

PROPRIETARY INFORMATION – WITHHOLD UNDER 10CFR2.390

**VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261**

September 16, 2009

10 CFR 50.90

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Serial No. 09-455A
SPS-LIC/CGL R2
Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
PROPOSED LICENSE AMENDMENT REQUEST
PERMANENT ALTERNATE REPAIR CRITERIA (PARC)
FOR STEAM GENERATOR TUBE REPAIR FOR UNITS 1 AND 2

By letter dated July 28, 2009, (Serial No. 09-455), Virginia Electric and Power Company (Dominion) requested license amendments, in the form of changes to the Technical Specifications (TS) to Facility Operating License Numbers DPR-32 and DPR-37 for Surry Power Station Units 1 and 2, respectively. The amendment request proposes to permanently revise TS 6.4.Q, "Steam Generator (SG) Program," to exclude portions of the SG tube below the top of the SG tubesheet from periodic tube inspections. The proposed change is based on the supporting structural analysis and leakage evaluation contained in Westinghouse Electric Company LLC WCAP-17092-P, "H*: Alternate Repair Criteria for the Tubesheet Expansion Region in Steam Generators with Hydraulically Expanded Tubes (Model 51F)," Revision 0, June 2009. The amendment request also proposes to revise TS 6.6.A.3, "Steam Generator Tube Inspection Report," as well as TS 3.1.C and TS 4.13, "RCS Operational Leakage."

On August 14, 2009, during a telephone conversation between Ms. Karen Cotton, NRC Project Manager, and Mr. Gary D. Miller, Dominion Corporate Licensing, the questions contained in Attachment 1 were reviewed. This request for additional information (RAI) (Accession No. ML092290359) addresses the Model 51F Westinghouse WCAP-17092-P and the Surry PARC license amendment request transmitted by the July 28, 2009 letter.

Attachment 1 provides the Dominion responses to RAI questions 17, 18, and 19. Attachment 2 contains the proprietary Westinghouse Electric Company LLC

ATTACHMENT 2 AND PORTIONS OF ATTACHMENT 5 CONTAIN PROPRIETARY INFORMATION THAT IS BEING WITHHELD FROM PUBLIC DISCLOSURE UNDER 10CFR2.390. UPON SEPARATION OF ATTACHMENT 2 AND THE PROPRIETARY PORTION OF ATTACHMENT 5, THIS LETTER IS DECONTROLLED.

ADD
NRR

LTR-SGMP-09-108 P-Attachment, "Response to NRC Request for Additional Information on H*; Model 44F and Model 51F Steam Generators," dated August 27, 2009, that provides proprietary information in response to RAI questions 1 through 16. Attachment 3 contains the Westinghouse Electric Company LLC LTR-SGMP-09-108 NP-Attachment, "Response to NRC Request for Additional Information on H*; Model 44F and Model 51F Steam Generators," that provides non-proprietary information in response to RAI questions 1 through 16.

Attachment 2 contains information proprietary to Westinghouse Electric Company LLC, and it is supported by the affidavit in Attachment 4 signed by Westinghouse Electric Company LLC, the owner of the information. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10CFR2.390 of the Commission's regulations. Accordingly, it is respectfully requested that the information, which is proprietary to Westinghouse, be withheld from public disclosure in accordance with 2.390 of the Commission's regulations. The affidavit, along with Westinghouse letter, CAW-09-2669, "Application for Withholding Proprietary Information from Public Disclosure," is contained in Attachment 4. Correspondence with respect to the copyright or proprietary aspects of Attachment 2 or the supporting Westinghouse affidavit should reference letter CAW-09-2669 and should be addressed to J. A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P. O. Box 355, Pittsburgh, PA 15230-0355.

Attachment 5 contains Westinghouse Electric Company LLC LTR-SGMP-09-122, "WCAP 17092-P, Rev. 0 Proprietary Information Clarification," dated August 28, 2009. On other plant dockets (i.e., Vogtle Units 1 and 2 and Braidwood Units 1 and 2), the NRC has requested clarification regarding certain information marked as proprietary in WCAP-17071-P (H* for Model F SGs) and WCAP-17072-P (H* for Model D5 SGs). The requested clarification also applies to WCAP-17092-P (H* for Surry's Model 51F SGs), which was included in the Surry PARC license amendment request transmitted by our July 28, 2009 letter. Attachment 5 is included in this transmittal to provide the clarification for Surry. Attachment 5 provides proprietary and non-proprietary replacement pages for WCAP-17092-P and WCAP-17092-NP, respectively. The proprietary information contained in Attachment 5 is supported by the affidavit, along with Westinghouse letter CAW-09-2605, "Application for Withholding Proprietary Information from Public Disclosure." Letter CAW-09-2605 and the affidavit were included in our July 28, 2009 letter. It is respectfully requested that the information in Attachment 5, which is proprietary to Westinghouse, be withheld from public disclosure in accordance with 10CFR2.390. Note that the Westinghouse letter LTR-SGMP-09-122 Errata contained in Attachment 8 identifies corrections to five pages in Attachment 5.

