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Your ref: Project Number 740
Our ref: DCP/NRC1907

June 1, 2007

Subject: AP1000 COL Standard Technical Report Submittal of APP-GW-GLR-056, Revision 0

In support of Combined License application pre-application activities, Westinghouse is submitting Revision 0 of AP1000 Standard Combined License Technical Report Number 11i. This report completes and documents, on a generic basis, activities required for partial closure of COL Information Item 3.9-2 in the AP1000 Design Control Document. Changes to the Design Control Document identified in Technical Report Number 11i are included in the proposed amendment to the design certification (DCD Revision 16). This report is submitted as part of the NuStart Bellefonte COL Project (NRC Project Number 740). The information included in this report is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification.

The purpose for submittal of this report was explained in a March 8, 2006 letter from NuStart to the U.S. Nuclear Regulatory Commission.

Pursuant to 10 CFR 50.30(b), APP-GW-GLR-056, Revision 0, "Steam Generator Design Specification and Design Report Summary," Technical Report Number 11i, is submitted as Enclosure 1 under the attached Oath of Affirmation.

It is expected that when the NRC review of Technical Report Number 11i is complete, COL Information Item 3.9-2 will be considered partially complete for COL applicants referencing the AP1000 Design Certification. The enclosed technical report is one of several reports that include modifications to COL Information Items 3.9-2. When the NRC review and audit of these reports and supporting analyses are complete, Westinghouse accepts that the activities required by the COL item, except for the as-built reconciliation, will be considered complete. Westinghouse will have the technical information supporting technical report 11i available for audit after June 30, 2007.

Questions or requests for additional information related to the content and preparation of this report 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.

Westinghouse requests the NRC to provide a schedule for review of this Technical Report within two weeks of its submittal.

Very truly yours,



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

/Attachment

1. "Oath of Affirmation," dated June 1, 2007

/Enclosure

1. APP-GW-GLR-056, Revision 0, "Steam Generator Design Specification and Design Report Summary," Technical Report Number 11i, dated May 2007.

cc:	D. Jaffe	- U.S. NRC	1E	1A
	E. McKenna	- 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
	D. Merkovsky	- Westinghouse	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)

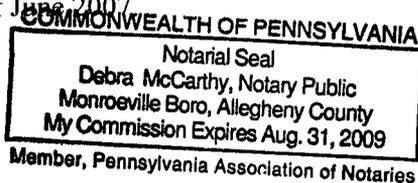
APPLICATION FOR REVIEW OF
"AP1000 GENERAL COMBINED LICENSE INFORMATION"
FOR COL APPLICATION PRE-APPLICATION REVIEW

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 15th day
of June, 2007.




Notary Public

ENCLOSURE 1

APP-GW-GLR-056, Revision 0

Steam Generator Design Specification and Design Report Summary

Technical Report Number 11i

AP1000 DOCUMENT COVER SHEET

TDC: _____ Permanent File: _____ APY: _____
 RFS#: _____ RFS ITEM #: _____

GLR
ASP
5-24-07

AP1000 DOCUMENT NO. APP-GW- GLR -056	REVISION NO. 0	Page 1 of 6	ASSIGNED TO W-Quinn
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ALTERNATE DOCUMENT NUMBER: TR11i WORK BREAKDOWN #:
 ORIGINATING ORGANIZATION: WEC-NPP
 TITLE: ~~AP1000 Steam Generator Design Specification and Reports Summary~~
Design Report PSA 5-24-07
PSA 5-24-07

ATTACHMENTS:	DCP #/REV. INCORPORATED IN THIS DOCUMENT REVISION:
CALCULATION/ANALYSIS REFERENCE:	

ELECTRONIC FILENAME APP-GW-GLR-056 r0	ELECTRONIC FILE FORMAT MSWord	ELECTRONIC FILE DESCRIPTION
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Class 3 Documents being transmitted to the NRC require the following two review signatures in lieu of a Form 36.

LEGAL REVIEW <i>Joseph C. Spadaone</i>	SIGNATURE/DATE <i>Joseph C. Spadaone 5-24-07</i>
PATENT REVIEW Mike Corletti	SIGNATURE/DATE <i>M. M. Corletti 5-24-07</i>

WESTINGHOUSE PROPRIETARY CLASS 2

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REVIEWERS	SIGNATURE/DATE	
VERIFIER M.C. McCullough	SIGNATURE/DATE <i>M.C. McCullough</i>	VERIFICATION METHOD Page by page review
AP1000 RESPONSIBLE MANAGER K.P. Quinn	SIGNATURE <i>K.P. Quinn</i>	APPROVAL DATE <i>5/24/07</i>

* Approval of the responsible manager signifies that document is complete, all required reviews are complete, electronic file is attached and document is released for use.

