PSEG Nuclear LLC
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PSEG Nuclear LLC

MAY 14 2007

10 CFR 50.90

LR-N07-0086

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

Salem Generating Station Units 1 and 2
Facility Operating License Nos. DPR-70 And DPR-75
Docket Nos. 50-272 And 50-311

Subject: Response to Request for Additional Information
Request for License Amendment – Topical Report References in
Technical Specification 6.9.1.9, Core Operating Limits Report

Reference: 1) Letter from Thomas P. Joyce (PSEG Nuclear LLC) to USNRC, September 26, 2006
2) Letter from USNRC to William Levis (PSEG Nuclear LLC), March 29, 2007

In Reference 1, PSEG Nuclear LLC (PSEG) requested an amendment to the Technical Specifications (TS) for Salem Generating Station (SGS) Units 1 and 2 to revise topical report references in TS 6.9.1.9.b.

In Reference 2, the NRC provided a Request for Additional Information (RAI) concerning PSEG's request. Attachment 1 to this letter restates the NRC questions and provides PSEG's responses. Attachment 1 contains information proprietary to Westinghouse Electric Company, LLC (Westinghouse). **Westinghouse requests that the proprietary information in Attachment 1 be withheld from public disclosure in accordance with 10CFR2.390(a)(4).** An affidavit supporting this request is included with Attachment 1. Attachment 2 contains a non-proprietary version of PSEG's response to the RAI.

The information provided herein does not invalidate PSEG's evaluation of no significant hazards considerations, using the criteria in 10CFR50.92(c), in our September 26, 2006 request. There are no commitments contained in this letter. In accordance with 10CFR50.91(b)(1), a copy of this submittal is being sent to the State of New Jersey.

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Should you have any questions regarding this request, please contact Mr. James Mallon at 610-765-5507.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 5/14/07

Sincerely,

Thomas P. Joyce
Site Vice President
Salem Station Units 1 and 2

cc Mr. S. Collins, Administrator - Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. R. Ennis, Licensing Project Manager - Salem
U. S. Nuclear Regulatory Commission
Mail Stop 08B1
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USNRC Senior Resident Inspector - Salem (X24)

Mr. K. Tosch, Manager IV
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Westinghouse Letter CAW-07-2277 dated May 10, 2007

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Attachment 1B contains information proprietary to Westinghouse. This document may be considered nonproprietary upon removal of Attachment 1B.

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Our ref: CAW-07-2277

May 10, 2007

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: PSE-07-26, Rev. 1 P-Attachment, "Responses to NRC Request for Additional Information on SBLOCA COSI Version," dated May 10, 2007 (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-07-2277 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 Public Service Electric & Gas.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-07-2277 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,

B. F. Maurer, Acting Manager
Regulatory Compliance and Plant Licensing

Jon Thompson (NRC O-7E1A)

Enclosures

CAW-07-2277

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

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COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared B. F. Maurer, 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:

B. F. Maurer, Acting Manager
Regulatory Compliance and Plant Licensing

Sworn to and subscribed before me
this 10th day of May, 2007

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 Acting 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 constitutes Westinghouse policy and provides 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 "brackets" in PSE-07-26, Rev. 1 P-Attachment, "Responses to NRC Request for Additional Information on SBLOCA COSI Version," (Proprietary) for submittal to the Commission, being transmitted by Public Service Electric & Gas letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse is that associated with Westinghouse's request for NRC approval of RAI Response to Question 3 on SBLOCA.

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

(a) Obtain NRC approval of Application of the SBLOCA COSI Model for Salem Unit 2.

(b) Assist the customer in obtaining NRC approval by responding to NRC RAI's.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of this information to its customers for purposes of SBLOCA support with the use of COSI.

(b) Westinghouse can sell support and defense of the use of Application of SBLOCA Methodology with COSI.

(c) The information requested to be withheld reveals the distinguishing aspects of SBLOCA methodology which was developed by Westinghouse.

(d) Its use by a competitor would reduce his expenditures of resources or improve his competitive position in the design and licensing of similar product.