The information provided by this transmittal clarifies the Surry PARC license amendment request, does not expand the scope of the request originally transmitted, and does not affect the conclusion of the no significant hazards consideration discussion provided in our July 28, 2009 letter and as published by the NRC in the Federal Register (Accession No. ML092020471).

Attachments:

1. Response to Request for Additional Information for Proposed License Amendment Request for Permanent Alternate Repair Criteria - Steam Generator Tube Repair for Units 1 and 2
2. Westinghouse Electric Company LLC LTR-SGMP-09-108 P-Attachment, "Response to NRC Request for Additional Information on H*; Model 44F and Model 51F Steam Generators" (Proprietary)
3. Westinghouse Electric Company LLC LTR-SGMP-09-108 NP-Attachment, "Response to NRC Request for Additional Information on H*; Model 44F and Model 51F Steam Generators" (Non-proprietary)
4. Westinghouse Electric Company LLC Letter CAW-09-2669, "Application for Withholding Proprietary Information from Public Disclosure"
5. Westinghouse Electric Company LLC LTR-SGMP-09-122, "WCAP 17092-P, Rev. 0 Proprietary Information Clarification" (Proprietary and Non-proprietary)
6. List of Regulatory Commitments
7. Westinghouse Electric Company LLC LTR-SGMP-09-108 Errata, "Errata: Responses to NRC Request for Additional Information on H*; Model 44F and Model 51F Steam Generators"
8. Westinghouse Electric Company LLC LTR-SGMP-09-122 Errata, "WCAP 17092-P, Rev. 0 Proprietary Information Clarification"

cc: U.S. Nuclear Regulatory Commission
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State Health Commissioner
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ATTACHMENT 4

**Westinghouse Electric Company LLC Letter CAW-09-2669,
“Application for Withholding Proprietary Information
from Public Disclosure”**

**VIRGINIA ELECTRIC AND POWER COMPANY
(DOMINION)
SURRY POWER STATION UNITS 1 AND 2**



Westinghouse Electric Company
Nuclear Services
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USA

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

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Our ref: CAW-09-2669

August 31, 2009

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: LTR-SGMP-09-108 P-Attachment, "Response to NRC Request for Additional Information on H*; Model 44F and Model 51F Steam Generators," dated August 2009 (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-09-2669 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The affidavit, which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.390 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by Dominion Virginia.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-09-2669, and should be addressed to J. A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Very truly yours,

A handwritten signature in black ink, appearing to read 'J.A. Gresham', written over a horizontal line.

J.A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Enclosures

cc: G. Bacuta, (NRC OWFN 12E-1)

bcc: J. A. Gresham (ECE 4-7A) 1L
R. Bastien, 1L (Nivelles, Belgium)
C. Brinkman, 1L (Westinghouse Electric Co., 12300 Twinbrook Parkway, Suite 330, Rockville, MD 20852)
RCPL Administrative Aide (ECE 4-7A) 1L (letter and affidavit only)
G. W. Whiteman, Waltz Mill
H. O. Lagally, Waltz Mill
C. D. Cassino, Waltz Mill
J. T. Kandra, Waltz Mill
D. L. Rogosky, ECE 564B

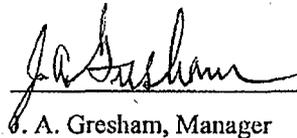
AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

SS

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared J. A. Gresham, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:



J. A. Gresham, Manager

Regulatory Compliance and Plant Licensing

Sworn to and subscribed before me

This 31st day of August, 2009



Notary Public

COMMONWEALTH OF PENNSYLVANIA

Notarial Seal

Sharon L. Markle, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires Jan. 29, 2011

Member, Pennsylvania Association of Notaries

- (1) I am Manager, Regulatory Compliance and Plant Licensing, in Nuclear Services, Westinghouse Electric Company LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.
- (2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Westinghouse "Application for Withholding" accompanying this Affidavit.
- (3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged or as confidential commercial or financial information.
- (4) Pursuant to the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.
 - (i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.
 - (ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitute Westinghouse policy and provide the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

