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Your ref: Docket No. 52-006
Our ref: DCP_NRC_002631

September 22, 2009

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-SRP9.1.3-SBPA-14

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

D063
NRO

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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-SRP9.1.3-SBPA-14
Revision: 0

Question:

In the AP1000 DCD, Rev. 17 (and 16), the applicant proposes to increase the spent fuel pool (SFP) storage rack density from high density to higher density racks. 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 61, "Fuel Storage and Handling and Radioactivity Control," requires in part that fuel storage systems be designed with a residual heat removal capability having reliability that reflects the importance to safety of decay heat removal. As indicated in NUREG-0800, "Standard Review Plan" Section 9.1.2, III.1, the NRC staff considers the design of high-density fuel storage systems to be acceptable in this regard if (among other things) low-density storage is used, at a minimum, for the most recently discharged fuel to enhance the capability to cool it. The design of the applicant's fuel storage system does not use low-density racks as specified by Standard Review Plan (SRP) Section 9.1.2.III.1, and this difference between the proposed design and the staff's acceptance criteria has not been explained and justified. Therefore, additional information is needed to address this difference and to explain how the proposed fuel storage system design is adequate for satisfying GDC 61 requirements commensurate with the staff's review criteria. Additionally, the AP1000 DCD needs to be revised to include this information.

Westinghouse Response:

The AP1000 Spent Fuel Pool has two distinct regions for the storage of spent fuel. There are 3 Region 1 rack modules (243 cells) that contain flux traps (water gaps) between each storage cell and 5 Region 2 rack modules (641 cells) that do not have flux traps between each cell (also there are 5 cells specially designed for the storage of damaged fuel assemblies). Both types of spent fuel storage racks are considered high density racks. Revision 15 of the DCD was approved by the NRC and was made up entirely of Region 1 high density racks.

The Rev. 17 (and Rev. 16) spent fuel pool rack layout, like the approved Rev. 15 layout, uses the Region 1 cells to store the most highly reactive fuel, including fresh fuel and recently discharged fuel. The Region 2 racks were included to increase the storage capacity of the spent fuel pool.

The capability of the AP1000 Spent Fuel Pool Cooling System to effectively and safely remove decay heat from the pool is discussed in Section 9.1.3 of the DCD. The spent fuel pool cooling system is designed to remove the decay heat produced by the spent fuel assemblies during all modes of plant operation, regardless of the spent fuel assemblies storage location in the pool. The AP1000 meets and exceeds all the temperature requirements outlined in 9.1.3.1.3.1 and 9.1.3.1.3.2. Decay heat analyses are documented in Westinghouse calculations APP-SFS-M3C-012, Revision 1 and APP-SFS-M3C-019, Revision 1.

Reference(s):

1) APP-SFS-M3C-012, Revision 1, "AP1000 Spent Fuel Pool Heatup, Boiloff, and Emergency Makeup on Loss of Cooling"

2) APP-SFS-M3C-019, Revision 1, "Calculation of Local Temperatures in AP1000 Spent Fuel Storage Racks"

Design Control Document (DCD) Revision:
None.

PRA Revision:
None.

Technical Report (TR) Revision:
None.