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 calculations 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

PSEG Response to NRC Request For Additional Information Regarding Request for Amendment to Salem Generating Station Unit 1 and 2 Technical Specifications - Topical Report References in Technical Specification 6.9.1.9, Core Operating Limits Report – *Non-Proprietary Version*

1. **Please describe how pre-existing oxidation is factored into the results for maximum (local) oxidation. If pre-existing oxidation was considered to be negligible because all the fuel is fresh fuel, please state that it is all fresh fuel. If pre-existing oxidation is considered in the reported results, or if pre-existing oxidation is not reflected in the results, please provide an estimate of the contribution of the pre-existing oxidation.**

PSEG Response

The results (peak cladding temperature and maximum local oxidation) for the Salem Unit 2 Replacement Steam Generator (RSG) Small Break Loss of Coolant Accident (SBLOCA) analysis are provided in Table 1-1 below. Additional information regarding the bases for the maximum local oxidation, including consideration of both pre-existing and transient oxidation, is discussed below.

Table 1-1: Salem Unit 2 RSG SBLOCA Analysis Results

Peak Cladding Temperature	987°F
Maximum Local Oxidation	Pre-existing = 0% Transient = 0.01%

As part of the Salem Unit 2 RSG Program, a new SBLOCA analysis was performed at beginning of life (BOL) conditions, assuming all fresh fuel, resulting in a peak cladding temperature of 987°F. Because of low clad temperatures, the maximum transient oxidation was only 0.01%.

Pre-existing oxidation is predicted and compared to the design limit on a cycle-specific basis as part of the normal reload evaluation process. The pre-existing oxidation increases with burnup, from zero at BOL to a maximum value at the discharge of the fuel (end of life, or EOL). The design limit 95% upper bound value for each of the fuel designs that will be included in the RSG cores is <16%. The actual upper bound values for each of the fuel designs are expected to be well below this value. Because the transient oxidation is so low, the sum of the transient and pre-existing oxidation remains below 16% at all times in life. This confirms Salem Unit 2 conformance with the 10 CFR 50.46 acceptance criterion for local oxidation.

2. Section 4.2 of Attachment 1 to your submittal states that "the standard "integer" break spectrum was used..." Please identify the breaks that were calculated and the results (peak cladding temperature (PCT), O_2, H_2, and a PCT vs time plot) that were obtained for each analyzed break.

PSEG Response

The break spectrum analyzed in support of PSEG's September 26, 2006 amendment request is the same as the Salem Generating Station current licensing basis spectrum (i.e., 1.5, 2, 3, and 4-inch breaks). Table 2-1 below includes information for the peak cladding temperature (PCT), maximum local oxidation, and hydrogen generation for each of the break sizes analyzed. Figures 2-1 through 2-3 include the PCT versus time plots for each of the applicable break sizes. Note that as a result of SBLOCA analysis submittals for various Extended Power Uprate (EPU) and RSG programs, the NRC recently challenged Westinghouse on the coarseness of the standard NOTRUMP-EM break spectrum (i.e., 1.5, 2, 3 and 4 inch) (e.g., Callaway Unit 1 Amendment No. 168, dated September 29, 2005, TAC No. MC4437 (ML#052570054)). The Westinghouse position on the NOTRUMP-EM break spectrum was sent to the NRC in Reference 1 and included a proposed approach for future NOTRUMP-EM analyses. In any future applications of the NOTRUMP-EM, if any integer break size PCT is approximately equal to or greater than 1700°F, or if the PCT results are close to or greater than the corresponding Large Break LOCA (LBLOCA) PCT results, the analysis includes a refined break spectrum to assure 10 CFR 50.46 compliance. The results presented herein do not show PCTs approximately equal to or greater than 1700°F. Also, enough margin exists between the SBLOCA PCT and the LBLOCA PCT (2038°F, Reference 2) to justify not including a refined break spectrum in this analysis.

Table 2-1: Salem Unit 2 RSG SBLOCA Analysis Results

Result	1.5-inch (1)	2-inch	3-inch	4-inch
PCT (°F)	N/A	910	987	964
Maximum local oxidation (%)		0.00	0.01	0.01
Total hydrogen generation (2)		<1%	<1%	<1%

(1) There is no core uncovery for the 1.5-inch case.

(2) The hot rod average oxidation values are 0.0, 0.0, and 0.0% for the 2-, 3-, and 4-inch break cases respectively; total hydrogen generation would be less than hot rod average oxidation, and is therefore less than 1% for all breaks analyzed.