- (a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of

Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

- (b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.
- (c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.
- (d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.
- (e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.
- (f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

- (a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.
- (b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.
- (c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

- (d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.
 - (e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.
 - (f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.
- (iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390, it is to be received in confidence by the Commission.
- (iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.
- (v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in LTR-SGMP-09-108 P-Attachment, "Response to NRC Request for Additional Information on H*; Model 44F and Model 51F Steam Generators," dated August 2009 (Proprietary), for submittal to the Commission, being transmitted by Dominion Virginia letter and Application for Withholding Proprietary Information from Public Disclosure to the Document Control Desk. The proprietary information as submitted for use by Westinghouse for Surry Units 1 and 2 is expected to be applicable to other licensee submittals in support of implementing an alternate repair criterion, called H*, that does not require an eddy current inspection and plugging of steam generator tubes below a certain distance from the top of the tubesheet.

This information is part of that which will enable Westinghouse to:

- (a) Provide documentation of the analyses, methods, and testing which support the implementation of an alternate repair criterion, designated as H*, for a portion of the tubes within the tubesheet of the Surry Units 1 and 2 steam generators.
- (b) Assist the customer in obtaining NRC approval of the Technical Specification changes associated with the alternate repair criterion.

Further this information has substantial commercial value as follows:

- (a) Westinghouse plans to sell the use of similar information to its customers for the purposes of meeting NRC requirements for licensing documentation.
- (b) Westinghouse can sell support and defense of the technology to its customers in the licensing process.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar calculation, evaluation and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.390 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).

COPYRIGHT NOTICE

The reports transmitted herewith each bear a Westinghouse copyright notice. The NRC is permitted to make the number of copies of the information contained in these reports which are necessary for its internal use in connection with generic and plant-specific reviews and approvals as well as the issuance, denial, amendment, transfer, renewal, modification, suspension, revocation, or violation of a license, permit, order, or regulation subject to the requirements of 10 CFR 2.390 regarding restrictions on public disclosure to the extent such information has been identified as proprietary by Westinghouse, copyright protection notwithstanding. With respect to the non-proprietary versions of these reports, the NRC is permitted to make the number of copies beyond those necessary for its internal use which are necessary in order to have one copy available for public viewing in the appropriate docket files in the public document room in Washington, DC and in local public document rooms as may be required by NRC regulations if the number of copies submitted is insufficient for this purpose. Copies made by the NRC must include the copyright notice in all instances and the proprietary notice if the original was identified as proprietary.

ATTACHMENT 1

**Response to Request for Additional Information for
Proposed License Amendment Request**

**Permanent Alternate Repair Criteria
for Steam Generator Tube Repair for Units 1 And 2**

**VIRGINIA ELECTRIC AND POWER COMPANY
(DOMINION)
SURRY POWER STATION UNITS 1 AND 2**

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION FOR
PROPOSED LICENSE AMENDMENT REQUEST**

**PERMANENT ALTERNATE REPAIR CRITERIA
FOR STEAM GENERATOR TUBE REPAIR FOR SURRY UNITS 1 AND 2**

NRC Question 1

Reference 1, Page 6-21, Table 6-6. This table contains a number of undefined parameters and some apparent inconsistencies with Table 5-2 on page 5-6. Please define the input parameters in Table 6-6.

Dominion Response

The response to Question 1 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 2

Reference 1, Section 6.2.2.2. Why was the FEA analysis not run directly with the modified temperature distribution rather than running with the linear distribution and scaling the results?

Dominion Response

The response to Question 2 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 3

Reference 1, Section 6.2.3. Why is radial displacement the "figure of merit" for determining the bounding segment? Does circumferential displacement not enter into this? Why is the change in the tube hole diameter not the "figure of merit?"

Dominion Response

The response to Question 3 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 4

Reference 1, Page 6-66. In Section 6.2.5.3, it is concluded that the tube outside diameter and the tubesheet tube bore inside diameter always maintain contact in the predicted range of tubesheet displacements. However, for tubes with through wall cracks at the H^ distance, there may be little or no net pressure acting on the tube for some distance above H^* . In Tables 6-18 and 6-19, the fourth increment in the step that occurs two steps prior to the last step suggests that there may be no contact between the tube and tubesheet, over a portion of the circumference, for a distance above H^* . Is the conclusion in Section 6.2.5.3 valid for the entire H^* distance, given the possibility that the tubes may contain through wall cracks at that location? Additionally, please address the following issues:*

