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

Our ref: LTR-NRC-05-37

June 17, 2005

Subject: "EOL MTC Elimination Informational Benchmark" (Proprietary/Non-Proprietary)

Dear Mr. Wermiel:

Enclosed is Westinghouse's "EOL MTC Elimination Informational Benchmark." Previous NRC approvals to use ANC/PARAGON as a replacement for DIT ROCS documented the acceptability of this transition. This informational benchmark is provided to further substantiation that ANC/PARAGON can be used as a direct replacement for DIT/ROCS in all methodology where DIT/ROCS was previously used.

Also enclosed are:

1. One (1) copy of the Application for Withholding, AW-05-2012 with Proprietary Information Notice and Copyright Notice.
2. One (1) copy of Affidavit, AW-05-2012.

This submittal contains Westinghouse proprietary information of trade secrets, commercial or financial information which we consider privileged or confidential pursuant to 10 CFR Section 2.390. Therefore, it is requested that the Westinghouse proprietary information attached hereto be handled on a confidential basis and be withheld from public disclosure.

Correspondence with respect to this affidavit or Application for Withholding should reference AW-05-2012 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,

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

Enclosures

cc: B. M. Pham, NRR
B. J. Benney, NRR
F. M. Akstulewicz, NRR
S. L. Wu, NRR
L. M. Feizollahi, NRR

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Westinghouse

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Attention: J. S. Wermiel, Chief
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Division of Systems Safety and Analysis

June 17, 2005

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: LTR-NRC-05-37 P-Attachment, "EOL MTC Elimination Informational Benchmark" (Proprietary)

Reference: Letter from J. A. Gresham to J. S. Wermiel, LTR-NRC-05-37, dated June 17, 2005

Dear Mr. Wermiel:

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-05-2012 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-05-2012 and should be addressed to James A. Gresham, Manager of Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P. O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Very truly yours,

J. A. Gresham, Manager

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared James 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:

James A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Sworn to and subscribed
before me this 17th day
of June, 2005

Notary Public

Notarial Seal
Sharon L. Fiori, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires January 29, 2007
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 rulemaking 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 which 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-NRC-05-37 P-Attachment, "EOL MTC Elimination Informational Benchmark" (Proprietary), for submittal to the Commission, being transmitted by Westinghouse letter (LTR-NRC-05-37) and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse Electric Company is to provide an informational benchmark to the NRC staff.

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

(a) Assist customers in improving their operational performance.

(b) Promote convergence between Westinghouse business units.

Further this information has substantial commercial value as follows:

(a) Westinghouse can use modeling capability to further enhance their licensing position over their competitors.

(b) Assist customers (licensees) to obtain license changes.

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 technical evaluation justifications 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 for developing the enclosed improved core thermal performance methodology.

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

EOL MTC Elimination
Informational Benchmark

June 17, 2005

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

EOL MTC Elimination
Informational Benchmark

Since the merger of the nuclear businesses of ABB CE and Westinghouse Electric Company, there has been an ongoing effort to replace CE DIT/ROCS nuclear design package with the Westinghouse equivalent NRC-approved ANC/PARAGON package (APA code suite). This transition was implemented in such a way as to maintain the current approved CE safety analysis methodology and plant Technical Specifications. As part of the transition effort an extensive benchmarking effort was performed to assure that the uncertainties for the APA code suite were within the allowances assumed in the CE Safety Analysis methodology. The ANC/PARAGON nuclear code system was used for the licensing analysis of ANO2 Cycle 18 and Calvert Cliffs Unit 2 Cycle 16 that began operation this past spring. The SERs for the change in nuclear design methodology for these plants (given in References 1 and 2) approved the use of ANC/PARAGON as a replacement for DIT/ROCS for nuclear design and analysis of CE type plants.

However, it was noted that the SER for the CE methodology topical (CE NPSD-911-A, Amendment 1-A), used by several CE plants to justify elimination of the End-of-Cycle Moderator Temperature Coefficient (EOC MTC) measurement, contained a requirement that indicated that if any methodology other than the CE methodology were used for the purpose of EOC MTC test elimination, that appropriate (ITC) benchmark information should be submitted to the NRC. This letter provides these benchmarks. Note that this benchmark is being provided for information only. It is Westinghouse's position that the plant specific SERs approving the use of ANC/PARAGON for those CE plants requesting a change to the APA code suite (References 1 and 2), provides the necessary approval for the use of ANC/PARAGON for all nuclear analysis applications for CE NSSS plants where DIT/ROCS had previously been used, this would include EOC MTC Elimination methodology (CE NPSD-911-A, Amendment 1-A).