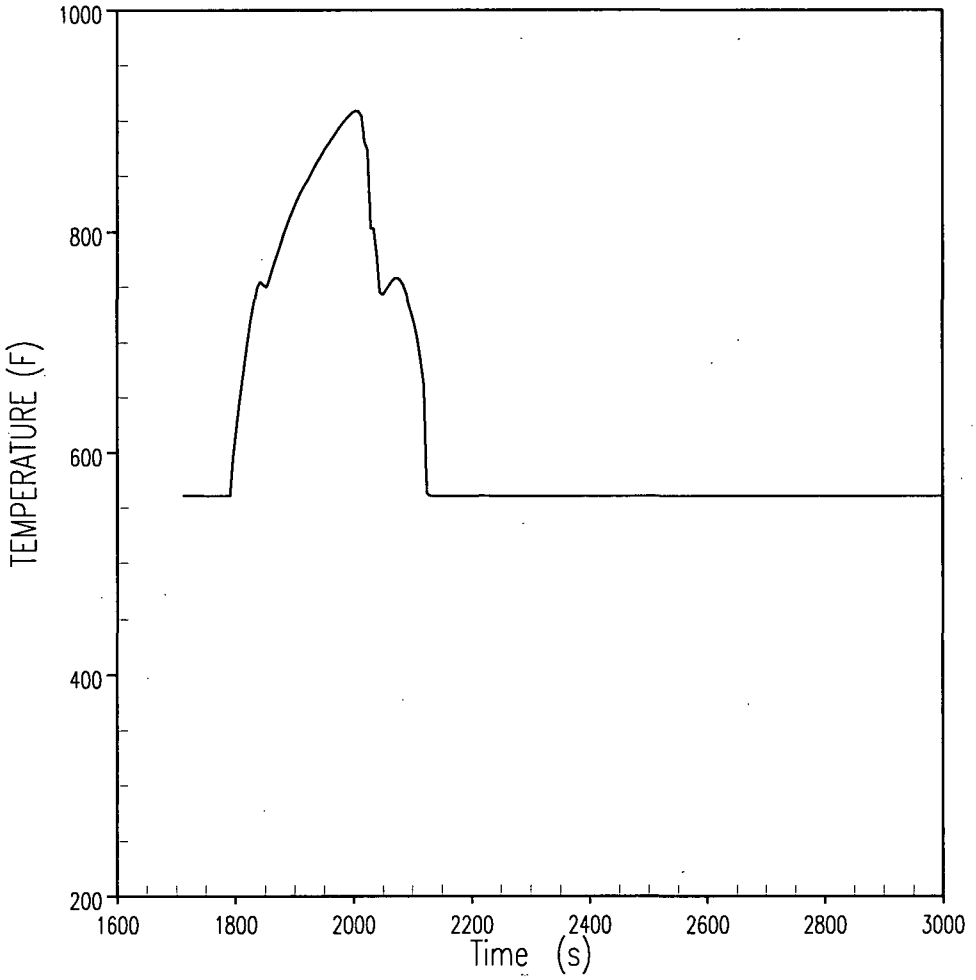

Figure 2-1: Salem Unit 2 RSG SBLOCA Analysis 2-inch PCT Results

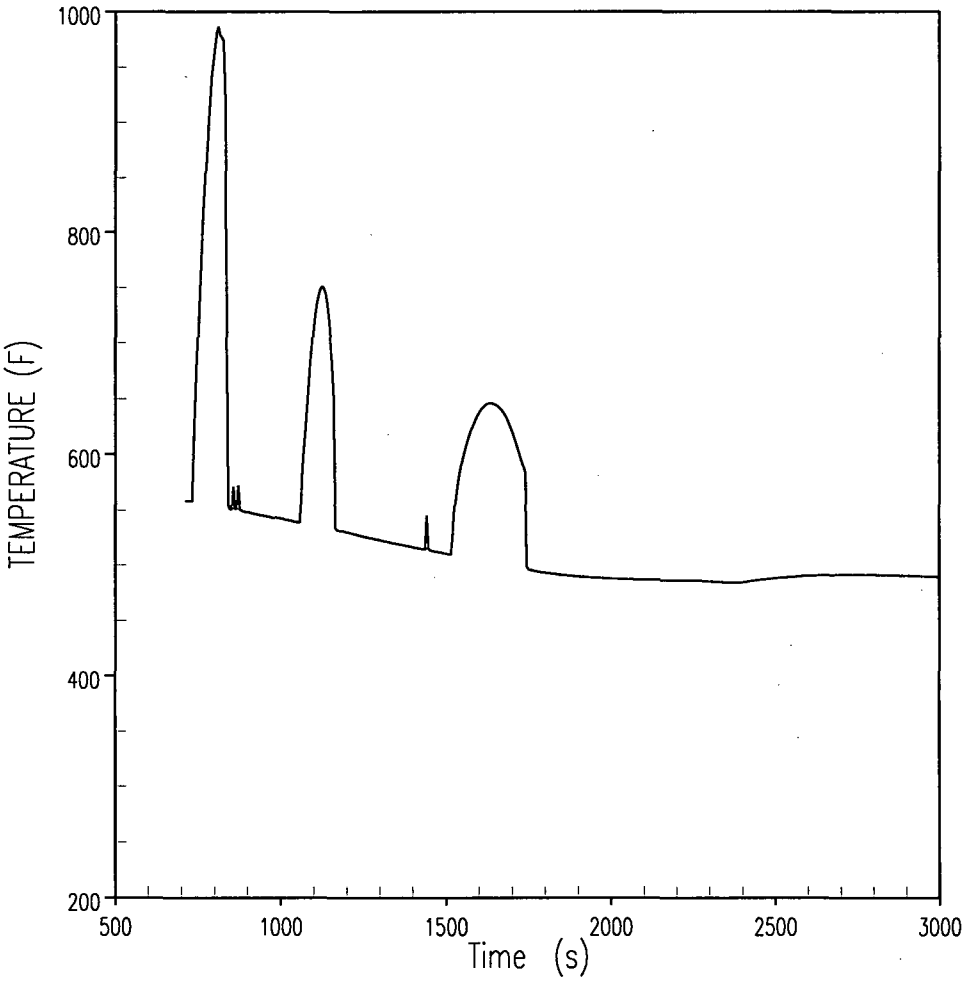

Figure 2-2: Salem Unit 2 RSG SBLOCA Analysis 3-inch PCT Results

The spiking behavior of the 3-inch break size PCT results shown above is representative of the top core vapor response of the transient, which follows the core mixture level. These increases in PCT correspond to the times at which the mixture level drops below the top of the active fuel and the void fraction in the top core node is allowing the vapor to heat up before the core mixture level recovers.