- a. Clarify the nature of the finite element model ("slice" model versus axisymmetric SG assembly model) used to generate the specific information in Tables 6-1, 2, and 3 (and accompanying graph entitled "Elliptical Hole Factors") of Reference 6-15. What loads were applied? How was the eccentricity produced in the model? (By modeling the eccentricity as part of the geometry? By applying an axisymmetric pressure to the inside of the bore?) Explain why this model is not scalable to lower temperatures.*
- b. Provide a table showing the maximum eccentricities (maximum diameter minus minimum diameter) from the 3 dimensional (3-D) finite element analysis for normal operating and steam line break (SLB), for model 51F.*
- c. In Figure 2 of the White Paper, add plot for original relationship between reductions in contact pressure and eccentricity as given in Reference 6-15 in the graph accompanying Table 6-3. Explain why this original relationship remains conservative in light of the new relationship. Explain the reasons for the differences between the curves.*
- d. When establishing whether contact pressure increases when going from normal operating to steam line break conditions, how can a valid and conservative comparison be made if the normal operating case is based on the original delta contact pressure versus eccentricity curve and the SLB case is based on the new curve?*

Dominion Response

The response to Question 4 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 5

Reference 1, Section 6.3. Are the previously calculated scale factors and delta D factors in Section 6.3 conservative for steam line break (SLB) and feed line break (FLB)? Are they conservative for an intact divider plate assumption? Are they conservative for all values of primary pressure minus crevice pressure that may exist along the H^ distance for intact tubes and tubes with through-wall cracks at the H^* distance?*

Dominion Response

The response to Question 5 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 6

Reference 1, Page 6-84. How is tube temperature (T_T) on page 6-84 determined? For normal operating conditions (NOP), how is the T_T assumed to vary as function of elevation?

Dominion Response

The response to Question 6 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 7

Reference 1, Page 6-102, Figure 6-75. Contact pressures for nuclear plants with Model F steam generators are plotted in Figure 6-75, but it is not clear what operating conditions are represented in the plotted data, please clarify.

Dominion Response

The response to Question 7 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 8

Reference 1, Page 6-108, Reference 6-5. This reference seems to be incomplete; please provide a complete reference.

Dominion Response

The response to Question 8 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 9

Reference 1, Page 6-109, Reference 6-15. Table 6-3 in Reference 6-15 (SM-94-58, Rev 1) appears inconsistent with Table 6-2 in the same reference. Explain how the analysis progresses from Table 6-2 to Table 6-3.

Dominion Response

The response to Question 9 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 10

Reference 1, Page 8-9, Figure 8-1. There is an apparent discontinuity in the plotted data of the adjustment to H^ for distributed crevice pressure, please provide any insight you may have as to why this apparent discontinuity exists.*

Dominion Response

The response to Question 10 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 11

Reference 1, Page 8-5, Section 8.1.4. Clarify whether the "biased" H^ distributions for each of the four input variables are sampled from both sides of the mean H^* value during the Monte Carlo process, or only on the side of the mean H^* value yielding an increased value of H^* .*

Dominion Response

The response to Question 11 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 12

Reference 1, Page 8-20, Case S-4. Why does the assumption of a 2-sigma value for the coefficient of thermal expansion of the tube (α_T) and the tubesheet (α_{TS}) to determine a "very conservative biased mean value of H^ " conservatively bound the interaction effects between α_T and α_{TS} ? Describe the specifics of how the "very conservative biased mean value of H^* ," as shown in Table 8-4, was determined.*

Dominion Response

The response to Question 12 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 13

Reference 1, Page 8-22, Case M-5. The description for this case seems to correspond to a single tube H^ estimate rather than a whole bundle H^* estimate. How is the analysis performed for a whole bundle H^* estimate?*

Dominion Response

The response to Question 13 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 14

Reference 1, Page 8-22, Case M-5 states: "Interaction effects are included because the 4.166 sigma variations were used that already include the effective interactions among the variables." Case M-5 also states that the 4.166 sigma variations come from Table 8-2. However, Table 8-2 does not appear to include interactions among the variables. Explain how the 4.166 sigma variations include the effect of interactions among the variables.

Dominion Response

The response to Question 14 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 15

Reference 1, Page 8-23, Case M-7. Was the "2 sigma variation of all variables" divided by a factor of 2?

DOMINION Response

The response to Question 15 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3).