AP1000 Standard Combined License Technical Report

Steam Generator Design Specification and Design Report Summary

Revision 0

Westinghouse Electric Company LLC
Nuclear Power Plants
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INTRODUCTION

The steam generator channel head, tubesheet, and tubes are a portion of the reactor coolant (primary) pressure boundary. The tubes transfer heat to the steam system while retaining radioactive contaminants in the primary system. The steam generator removes heat from the reactor coolant system during power operation and anticipated transients and under natural circulation conditions. The steam generator heat transfer function and associated secondary water and steam systems are not required to provide a safety related safe shutdown of the plant.

The steam generator secondary shell functions as containment boundary during operation and during shutdown when access opening closures are in place.

The purpose of this report is to provide partial closure of a Combined Operating License (COL) information item by completing the AP1000 steam generator design specification and design report for all primary pressure boundary components and the main feedwater nozzle and making them available for audit.

The completion of the steam generator design specification and design report for audit is identified as COL Information Item 3.9-2 in DCD Table 1.8-2 and Subsection 3.9.8.2 (FSER Action 3.9.2.4-1), to be completed by the Combined License applicant.

The COL item from the DCD reads:

“Combined License applicants referencing the AP1000 design will have available for NRC audit the design specifications and design reports prepared for ASME Section III components.”

Because there are several ASME Section III components, the design specifications and design reports are being made available for audit as each individual component is completed, in order to facilitate the review process.

Since there are additional primary components requiring design reports and design specifications, this technical report only provides for partial completion of COL item 3.9-2.

TECHNICAL BACKGROUND

The AP1000 steam generator is designed to meet the applicable criteria of the ASME Boiler and Pressure Vessel Code, Section III, 1998 Edition through 2000 Addenda. Detailed stress analyses for the primary pressure boundary components and the main feedwater nozzle have been performed and show compliance with the structural requirements of the design specification and the allowable stresses as given in the appropriate ASME Code subsections. The analytical work is sufficient to conclude, for the primary pressure boundary components and the main feedwater nozzle, that the final margins of safety comply with the applicable requirements of the ASME Code and requirements of the design specification. These analyses, summarized in Reference [1], along with the AP1000 steam generator design specification, Reference [2], are available for audit by the NRC. Analysis of secondary side components is currently in progress and based on similarities of the AP1000 steam generator design to previously proven steam generator designs, Westinghouse is confident that when complete, the analyses will demonstrate acceptable results for all AP1000 loading conditions and meet the requirements of the ASME Code and design specification. The complete generic design report for the steam generator will include stress analyses for the secondary pressure boundary, tube to tubesheet weld, steam outlet nozzle, startup feedwater nozzle, minor shell taps, secondary manway, handholes, inspection ports, recirculation port, lower internal components, upper internal components, and the feedwater ring.

The final, complete plant-specific steam generator ASME Code design report will be provided to the NRC as required by Tier 1 Inspections, Tests, Analyses, and Acceptance Criteria 2a in Table 2.2.3-4, after the fabrication of the steam generator is completed and the as-built dimensions are reconciled.

REFERENCES

- 1) APP-MB01-Z0R-100, Rev. 0, "AP1000 Steam Generator Summary Design Report"
- 2) APP-MB01-Z0-101, Rev. 0, "AP1000 Steam Generator Design Specification"

REGULATORY IMPACT

The completion of ASME Section III component design specifications and design reports for audit are discussed in Subsection 3.9 of the NRC Final Safety Evaluation Report (FSER) for the AP1000. Making the steam generator design specification and design report available for audit is part of COL information item 3.9-2 from Table 1.8-2 of the DCD (3.9.2.4-1 as identified in the FSER). The completion of the steam generator design specification and design report for audit does not alter the conclusions in the FSER.

DCD MARKUP

Upon completion of the steam generator design specification and generic ASME Code design report for audit, the text in DCD Tier 2, Subsection 3.9.8.2 will be modified and Reference 31 can be added to DCD Subsection 3.9.9. These changes for these two subsections are provided below:

Revise DCD Subsection 3.9.8.2 as follows:

3.9.8.2 Design Specifications and Reports

The Combined License information requested in this subsection has been addressed in several technical reports, and the applicable changes are incorporated into the DCD. No additional work is required by the Combined Operating License Applicant to address the aspects of the Combined License information requested in this subsection as delineated in the two following paragraphs:

The design specification and design report for ASME Section III components and piping are available for NRC audit via the reports listed in Table 3.9-19.

