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Your ref: Project Number 740  
Our ref: DCP/NRC1729

April 5, 2006

**Subject: AP1000 COL Design Change Review**

In support of Combined License application pre-application activities, Westinghouse has been preparing and reviewing standard changes to the Design Control Document. Three sets of changes have been reviewed, approved, and summarized below. These changes are intended to be incorporated into FSARs referencing the AP1000 design certification or incorporated into the design certification using supplemental rulemaking when 10 CFR Part 52 is revised to permit such changes.

Criteria in 10 CFR Part 52 Appendix D Section VIII B. 5. a, b, and c provide for changes in Tier 2 of the Design Control Document that do not require prior NRC approval. The changes summarized below satisfy these criteria. The changes are generic and are expected to apply to all projects referencing the AP1000 Design Certification. This information is submitted as part of the NuStart Bellefonte COL Project (NRC Project Number 740).

The reviews of these changes were included in a table of COL technical reports in a March 8, 2006 letter from NuStart to the NRC. A tentative schedule for the completion of the review was included in the letter. Table 1 is attached to this letter to provide the status and anticipated schedule for reports and design change reviews that were expected to be complete in March 2006.

The criteria in VIII. B.5.b are similar to 10 CFR 50.59 evaluation criteria. In a manner similar to the requirements for review and reporting of 50.59 evaluations, Westinghouse will be periodically providing summaries of changes to the AP1000 Design Control Document. These summaries are provided for changes that have been approved for incorporation into COL application FSARs and do not require NRC approval under provision of Appendix D Section VIII. These summaries are listed on the next page.

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### **Passive Residual Heat Removal Heat Exchanger**

During the detail design stages, the Passive Residual Heat Exchanger (PRHR) design was optimized to reduce its overall weight, design complexity, and manufacturing cost. This design development resulted in a configuration of the connection of the heat exchanger to the in-containment refueling water storage tank (IRWST) and tube bundle frame supports that are different than what is shown in Figure 6.3-5 of the AP1000 Design Control Document (DCD). Figure 6.3-5 is revised to show the updated connection and tube bundle frame supports.

### **Zinc Addition**

The ability to inject a small quantity of zinc acetate into the Reactor Coolant System has been incorporated into the AP1000 design. Operation with chemical zinc in the coolant has been demonstrated to change the oxide film on primary piping and components, significantly reducing occupational radiation exposure, and the potential for crud-induced power shift (CIPS, formerly AOA). Minor changes to the base AP1000 design are required to allow for zinc addition to be used, particularly in reactor coolant water chemistry specification (DCD Table 5.2-2) and the Chemical and Volume Control System (DCD section 9.3.6).

### **Hydrogen Igniter Locations**

The elevations or locations of a few hydrogen igniters within the AP1000 hydrogen control system are changed slightly. Igniter locations are being adjusted consistent with the physical plant layout. Their number, electrical power grouping, and design functions are not changed.

The review and approval of the changes summarized above is documented in the following AP1000 documents. The technical report numbers refer to the numbers in the table included with the March 8, 2006 letter from NuStart to the NRC.

APP-GW-GLN-001, "Passive Residual Heat Removal Heat Exchanger," Technical Report Number 38

APP-GW-GLN-002, "Zinc Addition," Technical Report Number 32.

APP-GW-GLN-003, "Hydrogen Igniter Locations," Technical Report Number 37.

The use of the provisions of Section VIII B. 5.b to establish design control document changes is new to Westinghouse and the NRC. To provide examples of the review and approval process used by Westinghouse, the documents listed above are provided with this letter.

Questions or requests for additional information related to these design changes 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 of each applicant is included on the cc: list of this letter.

