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Your ref: Docket No. 52-006
Our ref: DCP/NRC2425

April 13, 2009

Subject: AP1000 Response to Request for Additional Information (SRP 6)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 6. 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-SRP6.2.4-SPCV-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
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/Enclosure

1. Response to Request for Additional Information on SRP Section 6

D063
NRO

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ENCLOSURE 1

Response to Request for Additional Information on SRP Section 6

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP6.2.4-SPCV-02
Revision: 0

Question:

RAI-SRP6.2.4-SPCV-01 requested that the length of pipe from the containment to the outboard containment isolation valve be provided to demonstrate that containment isolation valves outside containment are located as close to containment as practical per 10 CFR 50, Appendix A, General Design Criteria 55, 56, and 57. The response to this RAI provided these distances.

The response was provided in Westinghouse letter of 13 Jan 2009, Subject: AP1000 Responses to Requests for Additional Information (SRP), ML0901500380. This response was submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

The staff concludes that the response confirms that all the containment isolation valves outside containment have been located as close to the containment as practical, per the requirements of 10 CFR 50, Appendix A, General Design Criteria 55, 56 and 57. Therefore, add these distances from the containment to the outside containment isolation valves to Table 6.2.3-1, Containment Mechanical Penetrations and Isolation Valves, in the AP1000 DCD, Revision 17.

The corresponding ITAAC in Table 14.3-7, Radiological Analysis, that the containment penetration isolation features be configured as in Table 6.2.3-1, remains acceptable to the staff as written.

Westinghouse Response:

The values provided in the response to RAI-SRP6.2.4-SPCV-01 are added to DCD Table 6.2.3-1, "Containment Mechanical Penetrations and Isolation Valves," rounded to the nearest foot and noted as nominal. These pipe length values are added to confirm compliance with the requirements of GDC 55, 56 and 57.

Design Control Document (DCD) Revision:

Change DCD Table 6.2.3-1 as attached.

PRA Revision: None

Technical Report (TR) Revision: None

Table 6.2.3-1 (Sheet 1 of 4)

CONTAINMENT MECHANICAL PENETRATIONS AND ISOLATION VALVES

System	Containment Penetration			Isolation Device						Test		
	Line	Flow	Closed Sys IRC	Valve/Hatch Identification	Pipe Length	DCD Subsection	Position N-S-A	Signal	Closure Times	Type[1] & Note	Medium	Direction
CAS	Service air in	In	No	CAS-PL-V204 CAS-PL-V205	9 -	9.3.1	C-O-C C-O-C	None None	N/A N/A	C,5	Air	Forward
	Instrument air in	In	No	CAS-PL-V014 CAS-PL-V015	9 -	9.3.1	O-O-C O-O-C	T None	std. N/A	C,5	Air	Forward
CCS	IRC loads in	In	No	CCS-PL-V200 CCS-PL-V201	9 -	9.2.2	O-O-C O-O-C	S None	std. N/A	C,5	Air	Forward
	IRC loads out	Out	No	CCS-PL-V208 CCS-PL-V207 CCS-PL-V220	8 - -	9.2.2	O-O-C O-O-C C-C-C	S S None	std. std. N/A	C,5	Air	Forward
CVS	Spent resin flush out	Out	No	CVS-PL-V041 CVS-PL-V040 CVS-PL-V042	19 - 21	9.3.6	C-C-C C-C-C C-C-C	None None None	N/A N/A N/A	C	Air	Forward
	Letdown	Out	No	CVS-PL-V047 CVS-PL-V045	36 -	9.3.6	C-O-C C-O-C	T T	std. std.	C	Air	Forward

	Charging	In	No	CVS-PL-V090 CVS-PL-V091 CVS-PL-V100	31 - -	9.3.6	C-O-C C-O-C C-C-C	HR,PL2, S+PL1, SGL HR,PL2, S+PL1, SGL None	std. std. N/A	C	Air	Forward
	H2 injection to RCS	In	No	CVS-PL-V092 CVS-PL-V094	22 -	9.3.6	O-C-C C-C-C	T None	std. N/A	C	Air	Forward
DWS	Demin. water supply	In	No	DWS-PL-V244 DWS-PL-V245	28 -	9.2.4	C-O-C C-O-C	None None	N/A N/A	C,5	Air	Forward
FHS	Fuel transfer	N/A	No	FHS-FT-01	-	6.2.5	C-O-C	None	N/A	B	Air	Forward
FPS	Fire protection standpipe sys.	In	No	FPS-PL-V050 FPS-PL-V052	57 -	9.5.1	C-C-C C-C-C	None None	N/A N/A	C,5	Air	Forward
PSS	RCS/PSX/CVS samples out	Out	No	PSS-PL-V011 PSS-PL-V010A,B	13 -,-	9.3.3	C-C-C C-C-C	T T	std. std.	C	Air	Forward
	Cont. air samples out	Out	No	PSS-PL-V046 PSS-PL-V008	13 -	9.3.3	O-C-C O-C-C	T T	std. std.	C	Air	Forward
	RCS/Cont. air sample return	In	No	PSS-PL-V023 PSS-PL-V024	16 -	9.3.3	O-C-C O-C-C	T None	std. N/A	C	Air	Forward