The consistency of the reactor vessel core support materials relative to known issues of irradiation-assisted stress corrosion cracking or void swelling has been evaluated and addressed in APP-GW-GLR-035, (Reference 21).

The following words represent the original Combined Operating License Information Item commitment, which has been addressed as discussed above.

Combined License applicants referencing the AP1000 design will have available for NRC audit the design specifications and design reports prepared for ASME Section III components. Combined License applicants will address consistency of the reactor vessel core support materials relative to known issues of irradiation-assisted stress corrosion cracking or void swelling (see subsection 4.5.2.1). [*The design report for the ASME Class 1, 2, and 3 piping will include the reconciliation of the as-built piping as outlined in subsection 3.9.3. This reconciliation includes verification of the thermal cycling and stratification loadings considered in the stress analysis discussed in subsection 3.9.3.1.2.*]*

Add the following references to DCD subsection 3.9.9

21. APP-GW-GLR-035, (WCAP-16620) "Consistency of Reactor Vessel Core Support Materials Relative to Known Issues of Irradiation-Assisted Stress Corrosion Cracking (IASCC) and Void Swelling for the AP1000 Plant," Westinghouse Electric Company LLC, July 2006.
22. APP-GW-GLR-049, "Accumulator Design Specification and Design Report Summary," Westinghouse Electric Company LLC, October 2006.
23. APP-GW-GLR-048, "Core Makeup Tank Design Specification and Design Report Summary," Westinghouse Electric Company LLC, October 2006.
24. APP-GW-GLR-057, "Control Rod Drive Mechanism Design Specification and Design Report Summary," Westinghouse Electric Company LLC, February 2007.
25. APP-GW-GLR-054, "In-Core Instrumentation Guide Tube Design Requirements and Design Report Summary," Westinghouse Electric Company LLC, March 2007.
26. APP-GW-GLR-051, "Pressurizer Design Specification and Design Report Summary," Westinghouse Electric Company LLC, February 2007.
27. APP-GW-GLR-050, "Reactor Internals Design Specification and Design Report Summary," Westinghouse Electric Company LLC, January 2007.
28. APP-GW-GLR-052, "Reactor Coolant Pump Design Specification and Design Report Summary," Westinghouse Electric Company LLC, 2007.
29. APP-GW-GLR-053, "Passive RHR Heat Exchanger Design Specification and Design Report Summary," Westinghouse Electric Company, LLC, 2007.
30. APP-GW-GLR-055, "Reactor Vessel Design Specification and Design Report Summary," Westinghouse Electric Company LLC, 2007.
31. APP-GW-GLR-056, "Steam Generator Design Specification and Design Report Summary," Westinghouse Electric Company LLC, 2007.
32. APP-GW-GLR-013, "Safety Class Piping Design Specifications and Design Reports Summary," Westinghouse Electric Company LLC, February 2007.
33. APP-GW-GLR-021, "AP1000 As-Built COL Information Items," Westinghouse Electric Company LLC, June 2006.

Add Table 3.9-19 to the DCD as follows:

<u>Table 3.9-19</u> <u>Technical Reports Summarizing Design Specification and Design Reports for ASME</u> <u>Section III Components and Piping.</u>	
<u>Document Number</u>	<u>Document Title</u>
<u>APP-GW-GLR-013, Reference 32</u>	<u>Safety Class Piping Design Specifications and Design Reports Summary</u>
<u>APP-GW-GLR-048, Reference 23</u>	<u>Core Makeup Tank Design Specification and Design Report Summary</u>
<u>APP-GW-GLR-049, Reference 22</u>	<u>Accumulator Design Specification and Design Report Summary</u>
<u>APP-GW-GLR-050, Reference 27</u>	<u>Reactor Internals Design Specification and Design Report Summary</u>
<u>APP-GW-GLR-051, Reference 26</u>	<u>Pressurizer Design Specification and Design Report Summary</u>
<u>APP-GW-GLR-052, Reference 28</u>	<u>Reactor Coolant Pump Design Specification and Design Report Summary</u>
<u>APP-GW-GLR-053, Reference 29</u>	<u>Passive RHR Heat Exchanger Design Specification and Design Report Summary</u>
<u>APP-GW-GLR-054, Reference 25</u>	<u>In-Core Instrumentation Guide Tube Design Requirements and Design Report Summary</u>
<u>APP-GW-GLR-055, Reference 30</u>	<u>Reactor Vessel Design Specification and Design Report Summary</u>
<u>APP-GW-GLR-056, Reference 31</u>	<u>Steam Generator Design Specification and Design Report Summary</u>
<u>APP-GW-GLR-057, Reference 24</u>	<u>Control Rod Drive Mechanism Design Specification and Design Report Summary</u>