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Our ref: LTR-NRC-04-46

Attn: J. S. Wermiel, Chief
Reactor Systems Branch
Division of Systems Safety and Analysis

August 9, 2004

Subject: Copy of Draft Slide "BEACON™-COLSS Integration" Presentation Material for the Pre-Submittal Meeting for WCAP-12472, Addendum 1, on August 18, 2004
(Proprietary/Non-Proprietary)

Enclosed are the draft slide presentations (Proprietary/Non-Proprietary) for the NRC/Westinghouse pre-submittal meeting regarding WCAP-12472, Addendum 1, to be held on August 18, 2004 in Rockville, Maryland.

Also enclosed is:

1. One (1) copy of the Application for Withholding, AW-04-1871 (Non-Proprietary) with Proprietary Information Notice.
2. One (1) copy of Affidavit (Non-Proprietary).

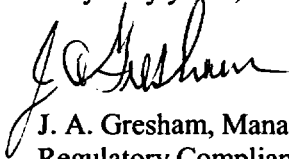
This submittal contains proprietary information of Westinghouse Electric Company LLC. In conformance with the requirements of 10 CFR Section 2.390, as amended, of the Commission's regulations, we are enclosing with this submittal an Application for Withholding from Public Disclosure and an affidavit.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

"BEACON™" trademark property of Westinghouse Electric Company LLC"

1007

Correspondence with respect to this affidavit or Application for Withholding should reference AW-04-1871 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 cursive script, appearing to read "J. A. Gresham".

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

Enclosures

cc: F. M. Akstulewicz/NRR
W. A. Macon Jr./NRR
E. S. Peyton/NRR
S. L. Wu/NRR



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Our ref: AW-04-1871

August 9, 2004

**APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE**

Subject: Copy of Draft Slide "BEACON™-COLSS Integration" Presentation Material for the Pre-Submittal Meeting for WCAP-12472, Addendum 1, on August 18, 2004 (Proprietary)

Reference: Letter from J. A. Gresham to J. S. Wermiel, LTR-NRC-04-46, dated August 9, 2004

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 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-04-1871 accompanies this Application for Withholding, setting forth the basis on which the identified proprietary information may be withheld from public disclosure.

Accordingly, it is respectfully 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-04-1871 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 cursive script, appearing to read 'J. A. Gresham', written over a horizontal line.

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

Enclosures

"BEACON™ trademark property of Westinghouse Electric Company LLC"

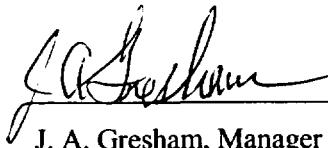
AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

SS

COUNTY OF ALLEGHENY:

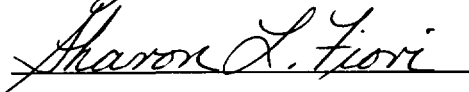
Before me, the undersigned authority, personally appeared J. A. Gresham, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit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



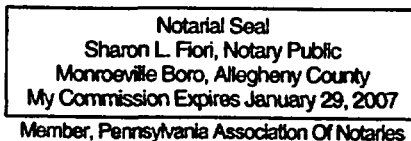
J. A. Gresham, Manager

Regulatory Compliance and Plant Licensing

Sworn to and subscribed
before me this 10th day
of August, 2004



Notary Public



- (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 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 Copy of Draft Slide "BEACON™-COLSS Integration" Presentation Material for the Pre-Submittal Meeting for WCAP-12472, Addendum 1, on August 18, 2004 (Proprietary) dated August 9, 2004, being transmitted by Westinghouse letter (LTR-NRC-04-46) 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 BEACON™-COLSS Integration.

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

- (a) Obtain NRC approval of the forthcoming Addendum 1 to WCAP-12472.

(b) Promote convergence between Westinghouse organizations.

Further this information has substantial commercial value as follows:

- (a) Westinghouse can sell support and defense of for BEACON™-COLSS.
- (b) The information requested to be withheld reveals the distinguishing aspects of a methodology 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 products 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.