Table 6.2.3-1 (Sheet 2 of 4)

CONTAINMENT MECHANICAL PENETRATIONS AND ISOLATION VALVES

	Containment Penetration			Isolation Device						Test		
System	Line	Flow	Closed Sys IRC	Valve/Hatch Identification	Pipe Length	DCD Subsection	Position N-S-A	Signal	Closure Times	Type[1] & Note	Medium	Direction
PXS	N_2 to accumulators	In	No	PXS-PL-V042	9	6.3	O-O-C	T	std.	C	Air	Forward
				PXS-PL-V043	-		C-C-C	None	N/A			
RNS	RCS to RHR pump	Out	No	RNS-PL-V002A/B	-	5.4.7	C-O-C	HR, S	std.	6	Air	--
				RNS-PL-V023	-	5.4.7	C-O-C	HR, S	std.	C		Forward
				RNS-PL-V022	42	5.4.7	C-O-C	HR, S	std.	C,4		Forward
				RNS-PL-V021	-	5.4.7	C-C-C	None	N/A	C		Forward
				RNS-PL-V061	-	5.4.7	C-O-C	T	std.	C		Forward
				PXS-PL-V208A	-	6.3	C-C-C	None	N/A	C		Forward
	RHR pump to RCS	In	No	RNS-PL-V011	25	5.4.7	C-O-C	HR, S	std.	C,4	Air	Forward
				RNS-PL-V013	-		C-O-C	None	N/A	C,4		
SFS	IRWST/Ref. cav. SFP pump discharge	In	No	SFS-PL-V038	20	9.1.3	C-O-C	T	std.	C,5	Air	Forward
				SFS-PL-V037	-		C-O-C	None	N/A			
	IRWST/Ref. cav. purif. out	Out	No	SFS-PL-V035	31	9.1.3	C-O-C	T	std.	C,5	Air	Forward
				SFS-PL-V034	-		C-O-C	T	std.			
				SFS-PL-V067	-		C-C-C	None	N/A			

SGS	Main steamline 01	Out	Yes	SGS-PL-V040A SGS-PL-V027A[7] SGS-PL-V030A,31A,32A,33A,34A,35A SGS-PL-V036A SGS-PL-V240A	29 67 11, 14, 18, 21, 23, 27 39 44	10.3	O-C-C O-O-C C-C-C O-O-C C-C-C	MS LSL None MS MS	5 sec std. N/A std. std.	A,2	N_2	Forward
	Main steamline 02	Out	Yes	SGS-PL-V040B SGS-PL-V027B[7] SGS-PL-V030B,31B,32B,33B,34B,35B SGS-PL-V036B SGS-PL-V240B	29 67 11, 14, 18, 21, 23, 27 39 44	10.3	O-C-C O-O-C C-C-C O-O-C C-C-C	MS LSL None MS MS	5 sec std. N/A std. std.	A,2	N_2	Forward
	Main feedwater 01	In	Yes	SGS-PL-V057A	23	10.3	O-C-C	MF	5 sec	A,2	H_2O	Forward
	Main feedwater 02	In	Yes	SGS-PL-V057B	23	10.3	O-C-C	MF	5 sec	A,2	H_2O	Forward
	SG blowdown 01	Out	Yes	SGS-PL-V074A	14	10.3	O-O-C	PRHR	std.	A,2	H_2O	Forward
	SG blowdown 02	Out	Yes	SGS-PL-V074B	13	10.3	O-O-C	PRHR	std.	A,2	H_2O	Forward
	Startup feedwater 01	In	Yes	SGS-PL-V067A	28	10.3	C-O-C	LTC, SGL	std.	A,2	H_2O	Forward
	Startup feedwater 02	In	Yes	SGS-PL-V067B	27	10.3	C-O-C	LTC, SGL	std.	A,2	H_2O	Forward

Table 6.2.3-1 (Sheet 3 of 4)

