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Your ref: Docket No. 52-006
Our ref: DCP_NRC_002600

August 25, 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 15. 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-08
RAI-SRP9.1.3-SBPA-12

RAI-SRP9.1.3-SBPA-13
RAI-SRP9.1.3-SBPA-15

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,

A handwritten signature in black ink, appearing to read 'Robert Sisk'.

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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	P. Buckberg	- U.S. NRC	1E
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	P. Hastings	- Duke Power	1E
	R. Kitchen	- Progress Energy	1E
	A. Monroe	- SCANA	1E
	P. Jacobs	- Florida Power & Light	1E
	C. Pierce	- Southern Company	1E
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ENCLOSURE 1

Response to Request for Additional Information on SRP Section 9

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Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.3-SBPA-08

Revision: 0

Question:

AP1000 DCD, Revision 17, makes a change to the description of the location of the connection point between the SFP and the main suction line for the spent fuel pool (SFP) cooling system. Where previously the description read, "main suction line connects to the SFP at an elevation 2 feet below the normal water level in the pool," the description was changed to read, "main suction line connects to the SFP at an elevation 6 feet below the operating deck."

The staff requests that the applicant:

- a) Clarify in the DCD whether there has been a change in the elevation of the main suction line relative to the elevation of the operating deck. State in the DCD the elevation of both the operating deck and the elevation of the main suction line.
- b) During the audit performed on June 25, 2009, Westinghouse clarified to the staff that the specified elevation of the main suction line described in the AP1000 DCD is the centerline elevation of the pipe. This elevation is used as initial water level in Revision 1 of APP-SFS-M3C-012, September 2007 "AP1000 Spent Fuel Pool Heatup, Boil off, and Emergency Makeup on Loss of Cooling." After a postulated seismic event, this section of piping is assumed to fail and drain the SFP. The staff considers it conservative to assume that the SFP will drain down to the bottom of the (10" diameter) main suction line for the SFP cooling system and not merely to the center line elevation of the pipe.

The staff requests that the applicant either re-evaluate the SFP thermal analysis (APP-SFS-M3C-012) assuming the SFP initial water level following a seismic event is the bottom of the main suction line for the SFP cooling system instead of the center line elevation of the pipe and update the DCD to reflect the results of the new evaluation or justify the use of this less conservative assumption.

Westinghouse Response:

- a) The elevation of the main suction line for the spent fuel pool (SFP) cooling system has not changed in elevation. Westinghouse determined that a normal operation band should be established so that continual makeup to the pool would not be needed to compensate for evaporation. Implementing this change required items that reference the normal water elevation of the pool be changed. The AP1000 spent fuel pool operating deck is at elevation 135.25'.
- b) It has been concluded the main suction line elevation which was used for the initial water level in Rev.1 of the boiloff calculation (APP-SFS-M3C-012 Rev.1), was the centerline and did not accurately represent the conditions following a double ended guillotine break

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of the spent fuel pool suction line. Westinghouse is revising calculation APP-SFS-M3C-012 at this time. We expect that the results can be available for review by the end of September, 2009. At that time, a revised version of this RAI response will be submitted to the NRC with required DCD changes.

Design Control Document (DCD) Revision: none

PRA Revision: None

Technical Report (TR) Revision: None

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Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP9.1.3-SBPA-12
Revision: 0

Question:

Section 6.2.3.1.3. "Additional Requirements" of the "Containment Isolation System," states that:

[Requirement M] *"Containment penetrations with leaktight barriers, both inboard and outboard, are designed to limit pressure excursion between the barriers due to heatup of fluid between the barriers. The penetration will either be fitted with relief or check valves to relieve internal pressure or one of the valves has been designed or oriented to limit pressures to an acceptable value".*

Table 6.2.3-1 "Containment Mechanical Penetrations and Isolation Valves" lists each containment penetration and provides a summary of the containment isolation characteristics. Table 6.2.3-1 Sheet 2 of 4 identifies the containment isolation valves related to the spent fuel pool. Valve SFS-PL-V067 is a pressure release valve located between SFS-PL-V034 and SFS-PL-V035. Tier 1 Table 2.2.1-1 also identifies the same pressure release valve. Figure 9.1-6 "Spent Fuel Pool Cooling System Piping and Instrumentation Diagram," Sheet 1 of 2 does not show valve SFS-PL-V067.

The staff requests that the applicant update Figure 9.1-6 Sheet 1 to include valve SFS-PL-V067.

Westinghouse Response:

Since Table 6.2.3-1 and Tier 1 Table 2.2.1-1 identify the valve, Figure 9.1-6 should also include the valve.