Westinghouse Non-Proprietary Class 3



A BNFL Group company

BEACON™-COLSS Integration

NRC/Westinghouse Meeting
Rockville, MD
August 18, 2004

Introduction

- Westinghouse currently has 2 PWR core monitoring systems with online power distribution and thermal hydraulic models
 - COLSS (Core Operating Limit Supervisory System)
 - Last topical on uncertainty methodology approved in 1987
 - Operating at 12 C-E designed plants (7 in the US)
 - BEACON™ (Best Estimate Analyzer for Core Operation - Nuclear)
 - Topical report approved in 1994
 - Topical report addendums approved in 1999 and 2002
 - Operating at ~50 W and C-E plant types (25 in the US)

BEACON™ is a trademark of the Westinghouse Electric Company

COLSS

- Developed to help maintain selected C-E plant types within LCOs
 - Digital core monitoring system
 - Uses data from plant computer with analytical model to determine reactor power, measured power distribution & power operating limits
 - Provides measured information on DNBR, LHR, ASI, tilt & core power level to verify against Tech. Spec. limits
 - Displays margin to limits and provide alarms upon approach to limits

BEACON

- Developed to help maintain W, C-E and other PWR plant types within LCOs
 - Digital core monitoring system
 - Uses data from plant computer with analytical model to generate measured power distribution
 - Provides measured information on DNBR, LHR (F_Q), Fr ($F_{\Delta h}$) and ASI (AO) to verify against Tech. Spec. limits
 - Provides predictive functions for estimated criticality, load maneuvers and reactivity balance calculations
 - Provides core analysis and incore flux map analysis capability

BEACON-COLSS Project

- Project started in 2002 to merge COLSS and BEACON core monitoring systems
 - Each have some features that are not in the other
 - Combine the best parts of BEACON & COLSS to develop an upgrade for COLSS

a, c

Functional Design

- BEACON-COLSS Functional Design Requirements

a, c

BEACON-COLSS Overview

a, c

BEACON Measured Power Distribution

- Receives current core information from plant computer



BEACON Measured Power Distribution

a, c



COLSS Merged Functions

- Core Flow
- Reactor Power Function

a, c

CETOP-D Code



BEACON-COLSS Product Level



BEACON-COLSS Uncertainty Methods

a, c

Power Peaking Uncertainty Methodology

- Compares BEACON “measured” results with “true” 3-D results



DNBR POL Uncertainty Methodology

- Compares BEACON “measured” results with “true” 3-D results

a, c

Application of Uncertainty Methodology

- Two C-E designed plants analyzed for uncertainties
- Previously analyzed using standard COLSS methods

a, c

Application of Uncertainty Methodology

- Pairs of “true” and “predicted” 3-D power distributions generated with following bounding conditions



