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U.S. Nuclear Regulatory Commission
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Your ref: Project Number 740
Our ref: DCP/NRC1769

August 24, 2006

Subject: AP1000 COL Response to Requests for Additional Information (TR #36)

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 36, APP-GW-GLR-016, AP1000 Pressurizer Design. 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 1 through 4 (TR36-1 through TR36-4) transmitted in an NRC letter from Steven D. Bloom to Andrea Sterdis, dated July 20, 2006, Subject: Westinghouse AP1000 Combined License (COL) Pre-application Technical Report 36 – Request for Additional Information (TAC No. MD2109).

Pursuant to 10 CFR 50.30(b), the responses to requests for additional information on Technical Report 36 numbered TR36-001, TR36-002, TR36-003 and TR36-004 are submitted as Enclosure 1 under the attached Oath of Affirmation.

It is expected that when additional anticipated RAIs on Technical Report 36 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 August 24, 2006

/Enclosure

1. Responses to Requests for Additional Information on Technical Report No. 36
TR36-001, TR36-002, TR36-003, TR36-004.

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)

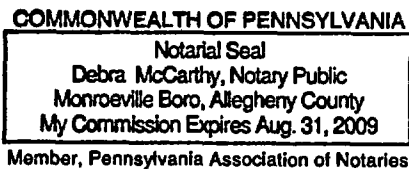
APPLICATION FOR REVIEW OF
"AP1000 GENERAL COMBINED LICENSE INFORMATION"
FOR COL APPLICATION PRE-APPLICATION REVIEW

W. E. Cummins, being duly sworn, states that he is Vice President, Regulatory Affairs & Standardization, 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.



W. E. Cummins
Vice President
Regulatory Affairs & Standardization

Subscribed and sworn to
before me this 24th day
of August 2006.



Notary Public

DCP/NRC1769
August 24, 2006

ENCLOSURE 1

Responses to Requests for Additional Information on Technical Report No. 36

TR36-001, TR36-002, TR36-003, TR36-004

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information

RAI Number: TR36-001

Question:

Section 2.1 of APP-GW-GLR-016, Rev 0 states that the inside diameter (ID) of the pressurizer was increased from 90 inches to 100 inches. Discuss the impact of the change in diameter on pressurizer stresses and pressurizer structural integrity.

Westinghouse Response:

The change in diameter from 90 inches to 100 inches increased the required thickness for the upper and lower head and the shell and increased the calculated stresses. The calculated stresses for the upper head, lower head, and shell remained below the allowable stress for SA-508, Gr. 3, CL 1 material of 30 ksi. The required thickness for each of these regions increased accordingly while the furnished thickness remained the same. While the furnished thickness remained above the required thickness, the margin was reduced.

The upper head required thickness increased from 1.95" to 2.21". The calculated stress increased from 23.64 ksi to 26.62 ksi. The furnished thickness for the upper head remained 2.50".

The vessel shell required thickness increased from 3.89" to 4.32". The calculated stress increased from 26.11 ksi to 28.87 ksi. The furnished thickness for the vessel shell remained 4.50".

The lower head required thickness increased from 1.95" to 2.21". The calculated stress increased from 19.90 ksi to 22.39 ksi. The furnished thickness for the lower head remained 3.00".

There are no necessary changes to APP-GW-GLR-016 due to this RAI.

Reference:

1. APP-MV20-Z0C-107, "AP1000 Pressurizer Sizing Calculation", Rev C, J.S. Kim, 8/6/06

Design Control Document (DCD) Revision:

None

PRA Revision:

None



RAI Number TR36-001-1

08/24/2006

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information

RAI Number: TR36-002

Question:

Table 5.1-2 of APP-GW-GLR-016 indicates the pressurizer height and (ID) have changed and the volume remained the same. Figure 5.4-5 shows the original pressurizer (ID) equal to 90 inches (to clad). Revised figure 5.4-5 shows the new pressurizer (ID) equal to 100 inches (to base metal). Table 5.1-2 shows that the pressurizer (ID) changes from 90 to 100 inches. Dimensions 90 and 100 inches do not have the same reference. Explain the discrepancy and report (ID) used to calculate pressurizer volumes.

Westinghouse Response:

The (ID) used to calculate the pressurizer volume was the 100 inches to base metal minus the 3/16" of cladding on both sides. Using these dimensions, the calculated volume remained at 2100 ft³.

The values depicted in Table 5.1-2 are nominal values and therefore, the value of 100 inches was used to depict the inner diameter instead of the exact value of 99.62 inches to clad.

A change to APP-GW-GLR-016 will be made to clarify the change in the pressurizer dimensions.

Reference:

1. APP-RCS-M3C-002, "AP1000 Pressurizer Sizing Calculation", Rev. 1, M. C. McCullough, 4/10/06
2. APP-GW-GEE-040, "AP1000 Pressurizer Design", Rev. 4, F. T. Johnson, 5/25/06

Design Control Document (DCD) Revision:

None

PRA Revision:

None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information

RAI Number: TR36-003

Question:

- A. What is the pressurizer nominal base metal wall thickness and clad thickness?
- B. Provide the ASME code calculation used to establish the required pressurizer minimum wall thickness.

Westinghouse Response:

A. The pressurizer shell nominal base metal wall thickness is 4.50 inches. The pressurizer upper head base metal wall thickness is 2.50 inches and the lower head base metal wall thickness is 3.00 inches. The clad thickness throughout the pressurizer is 3/16".

B. The ASME code calculation to establish the required pressurizer minimum wall thickness is calculation note APP-MV20-Z0C-107 Rev C. This calculation note provides the required thickness for the upper head, lower head, vessel shell, and all nozzles. The required thickness for the vessel shell was determined to be 4.32 inches. For the upper and lower head, the required thickness is 2.21 inches. The calculation note is available at Westinghouse for your review.

Reference:

1. APP-MV20-Z0C-107 Rev C, "AP1000 Pressurizer Sizing Calculation", J.S. Kim, 8/6/06
2. Design Change Proposal APP-GW-GEE-040, Rev 3, "AP1000 Pressurizer Design", F.T. Johnson, 5/26/06

Design Control Document (DCD) Revision:

None

PRA Revision:

None

AP1000 TECHNICAL REPORT REVIEW

Response to Request For Additional Information

RAI Number: TR36-004

Question:

Section 2.1 of APP-GW-GLR-016, Rev 0 states that the pressurizer spray capacity was incorrectly shown to be 500 gpm and it has been changed to its correct value of 700 gpm. Indicate whether this change in spray capacity changes the design transients used to evaluate the pressurizer or pressurizer spray line. Was the 700 gpm flow rate used in the inadvertent pressurizer spray transient?

Westinghouse Response:

As noted in Section 2.1 of APP-GW-GLR-016, Rev 0, the spray flow was incorrectly shown in Table 5.1-2 to be 500 gpm. This value was corrected in APP-GW-GLR-016 to 700 gpm. Therefore, the correct value of the pressurizer spray flow rate of 700 gpm was used for AP1000 calculations and transients.

The AP1000 700 gpm pressurizer spray flow rate was also used for the inadvertent pressurizer spray transient and other spray transients.

The AP1000 calculations and transients are available for review or audit at the Westinghouse offices.

Reference:

1. APP-GW-GLR-016, Rev 0, "AP1000 Pressurizer Design", Michael McCullough, 5/22/06

Design Control Document (DCD) Revision:

None

PRA Revision:

None