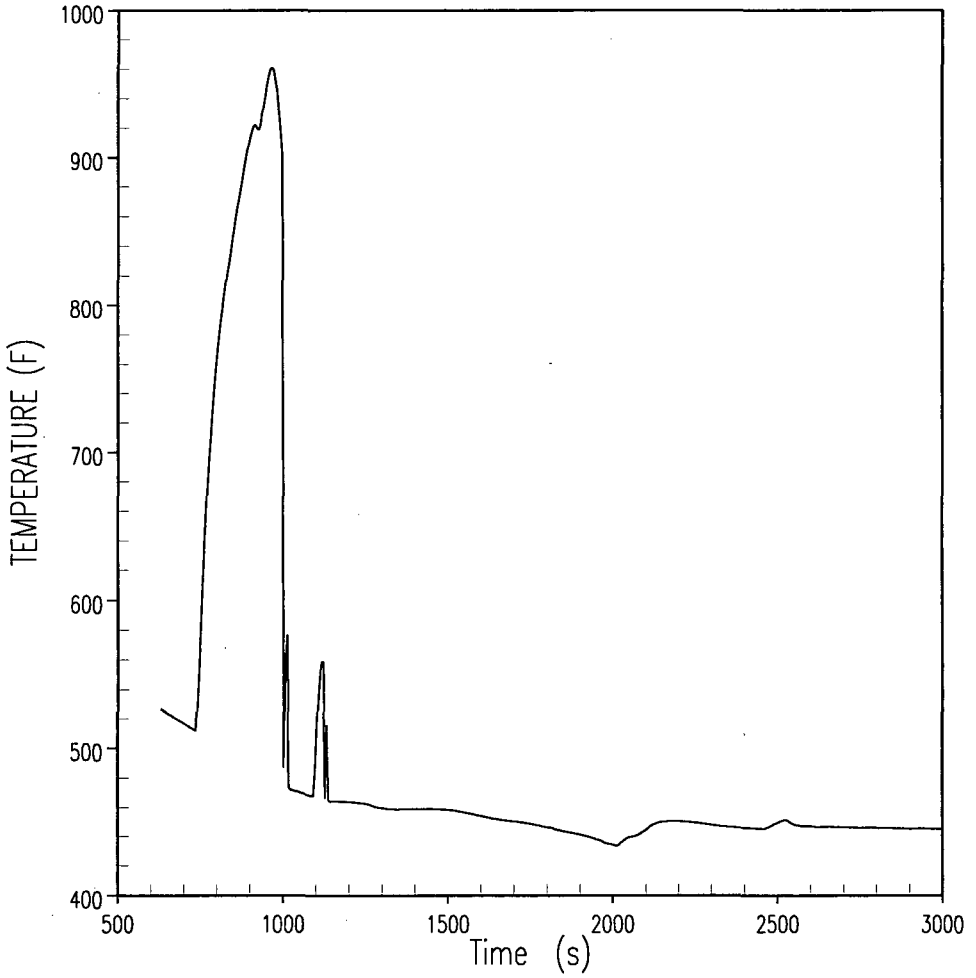

Figure 2-3: Salem Unit 2 RSG SBLOCA Analysis 4-inch PCT Results

3. **The small break loss-of-coolant accident (SBLOCA) analyses results using the "COSI" version of the NOTRUMP code reflect a significantly reduced PCT versus the previous results. Please discuss and quantify each of the factors contributing to this large benefit.**

   PSEG Response

   The vintage of the current Salem Unit 2 analysis makes this comparison on a one-to-one basis difficult; however, the differences can be explained in a qualitative sense. The major differences between the old and new analyses can be attributed to [

   ]^{a,c} Also, the current Salem Unit 2 SBLOCA analysis contains a significant number of assessments for evaluation model error corrections (Reference 2). The applied 10 CFR 50.46 assessments are often evaluated in a conservative manner (e.g., 0°F may be assessed rather than calculating a plant-specific PCT benefit). Because of this, the assessed PCT would be higher than the actual PCT reflecting any model corrections.

4. **To show that the referenced generically-approved SBLOCA analysis methodology applies specifically to each of the Salem units, provide a statement, for each unit, that PSEG and its vendor have ongoing processes that assure that the ranges and values of the input parameters for the Salem SBLOCA analyses conservatively bound the ranges and values of the as-operated plant parameters. (The discussion in Section 4.2 of Attachment 1 to your submittal does not address the concern regarding the ongoing applicability of the analysis when changes occur in the as-operated plant. For example, one of the items the processes referred to should assure is that the high pressure injection pumps continue to have sufficient flow capacity at SBLOCA pressures to deliver the flow assumed in the analyses.)**

   Furthermore, if both Salem plant-specific analyses are based on the same model and/or same analyses, justify that the model or analyses apply to both Salem units. For example, if one Salem unit's design has a different vessel internals design than the other unit's vessel internals design, the same

methodology may apply to both Salem units, but the same model may not apply to both units (i.e., in this case, each unit would have to provide its own plant-specific SBLOCA analysis).

PSEG Response

PSEG and Westinghouse have ongoing processes that assure that the ranges and values of the input parameters for the Salem SBLOCA analysis conservatively bound the ranges and values of the as-operated plant parameters. Please note that the SBLOCA analysis performed for the Salem Unit 2 Replacement Steam Generator program is not applicable to Salem Unit 1 and the COSI model is only being implemented for Salem Unit 2.

References

1. LTR-NRC-06-44, "Transmittal of LTR-NRC-06-44 NP-Attachment, "Response to NRC Request for Additional Information on the Analyzed Break Spectrum for the Small Break Loss of Coolant Accident (SBLOCA) NOTRUMP Evaluation Model (NOTRUMP EM), Revision 1", (Non-Proprietary)," Gresham, J. A., July 2006.
2. LR-N06-0331, "Annual Report of the Emergency Core Cooling System Evaluation Model Changes and Errors required by 10 CFR 50.46, 'Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors'," Joyce, T. P., July 28, 2006. (NRC ADAMS Accession Number ML062200461)
3. WCAP-10054 Addendum 2 Rev 1, "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model," July 1997.