It is also worthy of note that Westinghouse also has a similar approved methodology (WCAP-13749-P-A) to support elimination of the EOC MTC measurement for the Westinghouse NSSS plants. This methodology employs ANC/PHOENIX. Since the NRC approval of PARAGON has acknowledged that PARAGON can be used to replace PHOENIX anywhere where PHOENIX is used, ANC/PARAGON can be used to perform the methodology of WCAP-13749-P-A. However the direct implementation of WCAP-13749-P-A for CE plants would require Technical Specifications and operating procedure changes in these plants. Thus, it is desirable to continue to use CE NPSD-911-A, with ANC/PARAGON instead of DIT/ROCS, for those CE plants for which ANC/PARAGON have already been approved.

Based on these facts, a review was conducted of the NRC's approval of CE plants to change over to the APA code suite from the previous CE code suite. Specifically, ANO-2 TS Amendment 257 was reviewed to determine what specific language the NRC used to approve acceptability of the APA code suite for the CE plants. The following are direct extracts from the NRC's SER.

> "Enclosure 1 to the July 8, 2004, application, the licensee provided supplemental information to demonstrate the applicability of the Westinghouse PHOENIX-P/ANC physics code package to ANO-2, which is a CE-designed plant. This includes comparisons between the predictions made using the PHOENIX-P/ANC physics codes and the ANO-2 Cycle 15 and 16 zero power physics test measurements and at power operating data. The zero power physics tests include critical boron concentrations, moderator temperature coefficient, control rod worth, and differential boron worth. The power operation data include boron letdown curves and axial power distributions. In all the comparisons, the differences between the measured and predicted values are very small, except for only a few low-power fuel assemblies on the core periphery having relatively higher percentage differences. The maximum error for the potential limiting fuel assemblies are within the uncertainty allowance on the assembly power used in the safety analysis. Therefore, the staff concludes that the PHOENIX-P/ANC physics code package is acceptable for the ANO-2 licensing application, and the listing of these TRs is acceptable."
>
> "The amendment would also add TR WCAP-16045-P-A "Qualification of the Two-Dimensional Transport Code PARAGON," to TS 6.6.5 with the intent to use PARAGON as a replacement for the PHOENIX lattice code. PARAGON is a new neutron transport code that can be used with a nuclear design code system or as a stand-alone code, which can be used as a direct replacement for the PHOENIX-P code. TR WCAP-16045-P-A describes the PARAGON code and confirms the qualification of the code both as a stand-alone transport code and as a substitute for the PHOENIX-P code as a nuclear data source for nodal code. The qualification process includes a comparison of PARAGON predicted values to measured data from several plants, including Calvert Cliffs. Benchmarking has shown that the PARAGON/ANC package is essentially the same as the PHOENIX-P/ANC package. The NRC has previously reviewed and concluded that TR WCAP-16045-P-A is acceptable for licensing applications with the safety evaluation (SE) stating that "the staff considers the new PARAGON code to be well qualified as a stand alone code replacement for the PHOENIX-P lattice code, wherever the PHOENIX-P code is used in NRC-approved methodologies." Therefore, the addition of TR WCAP-16045-P-A to TS 6.6.5 is acceptable."

From the regulatory language in the SER for ANO-2, ANC/PARAGON is an acceptable core design suite. The SER specifically allows the use of PARAGON in place of PHOENIX and approves the code suite for ANO-2. However, as noted in the first paragraph above, there were noted differences between the DIT/ROCS and ANC/PHOENIX comparisons, especially in a few low-power fuel assemblies on the core periphery having relatively higher percentage differences.

CE NPSD-911-A, Amendment 1-A has specific requirements of an uncertainty allowance for MTC in the safety analysis of [ ] [a, c]. Thus, benchmarks were performed in support of the transition of the CE plants to ANC/PARAGON which confirmed that the MTC predictive uncertainty for the APA code on the CE plants is within this value. A summary of these benchmarks is documented below for information purposes to further substantiate the validity of the APA code suite being acceptable as a direct replacement for the DIT/ROCS code suite in CE NPSD-911-A, Amendment 1-A.

Summary of PARAGON/ANC ITC Benchmark for the CE Plants

(Difference between measurement and prediction)

	# of Measurements	Standard Deviation	95/95 Tolerance Limit	Uncertainty used in Safety Analysis
ANC ROCS	[			] a, b, c

Based on the above information, it has been confirmed that the APA code suite is an acceptable replacement for the DIT/ROCS code suite in CE NPSD-911-A, Amendment 1-A, and is applicable to all the CE NSSS units that use CE NPSD-911-A, Amendment 1-A and have transitioned to the APA code suite.

References:

1. "Safety Evaluation by the Office of Nuclear Reactor Regulation, Related to Amendment No. 257 to Facility Operating License NPF-6, Entergy Operations Inc., Arkansas Nuclear One, Unit No. 2, Docket 50-368," March 23, 2005.

2. "Safety Evaluation by the Office of Nuclear Reactor Regulation, Related to Amendment No. 271 to Renewed Facility Operating License No. DPR-53, and Amendment No. 248 to Renewed Facility Operating License No. DPR-69, Calvert Cliffs Nuclear Power Plant, Inc., Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2, Docket Nos. 50-317 and 50-318," February 24, 2005.