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Your ref: Docket No. 52-006
Our ref: DCP/NRC2361

January 26, 2009

Subject: AP1000 Responses to Requests for Additional Information (SRP9)

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:

RAI-SRP9.3.6-SRSB-02

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-SRP 9.3.6-SRSB-02
Revision: 0

Question:

In DCD Revision 17, Table 9.3.6-2, the following CVS nominal design parameters are changed: the letdown heat exchanger shell side and tube side design temperatures are changed from 200°F and 650°F, respectively, to 150°F and 600°F; the design flows of the mixed bed and cation bed demineralizers, and the reactor coolant filter are changed from 100 gpm to 250 gpm; and the boric acid tank volume is changed from 70,000 to 73,515 gal. Westinghouse indicates that these changes are made to match report APP-CVS-M3-001, R0, which is not submitted for NRC review. The staff is requesting that Westinghouse provide the basis and justification for these changes to determine their acceptability.

Westinghouse Response:

It is correct that the values within DCD Rev. 17 were modified to match the values provided in Westinghouse document APP-CVS-M3-001, Rev. 0 (the System Specification Document). Specifically, the values were updated to match the design parameters provided by the datasheets within Appendix B-1.2.

Design temperatures of the Letdown Heat Exchanger were modified to match the design temperatures of the attached piping for both the tube and shell sides. CVS Piping attached to the heat exchanger tube side inlet has design temperature of 600°F, and Component Coolant Water (CCS) piping attached to the shell side inlet has a design temperature of 150°F. The component datasheet was authored to adhere to this philosophy, and as a result, the DCD was modified accordingly.

Additionally, it is not possible for temperatures to ever exceed 600°F on the tube side; purification flow is first cooled through the Regenerative Heat Exchanger, and a High-2 temperature interlock will isolate purification flow to the LHX if detected via instrument channel CVS-TICA-002. Temperatures cannot exceed 150°F on the shell side of the heat exchanger since the normal operating temperature of the CCS is 95°F, with maximum peaks of 100°F.

The design flows of the mixed bed demineralizers, cation bed demineralizer, and reactor coolant filters were changed from 100 gpm to 250 gpm to accommodate for shutdown purification flows when the Normal Residual Heat Removal System (RNS) provides the motive force for reactor coolant purification. In this mode of operation (when the RCS temp. is approximately 270°F or less), the RNS is aligned with the CVS such that purification flow enters the CVS downstream of the Letdown Heat Exchanger, flows through a mixed bed demineralizer, optionally through a cation bed demineralizer, a reactor coolant filter, and then back to the suction side of the RNS pumps. The nominal shutdown purification flow is 175 gpm, but could be as high as 214 gpm (when the cation bed is bypassed). A design flowrate of 250 gpm was specified to accommodate these higher flowrates, with margin.

For the Boric Acid Storage Tank volume, the DCD value of 73,515 gallons represents the useable volume of the tank, which includes the volume to accommodate one shutdown to cold shutdown followed by a shutdown for refueling at the end of the fuel cycle, plus the volume needed for normal operation, plus a volume for operating margin. This volume was updated according to a value calculated with updated inputs that more accurately represent the AP1000 design. The total volume of the tank is specified as 80,000 gallons to give additional margin over the useable volume.

Design Control Document (DCD) Revision:
None

PRA Revision:
None

Technical Report (TR) Revision:
None