Reference(s):

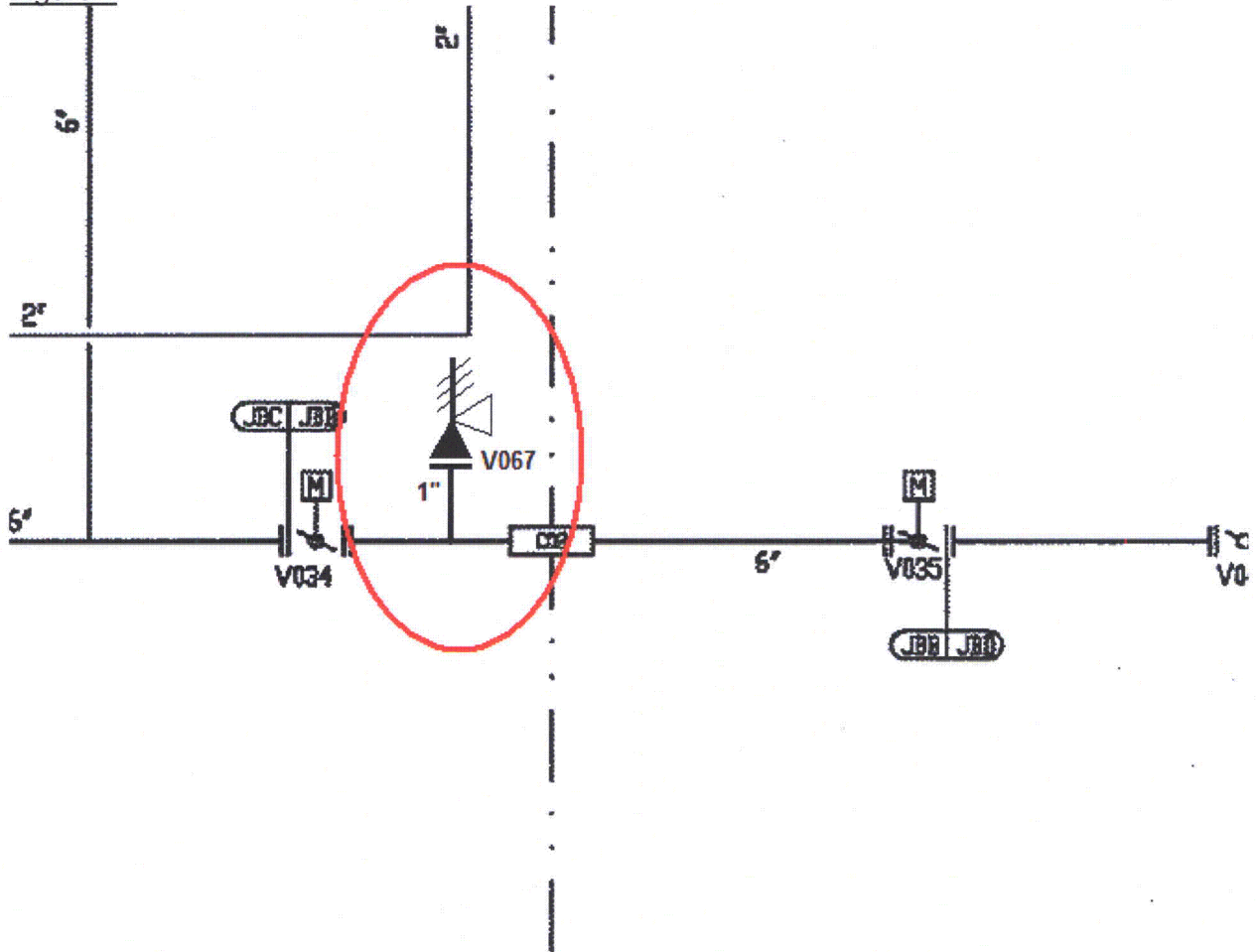
Design Control Document (DCD) Revision:

Figure 9.1-6 will include the following valve and attached line. The Figure 1 is enlarged and cropped from Figure 2, such that necessary details can adequately be viewed.