Application of Methodology for LHR POL

a, c

Application of Methodology for LHR POL

a, c

Application of Methodology for LHR POL

a, c

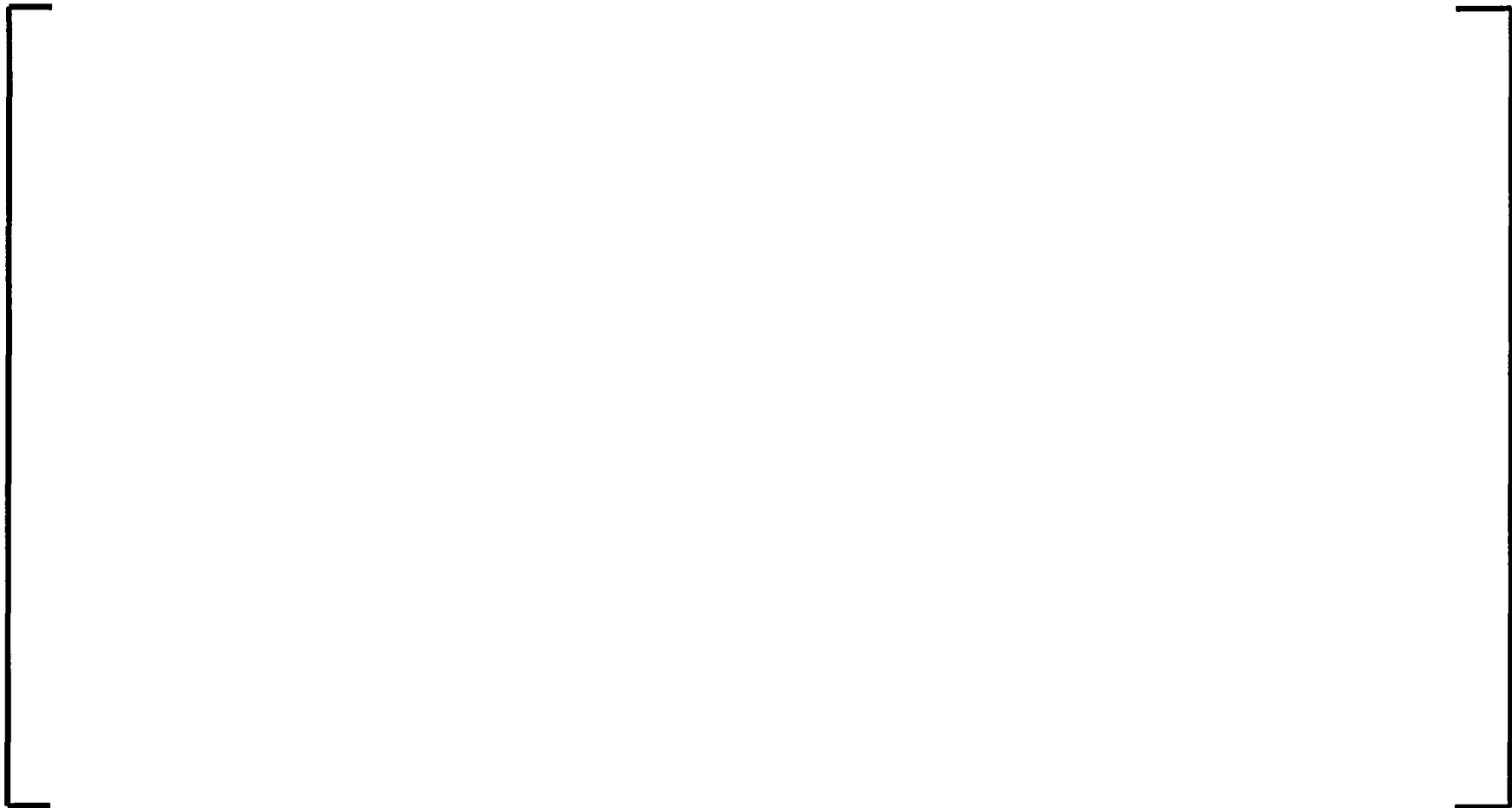
Power Peaking Uncertainty 95/95 UTL

a, c

Application of Methodology for LHR POL

I. Measured Power Peaking Factor and Uncertainty

a, c



Application of Methodology for LHR POL

Plant A Measured LHR Uncertainty 95/95 UTL

a, b, c



Application of Methodology for LHR POL

Plant B Measured LHR Uncertainty 95/95 UTL

a, b, c



Application of Methodology for LHR POL

- Comparison of LHR POL total uncertainty from standard COLSS method and BEACON-COLSS method
- Comparison made with 2.0 % ICI variability and 40 % ICI detectors deleted

a, c

Application of Methodology for DNBR POL

a, c

Application of Methodology for DNBR POL

a, c

Application of Methodology for DNBR POL

a, b, c

Application of Methodology for DNBR POL

a, c

Application of Methodology for DNBR POL



Uncertainty of DNBR POL

a, c



Application of Methodology for LHR POL

I. DNBR POL and Uncertainty

a, c

BECCLS – BEACON/COLSS Simulator

II. DNBR POL and Uncertainty

a, c

Application of Methodology for DNBR POL

- Comparison of DNBR POL uncertainty from standard COLSS method and BEACON-COLSS method

a, c

Technical Specification Modifications

a, c

Technical Specification Modifications



Technical Specification Modifications



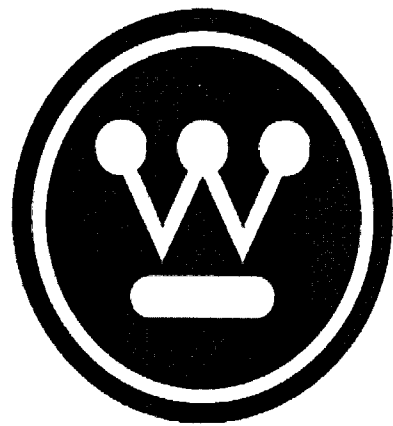
Westinghouse Licensing Submittal

- Submit licensing document as Addendum 3 to the BEACON Topical Report for COLSS application

a, c

Status / Schedule

a, c



Westinghouse

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