CONTAINMENT MECHANICAL PENETRATIONS AND ISOLATION VALVES

System	Containment Penetration			Isolation Device						Test		
	Line	Flow	Closed Sys IRC	Valve/Hatch Identification	Pipe Length	DCD Subsection	Position N-S-A	Signal	Closure Times	Type[1] & Note	Medium	Direction
VFS	Cont. air filter supply	In	No	VFS-PL-V003 VFS-PL-V004	33 -	9.4.7	C-O-C C-O-C	T, HR,DAS T, HR,DAS	10 sec 10 sec	C,5	Air	Forward Forward
	Cont. air filter exhaust	Out	No	VFS-PL-V010 VFS-PL-V009 VFS-PL-V008	33 - -	9.4.7	C-O-C C-O-C C-C-C	T,HR,DAS T,HR,DAS N/A	10 sec 10 sec N/A	C,5	Air	Forward Forward Forward
VWS	Fan Coolers out	Out	No	VWS-PL-V086 VWS-PL-V082 VWS-PL-V080	9 - -	9.2.7	O-O-C O-O-C C-C-C	T T None	std. std. N/A	C,3,4,5	Air	Forward
	Fan coolers in	In	No	VWS-PL-V058 VWS-PL-V062	9 -	9.2.7	O-O-C O-O-C	T N/A	std. std.	C,3,4,5	Air	Forward
WLS	Reactor coolant drain tank gas	Out	No	WLS-PL-V068 WLS-PL-V067	49 -	11.2	C-C-C C-C-C	T T	std. std.	C	Air	Forward
	Normal cont. sump	Out	No	WLS-PL-V057 WLS-PL-V055 WLS-PL-V058	39 - -	11.2	C-C-C C-C-C C-C-C	T,DAS T,DAS None	std. std. N/A	C	Air	Forward
SPARE		N/A	No	P40	-	6.2.5	C-C-C	N/A	N/A	B	Air	Forward
SPARE		N/A	No	P41	-	6.2.5	C-C-C	N/A	N/A	B	Air	Forward

SPARE		N/A	No	P42	-	6.2.5	C-C-C	N/A	N/A	B	Air	Forward
CNS	Main equipment hatch	N/A	No	CNS-MY-Y01	-	6.2.5	C-C-C	None	N/A	B	Air	Forward
	Maintenance hatch	N/A	No	CNS-MY-Y02	-	6.2.5	C-C-C	None	N/A	B	Air	Forward
	Personnel hatch	N/A	No	CNS-MY-Y03	-	6.2.5	C-C-C	None	N/A	B	Air	Forward
	Personnel hatch	N/A	No	CNS-MY-Y04	-	6.2.5	C-C-C	None	N/A	B	Air	Forward

Table 6.2.3-1 (Sheet 4 of 4)

CONTAINMENT MECHANICAL PENETRATIONS AND ISOLATION VALVES

Explanation of Heading and Acronyms for Table 6.2.3-1

System:	Fluid system penetrating containment
Containment Penetration:	These fields refer to the penetration itself
Line:	Fluid system line
Flow:	Direction of flow in or out of containment
Closed Sys IRC:	Closed system inside containment as defined in DCD Section 6.2.3.1.1
Isolation Device:	These fields refer to the isolation devices for a given penetration
Valve/Hatch ID:	Identification number on P&ID or system figure
Pipe Length:	Nominal length of pipe to outboard containment isolation valve, Feet
Subsection Containing Figure:	Safety analysis report containing the system P&ID or figure
Position N-S-A:	Device position for N (normal operation) S (shutdown) A (post-accident)
Signal:	Device closure signal MS: Main steamline isolation LSL: Low steamline pressure MF: Main feedwater isolation LTC: Low T_{cold} PRHR: Passive residual heat removal actuation T: Containment isolation S: Safety injection signal HR: High containment radiation DAS: Diverse actuation system signal PL2: High 2 pressurizer level signal S+PL1: Safety injection signal plus high 1 pressurizer level SGL: High steam generator level
Closure Time:	Required valve closure stroke time std: Industry standard for valve type ($\leq$ 60 seconds) N/A: Not Applicable
Test:	These fields refer to the penetration testing requirements
Type:	Required test type A: Integrated Leak Rate Test B: Local Leak Rate Test -- penetration C: Local Leak Rate Test -- fluid systems
Note:	See notes below
Medium:	Test fluid on valve seat
Direction:	Pressurization direction Forward: High pressure on containment side Reverse: High pressure on outboard side

Notes:

1. Containment leak rate tests are designated Type A, B, or C according to 10CFR50, Appendix J.
2. The secondary side of the steam generator, including main steam, feedwater, startup feedwater, blowdown and sampling piping from the steam generators to the containment penetration, is considered an extension of the containment. These systems are not part of the reactor coolant pressure boundary and do not open directly to the containment atmosphere during post-accident conditions. During Type A tests, the secondary side of the steam generators is vented to the atmosphere outside containment to ensure that full test differential pressure is applied to this boundary.
3. The central chilled water system remains water-filled and operational during the Type A test in order to maintain stable containment atmospheric conditions.
4. The containment isolation valves for this penetration are open during the Type A test to facilitate testing. Their leak rates are measured separately.
5. The inboard valve flange is tested in the reverse direction.
6. These valves are not subject to a Type C test. Upstream side of RNS hot leg suction isolation valves is not vented during local leak rate test to retain double isolation of RCS at elevated pressure. Valve is flooded during post accident operation.
7. Refer to DCD Table 15.0-4b for PORV block valve closure time.