Westinghouse Electric Company
Nuclear Power Plants
P.O. Box 355
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USA

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

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Your ref: Docket No. 52-006
Our ref: DCP/NRC2489

May 22, 2009

Subject: Submittal of Proprietary Responses to Action Items from the March 18 and 19, 2009 Meeting Regarding AP1000 Shield Building Design

As a follow up on to the meeting regarding AP1000 Shield Building held on March 18 and 19, 2009, Westinghouse is submitting a Proprietary version of responses to Shield Building Action Items.

A series of action items were identified during the AP1000 Shield Building meeting on March 18 and 19, 2009. Westinghouse and the NRC participated in this meeting to discuss RAI responses and unresolved issues related to the design of the AP1000 shield building. Several of the items from that meeting are addressed in the enclosed document. The enclosed document is an advance version of Westinghouse Report APP-1200-S3R-003, "Design Methodology for AP1000 Enhanced Shield Building Cylindrical Wall." This enclosure includes the portions of the report addressing other action items and transmitted by previous letters. New sections of this report address Shield Building Action Items 7, 8B, and 11. The attached document includes changes to portions previously provided. The changes to portions previously submitted are marked in the margin.

This transmittal completes the responses to the action items identified during the AP1000 Shield Building meeting on March 18 and 19, 2009

The Shield Building Action Items addressed in the attachment and the sections which address those items are itemized below.

7. Prepare assessment of recent test reports to demonstrate conservatism of design methodology. Include in-plane and out of plane. Use test data to substantiate the Westinghouse's design methodology for a shear wall subjected to vertical loads, such as loads from the floor, plus horizontal loads, such as loads generated by earthquakes. This substantiation should include in-plane axial forces plus bending moments on the wall, in-plane axial forces plus shear forces on the wall, and out-of-plane axial forces plus bending moments. This is an item that must be docketed.

Section 5 (except 5.5) of the attachment provides an assessment of recent test reports and literature review which demonstrate the conservatism of design methodology of the AP1000 Enhanced Shield Building Cylindrical Wall.

8B. Describe how this guide (the translation of JEAG4618-2005) was applied in the Westinghouse methodology.

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NRO

For Action Item 8A, a translation of the report JEAG4618-2005 has already been made available at the Twinbrook office.

For Action Item 8B, the response for Action Item 7 in the attachment describes in the **Introduction** to Section 5 the application of the JEAG4618-2005 guide in the Westinghouse methodology.

11. Clarify the use of ACI-349 and AISC N-690 for the shield building roof. What parts are being used, what is extended, how do we modify, and how do we support with testing. Specifically address why this is the same construction as the CR floor. Also, provide design methodology for SB roof and how it is supported by test or other method. Address whether the proposed concrete type is the same as the concrete type previously approved for the CR floor and the effect of those different formulas (if it is the case). Defend the worst case example of the design.

Section 5.5 of the attachment provides a description of the testing that supports the use of the half SC construction for the shield building roof. This is the same type of construction as the control room ceiling. This does not affect the design methodology. Use of ACI 349 and AISC-N690 was clarified in the proposed revision to the DCD provided in the response to RAI-SRP3.8.4-SEB1-02 (Westinghouse Letter DCP/NRC2380 Accession Number ML090490093).

The Westinghouse document APP-1200-S3R-003 which provides a description of the shield building design method, integrating the responses to several shield building action items, will include the following summary.

Summary

This report describes and justifies the methodology applied in the design of the cylindrical steel plate wall for the enhanced shield building. Section 2 describes the shield building cylinder, the materials, the design analyses and typical member forces. Section 3 provides the Code references and equations used to confirm the adequacy of the steel plate as reinforcement in the cylindrical wall where member forces have been calculated in an ANSYS finite element analysis. These equations are the same equations used in the design of steel plate modules elsewhere in the AP1000 and are also the same equations used to calculate reinforcement required in the reinforced concrete walls and floors.

Section 4 describes the design of the connection between the steel plate portion of the shield building and the reinforced concrete basemat and walls. The connection is designed in accordance with the ACI shear-friction provisions. Dowel bars extend into the SC portion and develop the strength of the bar in accordance with the development length requirement of ACI 349. The loads in the dowel bars are transferred to the surface steel plate by concrete and tie bars. The length of the tie bars is sufficient to develop the required shear friction force at the planes of potential cracking. Literature related to this mechanism including summaries of test data is described in section 4.

Section 5 reviews test data and literature supporting the design methodology for the wall. Subsections describe the behavior under in-plane compression, in-plane shear, and out of plane loads. Behavior is described and comparisons are made between test data in the literature and the design methodology applied in the AP1000 design. Reference is made to extensive test data from Japan that has been used in the development of a design guide in Japan. While Westinghouse has made comparisons against this design guide in the process of the design development, the AP1000 design method is based on the ACI 349 Code as described in Section 3 of the report.

The literature and test data reviewed in this report demonstrate the adequacy of the design methodology for the AP1000 enhanced shield building which was developed as an extension of the ACI 349 design approach.

