



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: 412-374-6306
Direct fax: 412-374-5456
e-mail: sterdia@westinghouse.com

Your ref: Project Number 740
Our ref: DCP/NRC1786

September 29, 2006

Subject: AP1000 COL Response to Requests for Additional Information (TR #8)

In support of Combined License application pre-application activities, Westinghouse is submitting responses to NRC requests for additional information (RAIs) on AP1000 Standard Combined License Technical Report 8, APP-GW-GLR-022, Rev. 0, AP1000 Leak-Before-Break Evaluation of As-Designed Piping. These RAI responses are submitted as part of the NuStart Bellefonte COL Project (NRC Project Number 740). The information included in the responses is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification.

Responses are provided for requests TR8-1, TR8-2, TR8-3 transmitted in two NRC letters dated August 29, 2006 and September 11, 2006 from Steven D. Bloom to Andrea Sterdis, Subject: Westinghouse AP1000 Combined License (COL) Pre-application Technical Report 8 – Request for Additional Information (TAC No. MD2175).

Pursuant to 10 CFR 50.30(b), the responses to requests for additional information on Technical Report 8 numbered RAI-TR08-001, RAI-TR08-002, and RAI-TR08-003 are submitted as Enclosure 1 under the attached Oath of Affirmation.

It is expected that when the RAIs on Technical Report 8 are complete, the technical report will be revised as indicated in the responses and submitted to the NRC. The RAI responses will be included in the document.

Questions or requests for additional information related to the content and preparation of these responses 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,

A handwritten signature in black ink, appearing to read 'Andrea Sterdis'.

A. Sterdis, Manager
Licensing and Customer Interface
Regulatory Affairs and Standardization

/Attachment

1. "Oath of Affirmation," dated September 29, 2006

/Enclosure

1. Responses to Requests for Additional Information on Technical Report No. 8
RAI-TR08-001, RAI-TR08-002, and RAI-TR08-003

cc:	S. Bloom	- U.S. NRC	1E	1A
	S. Coffin	- U.S. NRC	1E	1A
	G. Curtis	- TVA	1E	1A
	P. Grendys	- Westinghouse	1E	1A
	P. Hastings	- Duke Power	1E	1A
	C. Ionescu	- Progress Energy	1E	1A
	D. Lindgren	- Westinghouse	1E	1A
	A. Monroe	- SCANA	1E	1A
	M. Moran	- Florida Power & Light	1E	1A
	C. Pierce	- Southern Company	1E	1A
	E. Schmiech	- Westinghouse	1E	1A
	G. Zinke	- NuStart/Entergy	1E	1A

ATTACHMENT 1

“Oath of Affirmation”

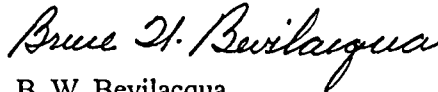
ATTACHMENT 1

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of:)
NuStart Bellefonte COL Project)
NRC Project Number 740)

APPLICATION FOR REVIEW OF
"AP1000 GENERAL COMBINED LICENSE INFORMATION"
FOR COL APPLICATION PRE-APPLICATION REVIEW

B. W. Bevilacqua, being duly sworn, states that he is Vice President, New Plants Engineering, for Westinghouse Electric Company; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission this document; that all statements made and matters set forth therein are true and correct to the best of his knowledge, information and belief.



B. W. Bevilacqua
Vice President
New Plants Engineering

Subscribed and sworn to
before me this 29nd day
of September 2006.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Debra McCarthy, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires Aug. 31, 2009
Member, Pennsylvania Association of Notaries

Notary Public

ENCLOSURE 1

Responses to Requests for Additional Information on Technical Report No. 8

RAI-TR08-001, RAI-TR08-002, and RAI-TR08-003

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information

RAI Number: RAI-TR08-001
Revision: 0

Question:

On page 47 of the report, you present a new bounding analysis curve (proposed DCD Figure 3B-22) for the 8" automatic depressurization system stages 2 and 3 piping that replaces the current approved DCD Figure 3B-16 for the same piping. Please demonstrate that by lowering the operating temperature of the piping system from 653°F to 250 °F, you can raise the upper bounding curve for the piping system from 40 ksi to about 49 ksi. Your justification should include current and revised key parameters such as leakage flaw size and all input parameters used in the new bounding analysis curve calculation so that the staff can perform an independent verification.

Westinghouse Response:

On August 29, 2006, an NRC staff member reviewed the LBB qualification process and was satisfied with the method that was used to calculate the stresses involved in the creation of the bounding analysis curve (BAC). During the audit, a new BAC (Figure 3B-22) was discussed. The method used to generate the new BAC is the same as provided in the DCD and approved by the NRC.

In response to this RAI the following are provided.

