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Your ref: Docket No. 52-006
Our ref: DCP/NRC2339

January 8, 2009

Subject: AP1000 Response to Request for Additional Information (SRP 3)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 3. 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 RAI:

RAI-SRP3.9.3-EMB2-08

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,

A handwritten signature in black ink, appearing to read "Robert Sisk".

Robert Sisk, Manager
Licensing and Customer Interface
Regulatory Affairs and Standardization

/Enclosure

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

cc: D. Jaffe - U.S. NRC 1E
E. McKenna - U.S. NRC 1E
B. Gleaves - U.S. NRC 1E
P. Ray - TVA 1E
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A. Monroe - SCANA 1E
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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-SRP3.9.3-EMB2-08
Revision: 0

Question:

The staff conducted an on-site review of AP1000 component design on October 13 to October 17, 2008. The staff reviewed how Westinghouse translated DCD information into the design specifications for all components audited. The staff also reviewed the way in which Westinghouse documented the design analysis methodologies, criteria, and functional requirements in its design report for each major component in accordance with ASME Code, Section III. The staff requires response to the following Open Item in order to conclude its review of the proposed removal of the COL information item, currently addressed in the DCA.

Containment & IRWST Sump Screens - Westinghouse stated that the screen structural calculations will be performed by the screen vendor, and that the analysis is not available for review at this time. The NRC audit team, however, were provided with the Design Specification and supporting Data Sheet Report for the screens. One important input to the structural calculations is the expected debris loading on the screens, which enters into the screen pressure drop model which, in turn, is used to compute the hydraulic force on the screen and supporting structure.

Westinghouse stated that the piping insulation selected for the AP1000 is the metallic reflective metal insulation (RMI), and that no fibrous or particulate insulation is used in those areas of the plant that is subject to steam blowdown loads from postulated accidents. Westinghouse also stated that the paint in those regions of containment will be appropriately qualified, so that paint is not expected to be a source of debris. Based upon these statements, the particulate loading on the sump screen is, reasonably, expected to consist of latent debris and chemical constituent debris. The documentation provides estimates representing "Best Estimate", "Bounding" and "Sensitivity" values of the masses of these debris categories. For the latent debris, the estimates are 14.35, 59.2 and 99 lbm, respectively. The NRC auditors did not review the origins of these masses. They did, however, observe that the latent debris estimate that is to be used as the design value for the screen is the best estimate value of approximately 14 lbm.

Estimates of latent debris mass that may accumulate in the current generation of PWRs range from approximately 20 lbm to more than 200 lbm. Compared with these estimates the best estimate of 14 lbm that is proposed for the AP1000 is judged by the NRC auditors as non-conservatively low. While it is likely possible to design containment cleanliness programs to sustain low latent debris inventory in containment, Westinghouse should justify the latent debris mass value used for the screen pressure drop component of the structural load on the IRWST and sump screens.

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

Westinghouse Response:

As discussed in TR 26, the total amount of latent debris in the AP1000 was calculated based on operating plant walk down debris loading data and AP1000 surface areas. This calculation was performed for two cases. One case was a best estimate case and one was a bounding case. The bounding case resulted in a total of about 100 pounds of latent debris in the containment. As discussed in TR 26, not all of the latent debris in the containment will be transported to the containment recirculation screens because some will be transported to the IRWST screens and some will not be transported at all. Debris on surfaces that are not flooded or sprayed with water are not transported.

To demonstrate that there is not a "cliff" near the bounding case, a sensitivity case was defined that used 200 pounds of latent debris (total in the containment). As discussed in TR 26, the 200 pounds was based on the NRC recommended value for latent debris in their safety evaluation of NEI 04-07.

The following table lists for the AP1000 the total debris amounts in the containment and how much could be transported to the containment recirculation screens.

AP1000 Latent Debris Amounts			
Case >	Best Estimate	Bounding	Sensitivity
Total in containment			200
Transported to Containment Recirculation Screens	14.35	59.2	99

As discussed above, the amount of latent debris calculated for the AP1000 containment is based on plant walk down data for the Best Estimate and the Bounding cases. Note that the Bounding case has about 50% more debris in the containment than is typically seen in operating plants based on walk down data. Some plants use 200 lb of debris but it is not based on walk down data.

As a result, the amounts of debris used in the AP1000 design are conservatively high compared to plant walk down data.

Westinghouse responses to RAI-SRP6.2.2-SRSB-05, RAI-SRP6.2.2-SRSB-06 and RAI-SRP6.2.2-SRSB-07 also address the basis for the latent debris values. These RAI responses were transmitted to the NRC in letters DCP/NRC2285 dated November 6, 2008 and DCP/NRC2287, dated November 11, 2008. As a result of these RAIs Westinghouse has made the calculations available for NRC staff to audit at the Westinghouse Twinbrook office until the end of January, 2009.

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

Design Control Document (DCD) Revision:

None

PRA Revision:

None

Technical Report (TR) Revision:

None