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Your ref: Docket No. 52-006
Our ref: DCP/NRC2356

January 14, 2009

Subject: AP1000 Responses to Requests for Additional Information (SRP)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 14. 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-SRP14.3.2-CCIB-05

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,

D. A. Lindgren / FOR

Robert Sisk, Manager
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/Enclosure

1. Response to Request for Additional Information on SRP Section 14

D063
NRO

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ENCLOSURE 1

Response to Request for Additional Information on SRP Section 14

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP14.3.2-CCIB-05
Revision: 0

Question:

In ITAAC Table 2.2.3-4, for design commitment Item 8.c, ITA item viii states: "Inspections of the IRWST and Containment recirculation screens will be conducted." The AC item viii states that: "The screen surface area of each IRWST screen is ≥ 500 ft^2. The screen surface area of each containment recirculation screen is > 2500 ft^2. The bottom of the containment recirculation screens is ≥ 2 ft above the loop compartment floor."

The staff asks the applicant to explain the following: a) is there a required shape of the screens and if there is a maximum surface area requirement, b) is there a maximum height the bottom of the recirculation screens should be above the loop compartment floor, c) what is the required thickness of the screens, their construction, and screen mesh size, and d) how the screens are supported. The staff requests that the details provided in the applicant's explanation be incorporated into AC item viii.

Westinghouse Response:

The details of the containment recirculation screen arrangements are provided in Section II of APP-GW-GLN-147, Revision 1 (AP1000 Containment Recirculation and IRWST Screen Design).

In general, the sump screen design details are appropriately addressed in the Acceptance Criteria for the ITAAC to provide assurance that a plant which incorporates the AP1000 design certification is built and should operate in accordance with the AP1000 design certification. Therefore, based on the following discussions, no additional information is proposed for Acceptance Criteria for Item viii.

a) As discussed above, the details of the recirculation screen design are expected to be addressed in the design report. While the screen surface is flat [i.e., the inlets to the individual screen pockets are parallel to each other], the ITAAC does not need to specify the overall shape of the recirculation screen since the key design aspect is the individual pocket frontal face and screen surface area and the total screen frontal face area and screen surface area for each screen, both of which are addressed in the ITAAC Acceptance Criteria. The ITAAC properly specifies the minimum screen area and there is no functional reason to establish a requirement for maximum screen surface area.

   As shown in Figures A1 to A4 and described in Section IV of APP-GW-GLN-147, the screen consists of pockets and the pockets taper slightly from the front opening of the pocket to the body. This taper forms a channel between adjacent pockets on all sides. The pocket design is perforated on all surfaces. These channels allow the flow, after it passes through the

perforated sheets that make up the pocket sides / top / bottom, to pass between the adjacent pockets to the plenum that is located behind the pockets. The complex / multiple-surface geometry of the screens within each pocket (which includes two vertical screens and one screen surface on the top of the pocket), the relatively large total screen surface area, and the relatively low flow velocities through the screen all help to minimize the potential of, or are not susceptible to a thin debris bed from being created over the entire surface area within each pocket.

b) There is no functional reason to establish a maximum height of the bottom of the recirculation screen above the loop compartment floor. Since the screen units are mounted in a housing that rests on the loop compartment floor, the details of the screen and housing frame are contained in the associated as-built component design report for ITAAC Item 5.a, which would address the structural aspects of the location above the bottom of floor.

(The relative height of the lowest portion of the containment recirculation screen is just above the floor by the thickness of the housing frame, as shown in the Figure 1 of APP-GW-GLN-147. The debris curb [or weir] described in Section IV of the report is located approximately 8 inches away from the front face [screen pocket inlets] of the recirculation screens.)

These aspects of the design are expected to be incorporated into the as-built component design reports in the ITAAC Acceptance Criteria for Item 5.a and do not need to be included in Item 8.c.

One clarification comment related to the original question is that the height requirement in the AC was revised in DCD Revision 17. As a result of the screen design changes described in APP-GW-GLN-147, the height requirement is related to the debris curb and not to the recirculation screens, as follows.

> *"A debris curb exists in front of the containment recirculation screens which is ≥ 2 ft above the loop compartment floor."*

There is no functional reason to establish a maximum height for the debris curb.

c) As discussed in Item b) above, the containment recirculation screen component design report that satisfies ITAAC Item 5.a is expected to provide the appropriate design information. This would appropriately address relevant component design characteristics such as screen material thickness, screen construction, and screen mesh size. The screen mesh opening size is specified in the Tier 2 information in fourth paragraph of DCD Section 6.3.2.2.7.2.

d) A description of how the containment recirculation screens are supported is provided in the design report, and is also expected to be appropriately addressed in the component design report developed to satisfy the requirements in ITAAC Item 5.a.

Section III of APP-GW-GLN-147 describes the construction of the screen support structure, and Figures A.3, 01, and 02 show how the screens are supported.

Design Control Document (DCD) Revision:

None

PRA Revision:

None

Technical Report (TR) Revision:

None