The upper bound stress limit on the BAC is based upon the flow stress, which is the average of the yield stress and ultimate stress values. The minimum yield stress and ultimate stress values are obtained from the ASME Code. For the 653°F temperature case flow stress value is 40.273 ksi $[(17.77+62.776)/2]$; for the 250°F temperature case flow stress value is 48.475 ksi $[(24.10+72.85)/2]$. Therefore, by lowering the temperature from 653°F to 250°F, the upper bound curve stress limit is raised from 40.273 ksi to 48.475 ksi.

Design Control Document (DCD) Revision:

None additional to TR8 previously provided (APP-GW-GLR-022)

PRA Revision:

None

Technical Report (TR) Revision:

None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information

RAI Number: RAI-TR08-002
Revision 0

Question: Please explain the process of collecting the pertinent results from your stress reports, transporting them as input to a spread-sheet file (I assume) for additional calculations, and validating your final results as plotted in the bounding analysis curves. The staff needs this information so that independent calculations need not be performed for every LBB system.

Westinghouse Response: TR-8 is a summary of LBB results for 13 lines. TR-8 references 13 analysis reports that perform the ASME Code analysis for these piping packages. One of the evaluations performed for each of these piping packages is to calculate the critical point on the LBB bounding analysis curve. An EXCEL spreadsheet is used to take the applicable PIPESTRESS output files and perform the required LBB calculations as specified in Appendix 3B of Section 3. A member of the NRC staff conducted an audit on August 29, 2006, and verified that the results presented in TR-8 met the bounding analysis curves, and that the process used to extract loads from the piping analysis output, insert the loads into the spreadsheet, and perform the necessary calculations, was acceptable.

Design Control Document (DCD) Revision:

None additional to TR8 previously provided (APP-GW-GLR-022)

PRA Revision:

None

Technical Report (TR) Revision:

None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information

RAI Number: RAI-TR08-003
Revision: 0

Question: On page 2 of the June 2006 report, you state, “[a]n addition of RCS-L131A will be made in the Automatic Depressurization System Stage 2, 3 (Upper Tier), and therefore...Figure 3B-10 of the DCD will be revised.” The added RCS-L131A is depicted on Page 59 of the same report. The revised report (July 2006) no longer has a paragraph regarding the RCS-L131A line. However, the piping schematic of the revised report (Page 56) still show this line. Clarify whether any change has been made to LBB piping systems shown in DCD Figure 3E-3 - sheet 2 of 2. If there is a change, then confirm whether any bounding analysis curve other than Figure 3B-10 for a 14" line is applied to this revised piping.

Westinghouse Response: The automatic depressurization system (ADS) stage 1,2,3 consists of two parallel tiers. A lower tier and an upper tier contain similar piping of similar size and operating conditions. At the beginning of the evaluation process, the upper and lower tiers had slightly different layouts. As the analysis progressed, it was determined that the better solution included making both of the layouts the same configuration by removing the reducing tee and adding a 14"x8" reducer after the tee as shown in the markup of DCD Figure 3E-3 – sheet 2 of 2 in TR8. Since BACs for 6", 8", and 14" piping were constructed for this analysis package, no additional curves were necessary for the revised layout in the upper tier piping. Both tiers required the use of the three BACs for the three sizes of pipe. A member of the NRC staff conducted an audit on August 29, 2006, and verified that the results presented in TR-8 met the appropriate bounding analysis curves and was acceptable, including the ADS stage 2 and 3 lines.

During the audit noted above it was noted that the technical report did not include a mark-up of the COL information Item 3.6-2. A mark-up for that section is provided below.

Design Control Document (DCD) Revision:

In addition to the changes noted in TR8 (APP-GW-GLR-022) revise Subsection 3.6.4.2 as follows:

3.6.4.2 Leak-before-Break Evaluation of as-Designed Piping --

~~Complete. Combined License applicants referencing t~~The AP1000 certified design will complete and the leak-before-break evaluation by comparing the results of the as-designed piping stress analysis with the bounding analysis curves are documented in Appendix 3B APP-GW-GLR-022. The Combined License applicant may perform leak before break evaluation for a specific location and loading for cases not covered by the bounding analysis curves. Successfully satisfying the bounding analysis curve limits in Appendix 3B may necessitate lowering the detection limit for unidentified leakage in containment from 0.5 gpm to 0.25 gpm. If so, the Combined License applicant shall provide a leak detection system capable of detecting a 0.25 gpm leak within 1 hour and shall modify appropriate portions of the DCD including subsections 5.2.5, 3.6.3.3, 11.2.4.1, Technical Specification 3.4.7 (and

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information

~~Bases), Technical Specification Bases B3.4.9, and Technical Specification 3.7.8 (and Bases). The leak before break evaluation will be documented in a leak before break evaluation report.~~

PRA Revision:

None

Technical Report (TR) Revision:

None