NRC Question 16

Section 8 of Reference 1. The variability of H^ with all relevant parameters is shown in Figure 8-3. The interaction between α_T and α_{TS} are shown in Figure 8-5. Please explain why the direct relationships shown in these two figures were not sampled directly in the Monte Carlo analysis, instead of the sampling method that was chosen. Also, please explain why the sampling method chosen led to a more conservative analysis than directly sampling the relationships in Figures 8-3 and 8-5. As part of the response, include discussion of main steam line break and whether it continues to be less limiting, from maximum H^* perspective, than three times normal operating pressure.*

Dominion Response

The response to Question 16 is provided in Westinghouse LTR-SGMP-09-108 P-Attachment (Attachment 2) and Westinghouse LTR-SGMP-09-108 NP-Attachment (Attachment 3). Note that Westinghouse LTR-SGMP-09-108 Errata contained in Attachment 7 corrects a header on page 49 in Attachments 2 and 3.

NRC Question 17

In the July 28, 2009, letter (accession no. ML092150464), SPS commits to monitor for tube slippage as part of the steam generator tube inspection program. The "due date/event" is "Starting with Unit 2 Refueling Outage 22." It is not clear whether the planned monitoring will be performed on Unit 1. Please clarify the wording so it is clear

that the tube slippage will be monitored at both units during every steam generator tube inspection outage.

Dominion Response

The slippage monitoring commitment in Attachment 4 to the July 28, 2009 letter states:

"Dominion commits to monitor for tube slippage as part of the SG tube inspection program. Due Date/Event: Starting with Unit 2 Refueling Outage 22"

This commitment has been modified as noted in the bold type:

"Dominion commits to monitor for tube slippage as part of the SG tube inspection program. Due Date/Event: Starting with Unit 2 Refueling Outage 22 **and during subsequent Unit 1 and Unit 2 SG inspections**"

NRC Question 18

In the June 2, 2009, letter, SPS commits to determine the position of the bottom of the expansion transition in relation to the top of the tubesheet and to enter "any significant deviation" into their corrective action program. This is a one-time verification prior to implementation of H. The commitment should be modified to also include a commitment to notify the NRC staff if significant deviations in the location of the beginning of the expansion transition, relative to the top of the tubesheet, are detected.*

Dominion Response

The one-time commitment in Attachment 4 to the July 28, 2009 letter states:

"Dominion commits to perform a one-time verification of tube expansion to locate any significant deviations in the distance from the top of tubesheet to the beginning of expansion transition. If any significant deviations are found, the condition will be entered into the plants corrective action program and dispositioned. Due Date/Event: Prior to the startup following Unit 2 Refueling Outage 22 and Unit 1 Refueling Outage 23"

This commitment has been modified as noted in the bold type:

"Dominion commits to perform a one-time verification of tube expansion to locate any significant deviations in the distance from the top of tubesheet to the beginning of expansion transition. If any significant deviations are found, the condition will be entered into the plants corrective action program and dispositioned. **Additionally, Dominion commits to notify the NRC of significant deviations.** Due Date/Event:

Prior to the startup following Unit 2 Refueling Outage 22 and Unit 1 Refueling Outage 23”

NRC Question 19

During review of the SPS amendment request, it was noticed that the wording associated with a regulatory commitment regarding use of the leakage factor had been stated in the body of the document (page 15 of Attachment 1) but the licensee did not actually make a commitment to establish an administrative operational leakage limit on page 15 of Attachment 1, in the list of regulatory commitments in the July 28, 2009 cover letter, or in Attachment 4. See below for an example of a complete commitment.

For the Condition Monitoring assessment, the component of leakage from the prior cycle from below the H distance will be multiplied by a factor of 2.03 and added to the total leakage from any other source and compared to the allowable accident induced leakage limit. For the Operational Assessment, the difference between the allowable accident induced leakage and the accident induced leakage from sources other than the tubesheet expansion region will be divided by 2.03 and compared to the observed operational leakage. An administrative operational leakage limit will be established to not exceed the calculated value.*

Dominion Response

The following commitment has been added to the list of regulatory commitments in Attachment 6:

“Dominion commits to the following: For the Condition Monitoring assessment, the component of leakage from the prior cycle from below the H* distance will be multiplied by a factor of 2.03 and added to the total leakage from any other source and compared to the allowable accident induced leakage limit. For the Operational Assessment, the difference between the allowable accident induced leakage and the accident induced leakage from sources other than the tubesheet expansion region will be divided by 2.03 and compared to the observed operational leakage. An administrative operational leakage limit will be established to not exceed the calculated value. Due Date/Event: Every operating cycle following Unit 2 Refueling Outage 22 and Unit 1 Refueling Outage 23”

Reference:

1. WCAP-17092-P, Rev. 0, “H*: Alternate Repair Criteria for the Tubesheet Expansion Region in Steam Generators with Hydraulically Expanded Tubes (Model 51F),” dated June 2009.