7, that the previous COL Information Item referred to. The ITAAC addresses examination for leakage and measurement of elevation at two locations before and after filling of the PCS storage tank. DCD subsection 3.8.4.7, however, provides additional requirements for examination of excessive cracks in accordance with ACI 349.3R-96. Therefore, Westinghouse is requested to include this additional commitment as part of the subject ITAAC or provide the technical basis for excluding it.

Follow up Question (Revision 2)

The staff reviewed the response to RAI-SRP3.8.6-SEB1-02, Rev.1 and determined that the proposed revisions to ITAAC Table 3.3-6 and DCD Section 3.8.4.7, addressing the concern related to inspection of the concrete PCS tank and supporting region, are still not consistent. The commitment in DCD Section 3.8.4.7, to inspect the PCS tank for significant cracking in accordance with ACI 349.3R-96, is not included in the ITAAC. In addition, the inspection identified in the ITAAC is applicable to the PCS tank boundary and the shield building tension ring while in the case of DCD Section 3.8.4.7, the inspection is applicable to the PCS boundary and the shield building roof above the tension ring. Explain whether the inspection should be

performed for all three structural regions (PCS tank boundary, shield building roof, and tension ring) and revise both sections of the DCD to be consistent. Otherwise, provide the technical basis for any deviation.

Westinghouse Response:

The justification for the removal of these COL information items was included in AP1000 Standard Combined License Technical Report APP-GW-GLR-021 (TR-06) (pages 7-11) transmitted to the NRC in June 2006. Please see NRC accession number ML061580451. Westinghouse did not receive RAIs on the subject COL information items as part of the review of the technical report during the preapplication review.

These three COL information items as written in DCD Revision 15 did not provide information that would be available during the COL application review. These COL information items required information and activities that could be completed only after completion of construction. If these items were to be retained they would be labeled as COL holder items.

The COL information item in DCD Subsection 3.8.6.2, Revision 15 read as follows:

> The Combined License applicant will examine the structures supporting the passive containment cooling storage tank on the shield building roof during initial tank filling as described in subsection 3.8.4.7.

The requirement to examine the passive containment cooling water storage tank is redundant with ITAAC Item 10 ii) of Tier 1, Table 3.3-6.

Deleting the COL information item did not alter the information about design and loading conditions of the passive containment cooling water storage tank in DCD Subsection 3.8.4.7. The commitment to do a test of the passive containment cooling water storage tank included in DCD Section 3.8.4.7 was not altered by the deletion of the COL information item.

The COL information item in DCD Subsection 3.8.6.3 Revision 15 read as follows:

> The Combined License applicant will evaluate deviations from the design due to as procured or as-built conditions and will summarize the results of the evaluation in an as-built summary report as described in subsections 3.8.3.5.7, 3.8.4.5.3 and 3.8.5.4.2.

The requirement to prepare an as-built summary report is redundant with ITAAC Item 2.a) i) of Tier 1 Table 3.3-6.

Deleting the COL information item did not alter the information about design and loading conditions of the structures described in DCD Subsections 3.8.3, 3.8.4, and 3.8.5. The commitments to provide design summary reports of the structures included in DCD Sections 3.8.3.5.7, 3.8.4.5.3 and 3.8.5.4.2 was not altered by the deletion of the COL information item.

The COL information item in DCD Subsection 3.8.6.4, Revision 15 read as follows:

The Combined License applicant will perform in-service inspection of the containment according to the ASME Code Section XI, Subsection IWE, as described in subsection 3.8.2.7.

Inservice inspection of the containment is required by NRC Regulations including 10CFR 50.55a. This COL Information Item was redundant with NRC Regulations. Inservice inspections are completed by the COL holder after operation is initiated.

Deleting the COL information item did not alter information about the design of the containment or appurtenances DCD Subsection 3.8.2. The commitment for inservice inspection of the containment included in DCD Section 6.6.1 was not altered by the deletion of the COL information item.

The justification provided for removal of the subject COL Information Items in APP-GW-GLR-021 remains valid. The justification provided in APP-GW-GLR-021 fully supported the removal of the COL Information Items. The removal of the COL Information Items did not alter design features in the AP1000 certified design. The removal of the COL Information Items did not adversely impact the safety of the design, construction, or operation of the AP1000. The activities and information required by these COL information items are required by redundant ITAAC and NRC regulations. These COL Information Items do not need to be returned to the DCD.

Response to Revision 1

Westinghouse agrees that the ITAAC does not fully capture the examination requirements contained in DCD subsection 3.8.4.7. Westinghouse will include the commitment for an examination for cracking in the Tier 1 Table 3.3-6. Also the inspection of the passive containment cooling water storage tank for leakage of water leaking out of the tank through the concrete the will be captured in the Tier 2 discussion. The changes to the DCD are shown below.

During the review of this request it was observed that the ITAAC requirement for measurement of the flow from the leak chase collection system does not have a corresponding commitment in Tier 2 of the DCD. An item will be added to Tier 2 Subsection 3.8.4.7 to provide the Tier 2 information.

