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Your ref: Docket Number 52-006
Our ref: DCP_NRC_003048

September 29, 2010

Subject: Supplementary Information on Proposed Changes for the AP1000 Design Control Document Rev. 18

This letter is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information provided is generic and is expected to apply to all Combined License (COL) applicants referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

Westinghouse provided preliminary information on changes which it proposed to include in Revision 18 of the AP1000 Design Control Document (DCD-18) in a January 20, 2010 letter (Reference 1). Supplementary information on some of those changes requested by the NRC was provided in a March 12, 2010 letter (Reference 2). Information was provided in an April 26, 2010 letter (Reference 3) for seven of the changes identified in the January 20, 2010 that were determined to meet one or more of the Interim Staff Guidance-11 (ISG-11) criteria for reporting to the NRC staff. The remaining 50 "elective" items in the January 20 letter are addressed in a letter dated May 21, 2010 (Reference 4). In a letter dated May 10, 2010 (Reference 5), information was provided for seven design changes that met one or more of the ISG-11 criteria and which supported the AP1000 Licensing Finalization schedule. In a letter dated May 25, 2010 (Reference 6), information was provided for two additional design changes that met one or more of the ISG-11 criteria and which supported the AP1000 Licensing Finalization schedule. In letters dated June 14, 2010 (Reference 7), June 18, 2020 (Reference 8), July 6, 2010 (Reference 9), July 8, 2010 (Reference 10), July 28, 2010 (Reference 11) July 29, 2010 (Reference 12), August 12, 2010, (Reference 13), and August 16 (Reference 14) information was provided for additional design changes. Supplementary information for Reference 11 was provided in Reference 15. Supplementary information for CN62 (initial information was provided in Reference 5) was provided in Reference 16. Supplementary information for CN05 (initial information was provided in Reference 3) was provided in Reference 17. Supplementary information for Reference 12 was provided in Reference 18.

This letter provides additional supplementary information on the design change (Change Number 72) which modifies the closure logic for the CCS containment isolation MOVs, installs a safety-class relief valve on each of the 10 inch CCS supply and return lines, and changes the safety class of the related piping to ensure the relief valves are installed in safety class piping. Information on CN72 was initially provided in Reference 11. Supplementary information on CN72 was provided in Reference 15. The additional supplementary information is provided in Enclosure 1. The associated revised DCD page is provided in Enclosure 2.

As noted previously, the changes described in this and the referenced letters do not constitute all of the changes which Westinghouse proposes to include in DCD-18. Rather, the changes in this letter are in addition to those which Westinghouse either has submitted or will submit to the NRC as responses to Requests for Additional Information or Safety Evaluation Report Open Items.

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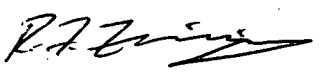
Westinghouse will work with the NRC staff to disposition the changes described in this letter as expeditiously as possible. Questions related to the content of this letter should be directed to Westinghouse. Please send copies of such questions to the prospective COL applicants referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Very truly yours,



R. F. Ziesing
Director, U.S. Licensing

References:

1. DCP_NRC_002744, Re-submittal of Proposed Changes for AP1000 Design Control Document Rev.18, January 20, 2010
2. DCP_NRC_002818, Supplementary Information to DCP_NRC_002744 – Re-Submittal of Proposed Changes for AP1000 Design Control Document Rev.18, March 12, 2010
3. DCP_NRC_002850, Final Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, April 26, 2010
4. DCP_NRC_002874, Final Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, May 21, 2010
5. DCP_NRC_002863, Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, May 10, 2010
6. DCP_NRC_002879, Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, May 25, 2010
7. DCP_NRC_002909, Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, June 14, 2010
8. DCP_NRC_002918, Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, June 18, 2010
9. DCP_NRC_002925, Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, July 6, 2010
10. DCP_NRC_002932, Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, July 8, 2010
11. DCP_NRC_002939, Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, July 28, 2010
12. DCP_NRC_002940, Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, July 29, 2010
13. DCP_NRC_002942, Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, August 12, 2010
14. DCP_NRC_002941, Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, August 16, 2010
15. DCP_NRC_003014, Supplementary Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, September 3, 2010.
16. DCP_NRC_003033, Supplementary Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, September 9, 2010.
17. DCP_NRC_003036, Supplementary Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, September 16, 2010.
18. DCP_NRC_003035, Supplementary Information on Proposed Changes for the AP1000 Design Control Document Rev. 18, September 16, 2010.

