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Your ref: Docket No. 52-006
Our ref: DCP_NRC_002532

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Subject: AP1000 Response to Request for Additional Information (SRP 9)

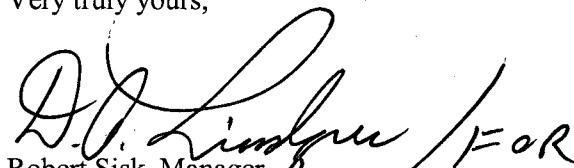
Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 9. This RAI response is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in this response is generic and is expected to apply 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(s):

RAI-SRP9.1.2-SEB1-06

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,


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

/Enclosure

1. Response to Request for Additional Information on SRP Section 9

cc:	D. Jaffe	- U.S. NRC	1E
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	C. Pierce	- Southern Company	1E
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ENCLOSURE 1

Response to Request for Additional Information on SRP Section 9

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.2-SEB1-06
Revision: 0

Question:

Section 2.8.1.4 "Rack-to-Rack and Rack-to-Wall Impacts" was revised in TR 54 Rev. 2 to state: "Rack-to-wall impacts occur twice – in Run 5 rack A1 impacts the west wall at a force of 45,690 lb and in Run 4 rack B4 impacts the north wall at a force of 67,800 lb."

Since the revised analyses now indicate that impacts occur between the racks and the pool walls, the staff requests Westinghouse to describe in detail how these additional impact loads have been considered in the design of the fuel pool structure (including the liner) and the design of the fuel racks, and also to identify where this is/will be described in the AP1000 DCD.

Westinghouse Response:

Consideration of Impact on Spent Fuel Racks:

The maximum rack-to-wall impact force on the spent fuel racks of 67,800 lbs (and also as increased to 81,580 lbs as a result of the re-evaluation of the fuel attenuation factor per RAI-SRP9.1.2-SEB1-05) is bounded by the maximum rack-to-rack impact, which is 269,700 lbs as discussed in Section 2.8.1.4 of TR54 (this value decreased to 260,600 lbs in the RAI-SRP9.1.2-SEB1-05 re-evaluation).

The spent fuel racks have been analyzed to show that the force required to buckle the cell walls at the top of the rack is greater than the calculated maximum impact force (260,600 lbs in the updated analysis, or 269,700 without considering the RAI-SRP9.1.2-SEB1-05 changes) by more than factor of 1.5. Specifically, the Westinghouse/Holtec proprietary version of the calculation concludes that the Safety Factor is 1.66 (in the old version, and updated to 1.72 in the reanalysis), and therefore will not buckle under the maximum calculated impact loads, including the maximum rack-to-wall impacts.

In conclusion, the effect on the spent fuel racks due to their impact with the spent fuel pool walls is bounded by the impact that the spent fuel racks have with other spent fuel racks, and this larger impact was considered in TR54 when evaluating the structural integrity of the spent fuel racks and shown to result in a safety factor greater than 1.5.

Consideration of Impact on Spent Fuel Pool Structure:

An additional analysis was performed to evaluate the impact of the resultant spent fuel rack loads imparted on the spent fuel pool structure during a seismic event. The analysis considers the updated maximum impact load of 81,580 lbs from the RAI-SRP9.1.2-SEB1-05 response.

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The conclusion of the analysis is that the rack impact load is much lower than other conventional loads that were previously considered and do not result in a significant impact. The required steel thickness of the liner to account for accident conditions changed from 0.465" to 0.467" and remains below the 0.5" design plate thickness.

The details of the evaluation of the impacts on the spent fuel pool structure are documented in Reference 1. No DCD changes are proposed, as this level of detail is not typically provided in the DCD.

Reference:

1. Westinghouse Proprietary Letter OBY/DCP0434, "Impact Evaluation due to Spent Fuel Rack Reaction during a Seismic Event", 5/29/09

Design Control Document (DCD) Revision:

None.

PRA Revision:

None.

Technical Report (TR) Revision:

None.