After the APP-1200-S3R-003 document is finalized a non proprietary version of the report will be provided as required by NRC regulations.

Also enclosed is one copy of the Application for Withholding, AW-09-2587 (non-proprietary) with Proprietary Information Notice, and one copy of the associated Affidavit (non-proprietary).

This submittal contains proprietary information of Westinghouse Electric Company, LLC. In conformance with the requirements of 10 CFR Section 2.390, as amended, of the Commission's regulations, we are enclosing with this submittal an Application for Withholding from Public Disclosure and an affidavit. The affidavit sets forth the basis on which the information identified as proprietary may be withheld from public disclosure by the Commission.

Correspondence with respect to the affidavit or Application for Withholding should reference AW-09-2588 and should be addressed to James A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company, LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Questions or requests for additional information related to 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.

Very truly yours,

Robert Sisk, Manager
Licensing and Customer Interface
Regulatory Affairs and Standardization

/Enclosures

1. AW-09-2587"Application for Withholding Proprietary Information from Disclosure," dated May 22, 2009

2. AW-09-2587, Affidavit, Proprietary Information Notice, Copyright Notice dated May 22, 2009

3. Design Methodology for Enhanced Shield Building Cylindrical Wall (Proprietary)

cc:	B. Gleaves	-	U.S. NRC	4E
	E. McKenna	-	U.S. NRC	4E
	T. Spink	-	TVA	4E
	P. Hastings	-	Duke Power	4E
	R. Kitchen	-	Progress Energy	4E
	A. Monroe	-	SCANA	4E
	P. Jacobs	-	Florida Power & Light	4E
	C. Pierce	-	Southern Company	4E
	E. Schmiech	-	Westinghouse	4E
	G. Zinke	-	NuStart/Entergy	4E
	R. Grumbir	-	NuStart	4E
	J. Monahan	-	Westinghouse	4E
	P. Greco	-	Westinghouse	4E
	T. Andreychek	-	Westinghouse	4E

ENCLOSURE 1

AW-09-2587

APPLICATION FOR WITHHOLDING
PROPRIETARY INFORMATION FROM DISCLOSURE

Westinghouse Electric Company
Nuclear Services
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355
USA

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

Direct tel: 412-374-6202
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e-mail: sisk1rb@westinghouse.com

Your ref: Docket No. 52-006
Our ref: AW-09-2587

May 22, 2009

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: Submittal of Proprietary Responses from the March 18 & 19, 2009 Meeting Regarding AP1000 Shield Building Design

The Application for Withholding is submitted by Westinghouse Electric Company, LLC (Westinghouse), pursuant to the provisions of Paragraph (b) (1) of Section 2.390 of the Commission's regulations. It contains commercial strategic information proprietary to Westinghouse and is customarily held in confidence.

The proprietary material for which withholding is being requested is identified in the proprietary version of the subject report. In conformance with 10 CFR Section 2.390, Affidavit AW-09-2587 accompanies this Application for Withholding, setting forth the basis on which the identified proprietary information may be withheld from public disclosure.

Accordingly, it is respectively requested that the subject information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR Section 2.390 of the Commission's regulations.

Correspondence with respect to this Application for Withholding or the accompanying affidavit should reference AW-09-2587 and should be addressed to James A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company, LLC, P.O. Box 355, Pittsburgh, Pennsylvania, 15230-0355.

Very truly yours,

Robert Sisk, Manager
Licensing and Customer Interface
Regulatory Affairs and Standardization

cc: G. Bacuta - U.S. NRC

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ENCLOSURE 2

AFFIDAVIT

AW-09-2587
May 22, 20098

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

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COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared Robert Sisk, 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:

Robert Sisk, Manager
Licensing and Customer Interface
Regulatory Affairs and Standardization

Sworn to and subscribed
before me this 22nd day
of May 2009.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Patricia S. Aston, Notary Public
Murrysville Boro, Westmoreland County
My Commission Expires July 11, 2011
Member, Pennsylvania Association of Notaries

Notary Public

(1) I am Manager, Licensing and Customer Interface, 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 attachment to DCP/NRC2489, Design Methodology for enhanced Shield Building Cylindrical Wall, in support of the AP1000 Design Certification Amendment Application, being transmitted by Westinghouse letter (DCP/NRC2489) and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse for the AP1000 Design Certification Amendment application is expected to be applicable in all license submittals referencing the AP1000 Design Certification and the AP1000 Design Certification Amendment Application in response to certain NRC requirements for justification of compliance of the safety system to regulations.

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

(a) Manufacture and deliver products to utilities based on proprietary designs.

(b) Advance the AP1000 Design and reduce the licensing risk for the application of the AP1000 Design Certification

(c) Determine compliance with regulations and standards

(d) Establish design requirements and specifications for the system.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of similar information to its customers for purposes of plant construction and operation.

(b) Westinghouse can sell support and defense of safety systems based on the technology in the reports.

(c) The information requested to be withheld reveals the distinguishing aspects of an approach and schedule which was developed by Westinghouse.

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 digital technology safety systems 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).

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