/Enclosures

1. Supplementary Information for CN72, Responses to NRC Comments, Non-Proprietary
2. Supplementary Information for CN72, Revised DCD Page, Non-Proprietary

cc:	B. Anderson	-	U.S. NRC	2E
	D. Jaffe	-	U.S. NRC	2E
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	P. Hastings	-	Duke Energy	2E
	R. Kitchen	-	Progress Energy	2E
	A. Monroe	-	SCANA	2E
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	C. Pierce	-	Southern Company	2E
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	G. Zinke	-	NuStart/Entergy	2E
	R. Grumbir	-	NuStart	2E
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ENCLOSURE 1

Supplementary Information for CN72
Responses to NRC Comments
Non-Proprietary

Westinghouse Responses to NRC Questions on CN72
Reference: Brian Anderson (USNRC) e-mail of 21 September 2010 [0926] to Michael Melton (WEC), Revision 2 – September 23, 2010

NRC Question 1 - *Confirm that ASME III, Class 3 allows relief valve blowdown of 20%. That is, for a CCS system design pressure of 200 psig, an overpressure of 220 psig, and a reseat pressure of 160 psig are allowed by the Code. If the code requires different values for V270 and V271 than the above, evaluate the effect on the results in APP-CCS-M3C-164, Rev. 0 DRAFT.*

Westinghouse Response: The ASME Code Section III, Article NC-7512.3, "Blowdown", does not dictate a specific blowdown percentage in the design of safety and relief valves. Although article NC-7731.4 states that a 5% blowdown is required for compressible fluids, no maximum allowable blowdown for non-compressible fluids is specified. Historically, Westinghouse has chosen to use 10% blowdown as the design value for safety-class relief valves and allows up to 20% blowdown for non-safety valves, consistent with normal supplier design practices. The choice of 10% or 20% blowdown has little effect on the final CCS pressure-temperature conditions at the containment isolation valves, or on the time required to reach them. This has been confirmed by a more recent ANSALDO RELAP analysis using 10% blowdown for V270 and V271.

NRC Question 2 – *The calculation results indicate that following the tube rupture transient the temperature at the containment isolation valves V200, V201, V207 and V208 is approximately 380°F, for steady state conditions. Although WEC confirmed the acceptability of this temperature of the specified valves, this particular operating condition should be added to the valve data sheets. Identify where in the AP1000 [DCD] this temperature will be provided (e.g., Chapter 3.9, Mechanical System and Components; Chapter 3.11, Environmental Qualification of Mechanical and Electrical Equipment).*

Westinghouse Response: The steady-state pressure and temperature limits applicable for the RCP external heat exchanger tube rupture event relate to the accident mitigation function of each valve. Each of the four (4) CCS containment isolation valves are explicitly identified in Table 3.9-12 (Sheet 1 of 7) as having both containment isolation and accident mitigation functions, and the conditions applicable for accident mitigation will be added to the valve data sheets as notes, pertaining to the specific fluid temperature and pressure conditions for which the valve must remain operable and intact. Design information for safety-related valves is included by reference in DCD Tier 2, Section 3.9.8.2, which states: "Design Specifications and selected design analysis information for ASME Code, Section III valves and auxiliary components are available for NRC review.".

NRC Question 3 – *According to the calculation (APP-CCS-M3C-164, Rev. 0) there are 780 u-tubes in the RCP external heat exchanger. Provide the code reference for the acceptability of postulating a single tube rupture.*

Westinghouse Response: ANSI/API-521 requires consideration of a tube rupture as a credible event for heat exchangers where there is a substantial difference in pressure between high and low pressure sides. The RCP external heat exchanger tube rupture event is analogous to a steam generator tube rupture design basis event, for which only one of the tubes in the affected component is assumed to suffer a double-ended guillotine break. The tube side of the RCP external heat exchanger is designed to ASME III Class 1 requirements, with design pressure and temperature equal to the design pressure and temperature of the AP1000 Reactor Coolant System. Being designed to ASME III Class 1 rules, the heat exchanger tube side is subject to regular in-service inspection per ASME XI, to verify the integrity of the tubes.

