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Your ref: Docket Number 52-006  
Our ref: DCP\_NRC\_003036

September 16, 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.

This letter provides supplementary information on the design change (Change Number 05) which addresses a redesign of the Steel Containment Vessel Girder and Polar Crane Rail Clip Design. Information on CN05 was initially provided in References 1 & 3. The supplementary information, which consists of responses to comments provided by the NRC is provided in Enclosure 1. The resolution of these comments did not affect the DCD.

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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NRC

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,



T.J. Ray For/

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

/Enclosure

1. Supplementary Information for CN05, Steel Containment Vessel Girder and Polar Crane Rail Clip Design

cc:	B. Anderson	- U.S. NRC	1E
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	E. McKenna	- U.S. NRC	1E
	T. Spink	- TVA	1E
	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
	E. Schmiech	- Westinghouse	1E
	G. Zinke	- NuStart/Entergy	1E
	R. Grumbir	- NuStart	1E
	M. Melton	- Westinghouse	1E

ENCLOSURE 1

Supplementary Information for CN05  
Steel Containment Vessel Girder and Polar Crane Rail Clip Design  
(Non-Proprietary)

The following information is provided in question and answer format to formally document communication between the NRC and Westinghouse on CN-05.

**Action Item #1:** NRC requests the full name of CMAA 70 and the title of Sec. 3.3.2.3

**Westinghouse Response:** The full name of CMAA 70 is CMAA (Crane Manufacturers Association of America) Specification #70, Revised 2000, "Specifications for Top Running Bridge & Gantry Type Multiple Girder Electric Overhead Traveling Cranes." The title of Section 3.3.2.3 is "Longitudinal Distribution of the Wheel Load."

**Action Item #2:** NRC requests that Westinghouse identify the basis on which the loading zone, S (i.e.,  $S = 2H + 2$  inches) is obtained. Specify if this is an analysis, a combination of analysis and testing, or code specification.

**Westinghouse Response:** Westinghouse used the theory of the 45 degree angles as the basis, then applied the actual AP1000 Polar Crane wheels, rail and clip design geometry to determine the "S" dimension of load distribution that the clip design would have to overcome.

**Action Item #3:** NRC requests the source or reference on the theory of the 45 degree angles. Provide a reference to any test performed

**Westinghouse Response:** Westinghouse used the abovementioned CMAA 70 (Section 3.3.2.3 - Longitudinal Distribution of the Wheel Load) as the reference for the design of determining the forces from the horizontal seismic load that creates the overturn moment on the crane rail. This moment creates a vertical force on the rail clips. Those forces were used in the analysis of the rail clip design. Westinghouse did not test the application of this widely used crane industry guide (CMAA70) for the design of the rail clips.

**Action Item #4:** NRC staff notes that the SCV girder is now extended inward by 2-3/4 inches. Based on the submittal, the reason for the change is that the tolerance requirement of the polar crane rail is much tighter than the SCV girder. Please provide the basis to justify that the increase of 2.75 inches inward of the SCV girder is quantitatively adequate to meet the tolerance requirement.

**Westinghouse Response:** In the design change proposal engineered inhouse, Westinghouse provided the basis for the inward extension of the CV girder top plate. An excerpt follows:

The PC is designed using, in part, ASME-NOG-1-1998 (NOG-1). NOG-1 requires the maximum and minimum span between the rails to be no greater or less than the nominal span of the rails  $\pm 3/8$ ". This tolerance is tighter than the construction of the SCV girder allows, based on input from industry experts. A tolerance of  $\pm 1.95$ " on the radius of the SCV girder is specified. Because of the difference in the tolerance requirements of the PC rail and constructability of the SCV, the girder (girder top plate, radial webs, and girder bottom plate) must be extended radially inward toward the center of the containment. Figure 5 shows the tolerance stack up and the required addition to the plates and radial plates of the SCV.

Therefore, the justification for the extension is the tolerance of the polar crane rail span and the tolerance of the CV itself. The stack-up tolerance required the extension of the top plate inwards.

Figure 5 follows:

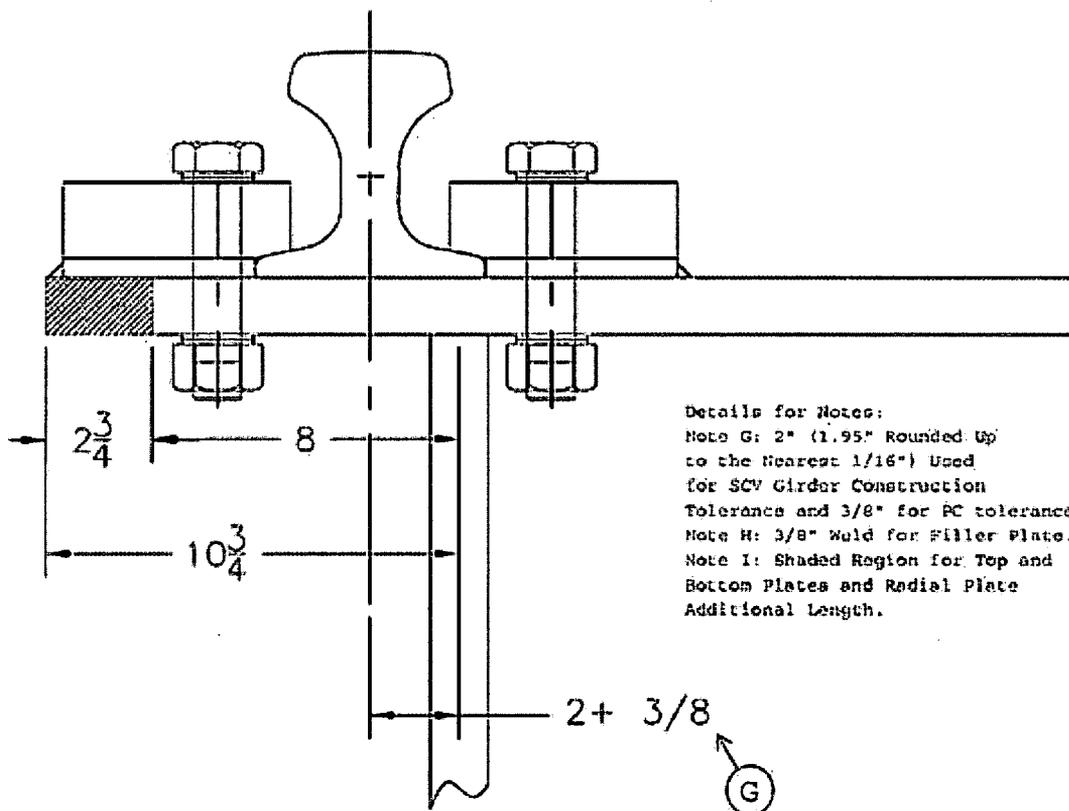


FIGURE 5