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Your ref: Docket No. 52-006
Our ref: DCP/NRC2142

May 28, 2008

Subject: AP1000 Responses to Requests for Additional Information (SRP9.1.3)

Westinghouse is submitting responses to the NRC requests for additional information (RAIs) on SRP Section 9.1.3. These RAI responses are submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in the responses is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

Responses are provided for RAI-SRP9.1.3-SBPA-01 through -05, as sent an email from Perry Buckberg to Sam Adams dated April 16, 2008. These responses complete all requests received to date for SRP Section 9.1.3.

Questions or requests for additional information related to the content and preparation of these responses 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. Responses to Requests for Additional Information on SRP Section 9.1.3

D063
NRO

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ENCLOSURE 1

Responses to Requests for Additional Information on SRP Section 9.1.3

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.3-SBPA-01
Revision: 0

Question:
In DCD, Revision 16, Section 9.1.3.2 and Table 9.1-2, the nominal boron concentration in the spent fuel pool was changed to a value of 2700 ppm from a previous value of 2500 ppm. TR-18, AP1000 Core & Fuel Design, Revision 0, states that this change to 2700 ppm is "for consistency with the accumulator boron concentration value provided in the DCD Chapter 15 Accident Analysis". However, the accumulator boron concentration value stated in DCD Chapter 15, Sections 15.1.4.2.2 and 15.1.5.2.3, is 2600 ppm, not 2700 ppm while TR-121, Spent Fuel Pool Water Level and Dose, Revision 0, Section 9.1.2.2 and Table 9.1-2, continue to say that the nominal boron concentration is 2500 ppm. The staff requests that the applicant clarify what the correct SFP boron concentration is. The staff also requests that the applicant identify if the change impacts previous analyses.

Westinghouse Response:
The correct spent fuel pool boron concentration is 2700 ppm. This is consistent with the stated values in Section 9.1.3.2 and Table 9.1-2 of Revision 16 of the AP1000 DCD and the IRWST boron concentration. The purpose of TR 121 was to address the change in spent fuel pool water level. The DCD markup associated with TR 121 only addresses changes applicable to change in the spent fuel pool water level. It does not specify all changes associated with section 9.1 of the DCD.

Boron dilution of the AP1000 spent fuel pool is addressed in the AP1000 Technical Report numbered APP-GW-GLR-029. The analysis assumes a boron concentration of 2300 ppm, which is consistent with Technical Specification 3.7.11 that states the fuel storage pool boron concentration shall be greater than or equal to 2300 ppm. This analysis is conservative with respect to the nominal spent fuel pool boron concentration. Increasing the boron concentration in this analysis will only increase the time and volume required to dilute the spent fuel pool. Therefore, no change to the analysis is needed.

The accumulator boron concentration in Chapter 15 is stated as 2600 ppm. This is consistent with Technical Specifications SR 3.5.1.4, which requires the boron concentration in each accumulator is between 2600 and 2900 ppm. No reanalysis is required.

References:

1. Spent Fuel Storage Racks Criticality Analysis, APP-GW-GLR-029

Design Control Document (DCD) Revision: None

PRA Revision: None

Technical Report (TR) Revision: None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.3-SBPA-02
Revision: 0

Question:

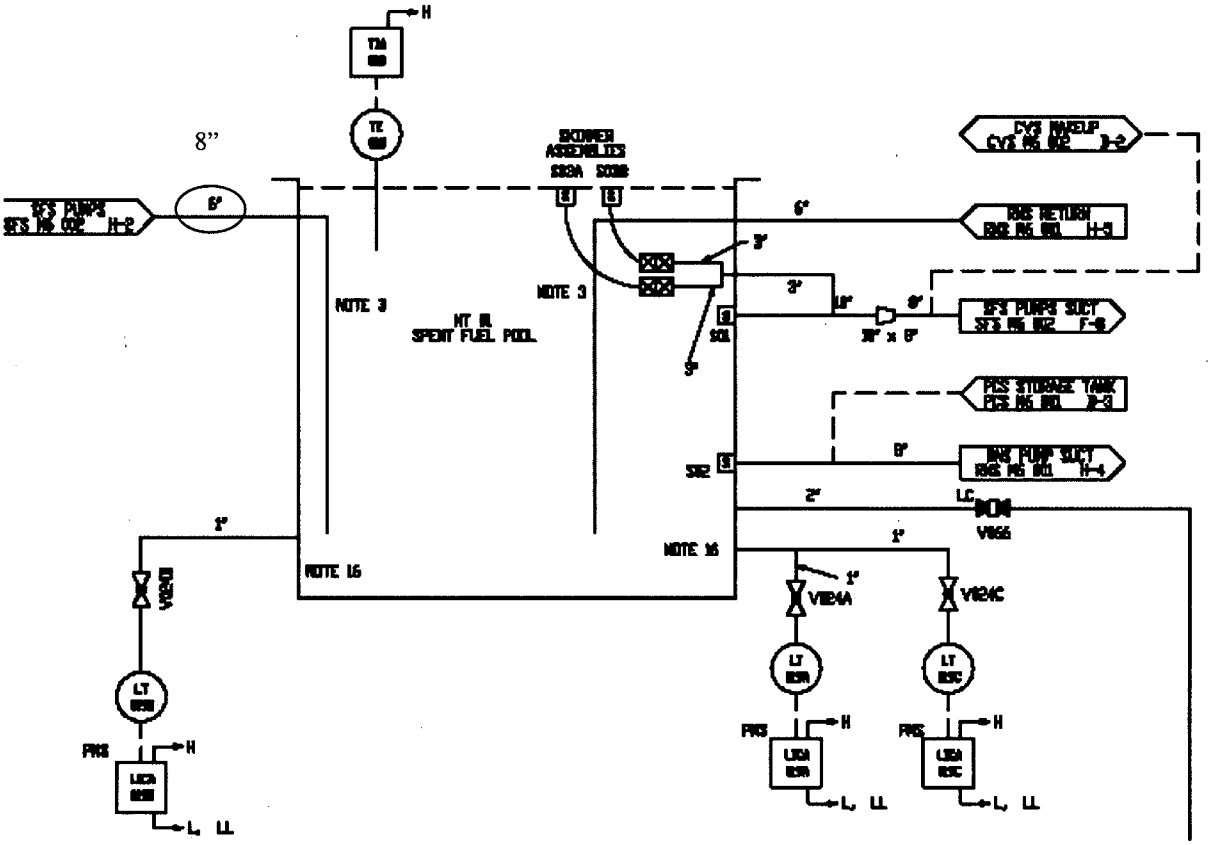
TR-103, Fluid System Changes, Revision 2, page 149 illustrates a change to DCD Figure 9.1.6 (Sheet 1 of 2). This change revises the SFS pumps' common discharge pipe size from 6 inch, schedule 40, to 8 inch, schedule 40. However, no similar change is shown on the matching pipe in the DCD, Figure 9.1.6 (Sheet 2 of 2). These changes have not been incorporated into DCD and these changes are not documented in TR-134, AP1000 DCD Impacts to Support COLA Standardization, Revisions 0 through 3. The staff requests that the applicant update TR-134 to reflect the above mention changes.

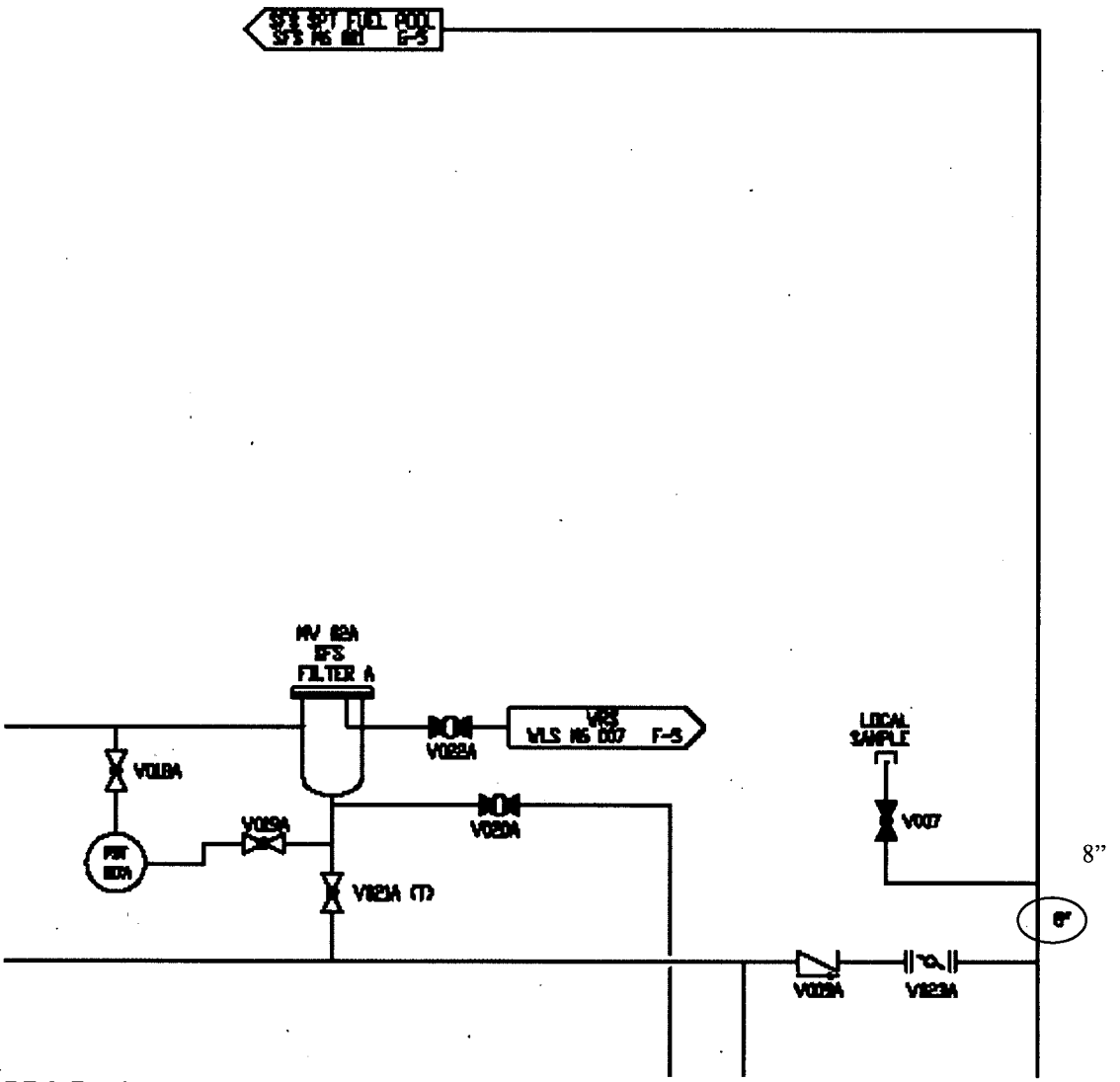
Westinghouse Response:

The SFS common discharge line is 8 inches as indicated in TR 103. This should have been reflected in Revision 16 of the AP1000 DCD. This will be captured in the next revision of TR 134.

References:
1. APP-GW-GLR-103

Design Control Document (DCD) Revision: Revise Figure 9.1.6 (Sheet 1 of 2 and 2 of 2) as shown below.





PRA Revision: None

Technical Report (TR) Revision: None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.3-SBPA-03
Revision: 0

Question:

TR-121, Spent Fuel Pool Water Level and Dose, Revision 0, page 2 of 17 states that the normal spent fuel pool water level is increased by 1 foot, from elevation 133.25 ft to elevation 134.25 ft. However, page 5 of the same TR shows the DCD was change from "...water level 2 feet 6 inches below the operating deck" to "...water level 12 inches below the operating deck"; this change corresponds to a level increase of 1 foot 6 inches. The staff requests that the applicant clarify the correct normal water level in the spent fuel pool and discuss how this water level change impacts previous analyses.

Westinghouse Response:

The correct spent fuel pool water level is 134.25 feet. This corresponds to a water level which is 12 inches below the operating deck. Revision 15 of the AP1000 DCD was inconsistent. Revision 15 of the DCD stated that the water level was 133.25 ft. It also stated that the water level was 2 feet 6 inches below the deck. TR 121 and Revision 16 of the DCD corrected this inconsistency. All effected analysis was included in TR 121, and the analysis was performed assuming a spent fuel pool water level of 134.25 feet.

References:
1. Spent Fuel Pool Water Level and Does, APP-GW-GLN-121, Rev. 0

Design Control Document (DCD) Revision: None

PRA Revision: None

Technical Report (TR) Revision: None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.3-SBPA-04
Revision: 0

Question:

TR-103, Fluid System Changes, Revision 2, documents changes in the decay heat values stated in DCD Section 9.1.3.4.3, Abnormal Conditions. Calculated decay heat level when no makeup is needed for 7 days changes from 2.3 MWt to 4.6 MWt. Calculated decay heat level below which makeup from the cask washdown area is sufficient changes from 2.8 MWT to 5.4 MWt.

The staff requests that the applicant provide an expanded discussion of these calculated decay heat levels. Include; what refueling off-load conditions each of the calculated values corresponds to and whether the calculated values are representative or limiting for the off-load conditions.

Westinghouse Response:

AP1000 DCD Sections 9.1.3.1.3.1 - 9.1.3.1.3.3 describe the conditions assumed for the calculated decay heat levels. The detailed calculation that computes these heat loads for each condition has been made available for NRC review at the Westinghouse offices in Rockville. The calculation number is APP-SFS-M3C-012 Revision 1. The calculated values are representative of limiting off-load conditions as detailed in the calculation.

References:
1. AP1000 Spent Fuel Pool Heatup, Boiloff, and Emergency Makeup on Loss of Cooling, APP-SFS-M3C-012, Rev. 1

Design Control Document (DCD) Revision: None

PRA Revision: None

Technical Report (TR) Revision: None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.3-SBPA-05
Revision: 0

Question:

It's not clear to the staff if there any pipes or other penetrations connecting to the SFP or inserted into the SFP below elevation 129.25 feet (the level to which SFP water is assumed to drain immediately following a loss of cooling). The staff requests that the applicant clarify whether or not there are pipes or other penetrations below this level and, if so, describe the design features that prevent draining or siphoning of the SFP water from below this level?

Westinghouse Response:

There are no non-safety related piping connections in the spent fuel pool below elevation 129.25. Below elevation 129.25 there are two safety related piping connections. These piping connection provide the two safety related makeup paths to the spent fuel pool. The piping is classified as AP1000 Safety Class C and they are normally isolated from the spent fuel pool. The lines provide safety related makeup from the passive containment cooling water storage tank and the cask washdown pit. An operator would have to manually align these flow paths.

Design Control Document (DCD) Revision: None

PRA Revision: None

Technical Report (TR) Revision: None