Response to Revision 2

The description of the areas to be inspected in ITAAC items 10 ii) and 10 iii) in Tier 1 Table 3.3-6 is not completely clear. The tension ring for the enhanced shield building is at the top of the cylindrical portion of the building and the design now has steel plate as the outer surface of the tension ring. Concrete cracking in the tension ring region will not be visible. Cracking in the area of the junction of the roof and cylinder portions of the shield building would be evident in the roof above the tension ring. The Acceptance Criteria for ITAAC Item 10 ii) will be revised to remove the phrase that indicates the tension ring is in the roof. The ITA and the Acceptance Criteria for ITAAC Item 10 iii) will be revised to clarify that the inspection is of the roof above the tension ring. With these changes the ITAAC for inspection of the shield building in Table 3.3-6 is consistent with DCD Section 3.8.4.7.

The requirement in ITAAC item 10 iii) in Tier 1 Table 3.3-6 for an inspection for cracking in the concrete is the same as the inspection identified in the commitment in Tier 2 Subsection 3.8.4.7. References to specific standard such as ACI 349.3R-96 are not included in Tier 1. This is an established practice in the preparation of Tier 1 information including ITAAC. The commitment in Tier 2, which is incorporated by reference in the COL applications, is sufficient to identify the standard to be used for evaluation of concrete cracking for the post-construction inspection. To include the specific standard in Tier 1 would require an exemption request if the standard is withdrawn or significantly modified.

The two areas of the shield building to be inspected for cracking in the concrete before and after the first filling of the Passive Containment Cooling Water Storage Tank are the boundaries of the tank and the area of the roof above the tension ring. These areas cover the joints between different portions of the roof structure and are the most likely locations to observe cracking.

Design Control Document (DCD) Revision: (Revision 1, 2)

Revise Tier 1 Table 3.3-6 as follows:

Table 3.3-6 Inspections, Tests, Analyses, and Acceptance Criteria		
Design Commitment	**Inspections, Tests, Analyses**	**Acceptance Criteria**
10. The shield building roof and PCS storage tank support and retain the PCS water sources. The PCS storage tank has a stainless steel liner which provides a barrier on the inside surfaces of the tank. Leak chase channels are provided on the tank boundary liner welds.	i) A test will be performed to measure the leakage from the PCS storage tank based on measuring the water flow out of the leak chase collection system.	i) A report exists and concludes that total water flow from the leak chase collection system does not exceed 10 gal/hr.
	ii) An inspection of the PCS storage tank exterior tank boundary and shield building tension ring will be performed before and after filling of the PCS storage tank to the overflow level. The vertical elevation of the shield building roof will be measured at a location at the outer radius of the roof (tension ring) and at a location on the same azimuth at the outer radius of the PCS water storage tank before and after filling the PCS storage tank.	ii) A report exists and concludes ~~that there is no visible water leakage from the PCS storage tank and~~ that inspection and measurement of the passive containment cooling water storage tank and the tension ring ~~of~~ structure before and after filling of the tank shows structural behavior under normal loads to be acceptable.
	iii) An inspection of the PCS storage tank exterior tank boundary and shield building tension ring will be performed before and after filling of the PCS storage tank to the overflow level. The boundaries of the passive containment cooling water storage tank and the shield building roof above the tension ring will be inspected visually for excessive concrete cracking	iii) A report exists and concludes that there is no visible water leakage from the PCS storage tank through the concrete and that there is no visible excessive cracking in the boundaries of the passive containment cooling water storage tank and the shield building roof above the tension ring
11. Deleted		
12. The extended turbine generator axis intersects the shield building.	An inspection of the as-built turbine generator will be performed.	The extended axis of the turbine generator intersects the shield building.

Revise Tier 2 Subsection 3.8.4.7 as follows: (Revision 1 and 2)

3.8.4.7 Testing and In-Service Inspection Requirements

Structures supporting the passive containment cooling water storage tank on the shield building roof will be examined before and after first filling of the tank.

- The boundaries of the passive containment cooling water storage tank and the shield building roof above the tension ring at the intersection of the shield building roof and the shield building cylinder will be inspected visually for excessive concrete cracking before and after first filling of the tank. Any significant concrete cracking will be documented and evaluated in accordance with ACI 349.3R-96 (reference 50). The structure around the passive containment cooling water storage tank will be inspected for water leaking out of the tank through the concrete.

- The vertical elevation of the passive containment cooling water storage tank relative to the top of the shield building cylindrical wall at the tension ring will be measured before and after first filling. The change in relative elevation will be compared against the predicted deflection.

- A test will be performed to measure the leakage from the passive containment cooling water storage tank based on measuring the water flow out of the leak chase collection system.

- A report will be prepared summarizing the test and evaluating the results.

There are no other in-service testing or inspection requirements for the seismic Category I shield building and auxiliary building. However, during the operation of the plant the condition of these structures should be monitored by the Combined License holder to provide reasonable confidence that the structures are capable of fulfilling their intended functions.

PRA Revision: None

Technical Report (TR) Revision: None