Very truly yours,



A. Sterdis, Manager  
Licensing and Customer Interface  
New Plants Engineering

/Attachments

1. Table 1, "AP1000 Near Term COL Pre-Application Submittals," April 5, 2006

/Enclosures

1. APP-GW-GLN-001, Passive Residual Heat Removal Heat Exchanger, Technical Report Number 38.
2. APP-GW-GLN-002, Zinc Addition, Technical Report Number 32.
3. APP-GW-GLN-003, Hydrogen Igniter Locations, Technical Report Number 37.

cc:	S. Bloom	- U.S. NRC	1A	1E
	G. Curtis	- TVA	1A	1E
	L. Dudes	- U.S. NRC	1A	1E
	P. Hastings	- Duke Power	1A	1E
	C. Ionescu	- Progress Energy	1A	1E
	D. Lindgren	- Westinghouse	1A	1E
	A. Monroe	- SCANA	1A	1E
	C. Pierce	- Southern Company	1A	1E
	E. Schmiech	- Westinghouse	1A	1E
	G. Zinke	- NuStart/Entergy	1A	1E

**Table 1**  
**AP1000 Near Term COL Pre-application Submittals**

<b>Document Number</b>	<b>TR No.</b>	<b>COL Item No. or DCD Sec. No.</b>	<b>Subject</b>	<b>NRC Review Result</b>	<b>Schedule or Status</b>
APP-GW-GLR-005	9	3.8-1	Containment Vessel Design Adjacent to Large Penetrations	Closure of Standard Plant COL Item	April 7
APP-GW-GLR-006	15	3.9-6	Piping Benchmark Program	Closure of Standard Plant COL Item	DCD/NRC1728, 3/31/06
APP-GW-GLN-006	62	3D	Methodology For Qualifying AP1000 Safety Related Electrical & Mechanical Equipment	Clarification of Standard Plant Equipment Qualification *	April 13
Letter	18		Changes to Reference Reactor Design	Outline planned approach and report submittals for updating fuel design to the NRC. April 10	
APP-GW-GLN-002	32	5.2	Zinc Addition	Acceptance of Standard Plant Design Change	Included with this submittal
APP-GW-GLN-003	37	6.2	Hydrogen Igniter Locations	Acceptance of Standard Plant Design Change	Included with this submittal
APP-GW-GLN-001	38	6.3	PRHR Hx Design	Acceptance of Standard Plant Design Change	Included with this submittal
APP-GW-GLR-007	27	6.4-3	Main Control Room Inleakage Test Frequency	Closure of Standard Plant COL Item	DCD/NRC1728, 3/31/06
APP-GW-GLN-004	39	7.2	I&C Design Changes	Acceptance of Standard Plant Design Change *	April 13

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<b>Document Number</b>	<b>TR No.</b>	<b>COL Item No. or DCD Sec. No.</b>	<b>Subject</b>	<b>NRC Review Result</b>	<b>Schedule or Status</b>
APP-GW-GLR-008	48	11.2-3 / 11.3-2	Identification of Ion Exchange and Absorbent Media	Closure of Standard Plant COL Item	DCD/NRC1728, 3/31/06
APP-GW-GLR-014	73	11.2-4	Dilution and Control of Boric Acid Discharge	Closure of Standard Plant COL Item	DCD/NRC1728, 3/31/06
Deleted	41	16.1	Minimum Reactor Coolant System Flow	Report deleted. Will be addressed as part of Tech Specs. Completion	
APP-GW-GLR-012	72	18.2-1 / 18.8-1	HFE Program Status Topical	Outline COL item closure activity status and planned activities to the NRC.	April 5
APP-GW-GLR-010	52	18.5-2	Main Control Room Position Task	Closure of Standard Plant COL Item	April 5
APP-GW-GLR-011	59	18.7-1	Execution and Documentation of the Human Reliability Analysis/Human Factors Engineering Integration	Closure of Standard Plant COL Item	April 5

\* These items represent design or DCD changes that satisfy the criteria of Part 52 Appendix D Section VIII B. 5 and do not require NRC approval. A summary of the changes will be provided.