



Westinghouse Electric Company
Nuclear Power Plants
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355
USA

U.S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, D.C. 20555

Direct tel: 412-374-6206
Direct fax: 724-940-8505
e-mail: sisk1rb@westinghouse.com

Your ref: Docket Number 52-006
Our ref: DCP_NRC_003033

September 9, 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, 2010 (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.

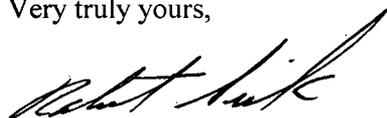
This letter provides supplementary information on the design change (Change Number 62) which addresses a redesign of the reactor vessel support system. Information on CN62 was initially provided in Reference 5. The supplementary information, which consists of responses to comments provided by the NRC 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.

DO63
NRO

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,



Robert Sisk, Manager
AP1000 Licensing Strategy
Regulatory Affairs and Strategy

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 CN62, Redesign of Reactor Vessel Support System

cc:	B. Anderson	- U.S. NRC	1E
	D. Jaffe	- U.S. NRC	1E
	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 CN62
Redesign of Reactor Vessel Support System
Non-Proprietary

1. NRC Comment: *Provide a stress analysis on the new design of the RV support box structure, showing the critical section bearing the maximum stress. Provide the comparison with the maximum stress in the old design and show that the new design is in compliance with the adopted code requirements.*

Westinghouse Response:

The final AP1000 reactor pressure vessel (RPV) support was designed to the requirements of design specification APP-SS30-Z0-001, Revision 1. Accordingly, the RPV support design meets the requirements of the ASME B&PV Code, Section III, Subsection NF, 1998 Edition with Addenda up to and including 2000. The support is classified as NF Class 1.

The RPV structural analysis and qualification is summarized in calculation APP-PH01-Z0C-007, Revision 0, May 26, 2010. The design was confirmed by utilizing a 3-dimensional finite element analysis (FEA) model to perform the analysis. The general purpose FEA computer code ANSYS was used for the modeling, analysis and results post processing. Linearized primary membrane (Pm) and primary membrane plus bending (Pm+Pb) stress intensities were computed and compared to the allowable stress limits of ASME NF-3220 for the Level A, B, C, and D load combinations. The Level D loading condition controls the design.

Figure 1, Figure 5-39(a) from calculation APP-PH01-Z0C-007, shows the RPV support FEA model and the stress intensity results for the controlling Level D horizontal load case. Thirty-two individual paths were chosen in the high stress regions shown above to compute the linearized stresses. The controlling stress interaction ratios for the Level D loading condition are Pm = 96.86% of allowable and Pm+Pb = 90.86% of allowable. Note all plate material is specified as ASTM A572, Grade 50 per Code Case N-71-18.

2. NRC Comment: *Provide information on the wear plate including material, lubricant used, geometric dimensions in size and shape and performance specifications. Provide an assurance in tribology that uneven settlement on the plate's top surface will not deter the lateral movement of the RV due to thermal expansion, and the plate can endure the frictional wearing due to cyclic movements of the heavy RV throughout its whole design lifetime, without loss of its intended design function.*

Westinghouse Response:

The RPV support bottom and side wear plates are specified as Lubron wear plates from Lubron Bearing Systems, the Lubron Nuclear Catalog attached for information. The wear plates are specified with the Meehanite GA50 base material and the AE40 Lubricant (graphite plugs) and during installation the top surface is also coated with the Lubron AE100 brush on dry film lubricant. AP1000 RPV support design drawings APP-PH01-V2-211 (General Assembly) and APP-PH01-V2-212 (Component Details), provide the specifics of the bottom and side wear plates.

During RPV installation the bottom wear plate along with the interfacing thermal plate are assembled with a bluing process to insure a high degree of uniform contact (>75%) between mating surfaces. By design these wear plates are good for up to 8,000 psi bearing pressure

and up to 1,100 degrees F. The actual bearing pressure for the AP1000 RPV support for the Level A service condition is approximately 2,300 psi. The RPV support, its connection to the foundation, the foundation and the wear plate connection to the support all have been designed for friction loads during normal plant heat-up and cool down thermal cycles.

Portions of the bottom wear plate, that are not normally in contact with the nozzle plate, are not expected to restrict thermal expansion induced nozzle plate movement.

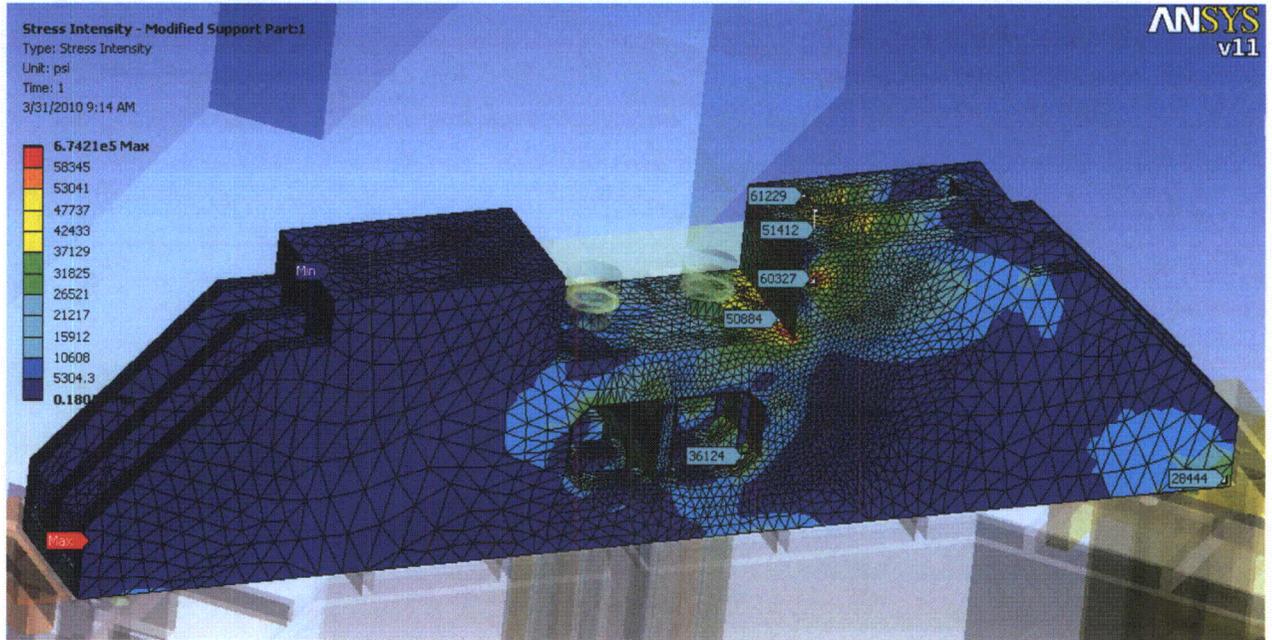


Figure 1: RPV support FEA model and the stress intensity results for the controlling Level D horizontal load case.