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Figure 1



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Figure 2

9. Auxiliary Systems

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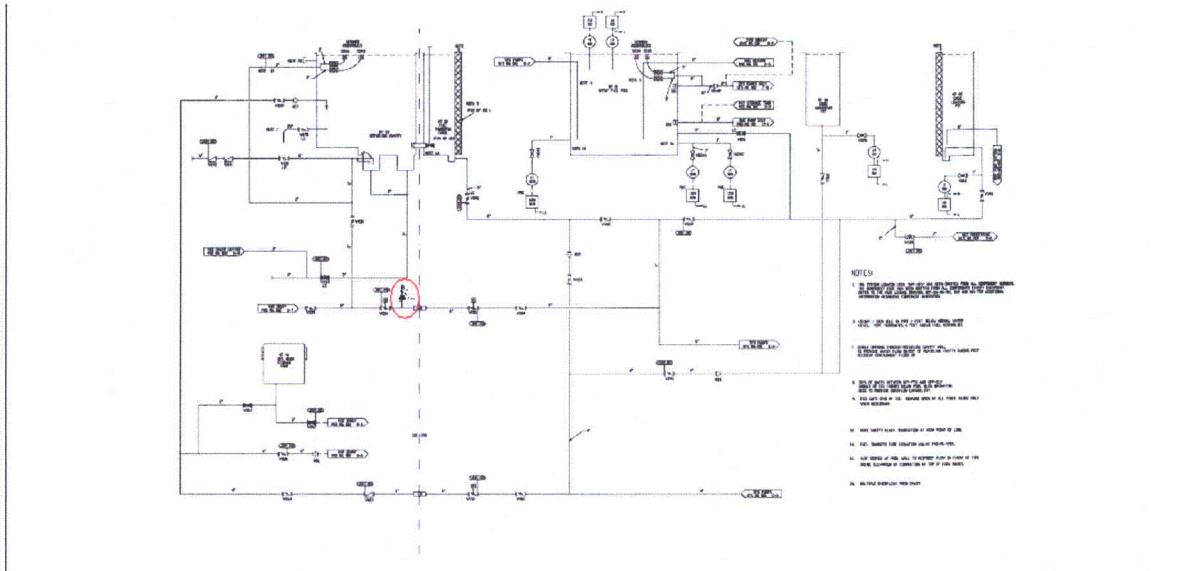


Figure 9.1-6 (Sheet 1 of 2)
Spent Fuel Pool Cooling System
Piping and Instrumentation Diagram
(REF) SFS 001

Tier 2 Material

9.1-69

Revision 17

PRA Revision: None

Technical Report (TR) Revision: None

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RAI Response Number: RAI-SRP9.1.3-SBPA-13

Revision: 0

Question:

Table 9.1-4 "Station Blackout/Seismic Event Times," provides the times before boiling would occur in the spent fuel pool following station blackout for various scenarios. For the worst case scenario (seismic event occurs after an emergency full core off-load immediately following refueling) the spent fuel pool (SFP) will reach saturation state in 1.37 hrs after the start of the event.

The staff requests that the applicant update the DCD in order to address the impact of SFP time to boil on the required operator actions needed to cope with this scenario.

Westinghouse Response:

Manual valves are used to connect both sources of water which are used for makeup. The alignment of the cask washdown pit requires opening the manual valve located in the Waste Monitor Tank B Room (12365). The alignment of the passive containment water storage tank requires opening a valve in the Mid Annulus Access Room (12345) and in the Passive Containment Cooling Valve Room in the upper Shield Building.

Preliminary results indicate that the operator will need to align makeup water approximately 15 hours after boiling has begun so that fuel is not uncovered. This assumes that a seismic event and a loss of site power occur, after a full core is transferred from the reactor to the SFP following a resumption of power after a typical core refueling. At that time, the pool is occupied by a whole fresh irradiated core, plus the fuel from the recent offload, plus 15.0 years worth of spent fuel. Also note that makeup to the pool must be added such that water does not spill out of the postulated SFS suction piping break.

Detailed information concerning operator action time will be available in Rev.2 of the AP1000 boiloff calculation (APP-SFS-M3C-012). The finalized revision of the calculation, which will be made available for review, will be completed by the end of September, 2009. Upon completion of the calculation, this RAI response will be revised and submitted to the NRC.

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-15
Revision: 0

Question:

The AP1000 DCD, Revision 17, made a change to Figure 9.1-4, "Spent Fuel Storage Pool Layout (889 Storage Locations)," to indicate that Rack C1 is 12x10 (-2) assemblies; whereas Revision 16 showed this same arrangement of assemblies but the label stated that Rack C1 contains an arrangement of 12x10 (-7) assemblies. Additional information is needed in the DCD to explain this apparent inconsistency.

Westinghouse Response:

The label was previously incorrect. Module C1 is different from the other Region 2 modules because it is used to make room for the 5 defective fuel storage cells. It is a 12x10 module, and 7 of the 12 cells in the North-South direction are removed to make room for the 5 defective fuel storage cells; therefore 2 cells were lost. The label 12x10 (-2) means that Module C1 is 12 cells long by 10 cells wide except that 2 are missing. This was not a design change, but rather a clarification.

Design Control Document (DCD) Revision:

None.

PRA Revision:

None.

Technical Report (TR) Revision:

None.