NRC Question 4 – *This calculation is needed for reference in completion of the SER. Please indicate when this calculation will be statused as final.*

Westinghouse Response: The calculation was made available for NRC review in the Westinghouse Rockville office on September 28, 2010.

Westinghouse Responses to NRC Questions on CN 72
Reference: Brian Anderson (USNRC) e-mail of 09/29/10 (1438) to Michael Melton (WEC)
Revision 0, 09/30/10

NRC Question 1 - *In the marked up FSAR Table 3.9-12 (sh 1/7) in DCP_NRC_002939, CCS-PL-V201 did not appear to have function 3, accident mitigation, added. Confirm that accident mitigation function will be added to this valve in this table in the FSAR.*

Westinghouse Response: V201 also has accident mitigation as a function. The entry in DCD Tier 2, Table 3.9-12 (sheet 1 of 7) will be modified to indicate that V201 has both a containment isolation and accident mitigation function.

NRC Question 2 - *Confirm that the conditions applicable for accident mitigation will be added to the valve data sheets which include CCS-PL-V270 and V271, the newly added safety related relief valves. This is to address the ~380F temperature at which the valves will be required to operate.*

Westinghouse Response: New data sheets are being prepared for safety-class relief valves CCS-PL-V270 and CCS-PL-V271 to reflect the specific conditions under which they must operate to ensure mitigation of the RCP external heat exchanger tube rupture event. These conditions include the discharge of flashing fluid at the maximum fluid temperature produced by the tube rupture.

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ENCLOSURE 2

Supplementary Information for CN72
Revised DCD Page
Non-Proprietary

Table 3.9-12 (Sheet 1 of 7)

LIST OF ASME CLASS 1, 2, AND 3 ACTIVE VALVES

Valve No.	Description	Function[a]
Compressed Air System		
CAS-PL-V014	Instrument Air Supply Outside Containment Isolation	2
CAS-PL-V015	Instrument Air Supply Inside Containment Isolation Check Valve	2
CAS-PL-V203	Service Air Supply Inside Containment Isolation Check Valve	2
Component Cooling Water System		
CCS-PL-V200	Containment Isolation Valve – Inlet Line Isolation	2, 3
CCS-PL-V201	Containment Isolation Valve – Inlet Line Check Valve	2, 3
CCS-PL-V207	Containment Isolation Valve – Outlet Line Isolation	2, 3
CCS-PL-V208	Containment Isolation Valve – Outlet Line Isolation	2, 3
CCS-PL-V220	Containment Isolation Thermal Relief Valve	2
CCS-PL-V270	CCS IRC Relief Valve	3
CCS-PL-V271	CCS IRC Relief Valve	3
Chemical and Volume Control System		
CVS-PL-V001	Reactor Coolant System Purification Stop	1
CVS-PL-V002	Reactor Coolant System Purification Stop	1
CVS-PL-V003	Reactor Coolant System Purification Stop	1
CVS-PL-V042	Flush Line Containment Isolation Relief	2
CVS-PL-V045	Letdown Containment Isolation IRC	2
CVS-PL-V047	Letdown Containment Isolation ORC	2
CVS-PL-V058	Letdown Line Containment Isolation Relief	2
CVS-PL-V080	Reactor Coolant System Purification Return Line Check Valve	1
CVS-PL-V081	Reactor Coolant System Purification Return Line Stop Valve	1
CVS-PL-V082	Reactor Coolant System Purification Return Line Check Valve	1
CVS-PL-V084	Auxiliary Pressurizer Spray Line Isolation	1
CVS-PL-V085	Auxiliary Pressurizer Spray Line Check Valve	1
CVS-PL-V090	Makeup Line Containment Isolation	2
CVS-PL-V091	Makeup Line Containment Isolation	2
CVS-PL-V092	Hydrogen Add Containment Isolation	2
CVS-PL-V094	Hydrogen Add IRC Isolation Check Valve	2
CVS-PL-V100	Makeup Line Containment Isolation Thermal Relief Check Valve	2
CVS-PL-V136A	Demineralized Water System Isolation	3
CVS-PL-V136B	Demineralized Water System Isolation	3
Demineralized Water System		
DWS-PL-V245	Demineralized Water Supply Inside Containment Isolation Check Valve	2
Fuel Handing System		
FHS-PL-V001	Fuel Transfer Tube Isolation Valve	3