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U.S. Nuclear Regulatory Commission
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Your ref: Docket No. 52-006
Our ref: DCP/NRC2171

June 20, 2008

Subject: AP1000 Response to Requests for Additional Information (SRP3.6)

Westinghouse is submitting a response to the NRC request for additional information (RAI) on SRP Section 3.6. This RAI response is submitted in support of the AP1000 Design Certification Amendment Application (Docket No. 52-006). The information included in the response is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application.

A response is provided for RAI-SRP3.6.2-EMB2-01 and RAI-SRP3.6.4-EMB2-01 as sent in an email from Mike Miernicki to Sam Adams dated April 29, 2008. This response completes all requests received to date for SRP Section 3.6.

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
Regulatory Affairs and Standardization

/Enclosure

1. Response to Requests for Additional Information on SRP Section 3.6

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NRO

cc:	D. Jaffe	-	U.S. NRC	1E
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ENCLOSURE 1

Response to Requests for Additional Information on SRP Section 3.6

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP3.6.2-EMB2-01
Revision: 0

Question:

In DCD Revision 16, Section 3.6.2.5 under high energy break locations, Westinghouse stated that for ASME Class 1 piping terminal end locations are determined from the piping isometric drawings. Intermediate break locations depend on the ASME Code stress report fatigue analysis results. These results are not available at design certification. For the design of the AP 1000, breaks are postulated at locations typically associated with a high cumulative fatigue usage factor. Westinghouse further stated that these locations are part of the as-built reconciliation as discussed in subsection 3.6.4.1. As discussed in RAI-SRP3.6.4-EMB2-01 question1.a, the determination of break locations is a part of the as-designed pipe break analysis and is not part of the as-built reconciliation. Westinghouse is requested to address this concern and to revise the DCD 3.6.2.5 accordingly.

Westinghouse Response:

Westinghouse will perform the ASME safety class piping analysis, including the fatigue analysis for class 1 lines and the calculation of the pipe break equation for the class 2/3 lines, for the risk significant lines as part of the piping DAC review. These analyses will allow Westinghouse to determine the terminal-end and intermediate break locations for these risk significant lines during the as-designed analysis for these high energy lines.

Design Control Document (DCD) Revision:
None

PRA Revision:
None

Technical Report (TR) Revision:
None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information (RAI)

RAI Response Number: RAI-SRP3.6.4-EMB2-01
Revision: 0

Question:
AP1000 DCD Revision 15, Section 3.6.4.1 identified a COL Information Item 3.6-1 which required the COL applicants referencing the AP1000 certified design to complete the final pipe whip restraint design and to address as-built reconciliation of the pipe break hazards analysis in accordance with the criteria outlined in subsection 3.6.1.3.2 and 3.6.2.5. In APP-GW-GLR-021, TR 6 and APP-GW-GLR-074, TR 7, Westinghouse proposed to modify the COL Information Item and provided a pipe break hazards analysis report for staff's review. Westinghouse stated that the report addresses and documents, on a generic basis, design activities required to complete COL Information Item in Section 3.6.4.1 in the AP 1000 DCD. Westinghouse further stated that it is expected that when the NRC review of TR 7 is complete, the included activities to address the COL Information Item in Section 3.6.4.1 will be considered complete for COL applicants referencing the AP 1000 Design Certification. On the basis of its review of TR 7, the staff found that there are numerous areas in the report are incomplete (e.g., ASME Class 1 piping fatigue evaluation, the complete design of the jet shields and pipe whip restraints, use of seismic response spectrum, etc.). The staff therefore, determined that the pipe break analysis of TR 7 can not be considered complete and the proposed revision to the COL Information Item 3.6-1 concerning the COL applicant's responsibility is not acceptable.

In a letter dated January 14, 2008, Westinghouse proposed to revise AP1000 DCD Revision 16, Section 3.6.4.1 to address NRC staff's comments on the completeness of TR 7. Westinghouse stated that a combined License (COL) holder referencing the AP1000 design will complete the pipe whip restraint design and complete an as-designed pipe break hazards analysis in accordance with the criteria outlined in subsection 3.6.1.3.2 and 3.6.2.5. The as-designed pipe rupture hazards analysis including break locations based on as-designed pipe analysis will be documented in an as-designed Pipe Rupture Hazards Analysis Report. The applicant also stated that the final design for these activities will be completed prior to fabrication and installation of the piping and connected components. Furthermore, the applicant stated that the as-built reconciliation of the pipe break hazards analysis in accordance with the criteria outlined in subsection 3.6.1.3.2 and 3.6.2.5 will be completed prior to fuel load. The same statement was also included in APP-GW-GLR-134, Revision 3, "AP1000 DCD Impacts to Support COLA Standardization," dated January 14, 2008. Based on its review of the information currently available in DCD Revision 16 and in APP-GW-GLR-134 Revision 4, the staff determined that the following additional information concerning the acceptability of the proposed COL Holder Item is needed:

a. The staff maintains that the pipe break hazards analysis report of TR 7 is incomplete. RG 1.206 C.III.4.3 allows the applicant to propose an alternative the COL Information Item that can not be resolved completely before the issuance of a license. It requires the applicant to provide sufficient information to justify why that item can not be completed before the issuance of a license. Furthermore, it states that the applicant should provide sufficient information on this

item to support the NRC licensing decision and also to propose a method for ensuring the final closure of the item including implementation schedules to allow the coordination of activities with the NRC construction inspection program following issuance of the COL. The current DCD and APP-GW-GLR-134 do not cover the level of detail described in RG 1.206 C.III.4.3. Westinghouse is requested to propose an alternative along with the described justification including implementation schedules to allow the coordination of activities with the NRC construction inspection program.

b. In some of the DCD Tier I tables of System Based Design Description and ITAAC, the applicant includes an acceptance criteria which states that for the as-built piping, a pipe break evaluation report exists and concludes that protection from the dynamic effects of a line break is provided. It should be noted that the pipe break hazards analysis report is required for all the piping systems (with the exception of LBB piping) that are within the scope of SRP 3.6.2. The staff's concern is that the current AP1000 system based ITAAC tables do not reflect that. Westinghouse is requested to address how the system based ITAAC approach addresses all the piping systems which are within the scope of SRP 3.6.2 and are required to be included in a pipe break analysis performed in accordance with the criteria outlined in subsection 3.6.1.3.2 and 3.6.2.5.

Westinghouse Response:

a.) Westinghouse is performing piping analysis as part of the piping DAC review. This analysis will provide results that will be used to determine the intermediate pipe break locations (if any) in the risk significant lines. This analysis includes the all-soils response spectra. Westinghouse will provide an as-designed pipe rupture hazards analysis including break locations based on as-designed pipe analysis and it will be documented in an as-designed Pipe Rupture Hazards Analysis Report.

b.) The ITAAC tables in the AP1000 DCD are system-based and Westinghouse has specifically mentioned a pipe break evaluation report for four systems (RCS, PXS, SGS, and RNS). Westinghouse, however, generates a single pipe break evaluation report that addresses all high energy lines for all systems. The single report addresses all of the piping systems which are within the scope of SRP 3.6.2 and are required to be included in a pipe break analysis performed in accordance with the criteria outlined in subsection 3.6.1.3.2 and 3.6.2.5.

Design Control Document (DCD) Revision:
None

PRA Revision:
None

Technical Report (TR) Revision:
None