Enclosure 7

Westinghouse Letter

Modeling of Fuel Assemblies Containing both IFBA and Gadolinia Absorber Rods

with

Westinghouse Core Design Code Systems

Non-Proprietary

6 pages follow

Modeling of Fuel Assemblies Containing both IFBA and Gadolinia Absorber Rods with Westinghouse Core Design Code Systems

1. Introduction

The APA code systems [1, 2] were used for many years to model reactor cores containing either IFBA (Integral Fuel Burnable Absorber) fuel rods or gadolinium fuel rods in separate assembly designs. These cores had never used assemblies with both IFBA and gadolinium in the same assembly configuration.

Prairie Island Units 1 and 2 has used gadolinium as the burnable absorber of choice for many years. For economic benefits, the plant is considering to transition to new designs with IFBA and Gadolinia rods in an intra-assembly mixture. Since the design and analysis of these cores will be performed using APA code systems, the question was raised regarding the accuracy and capability of APA to model these new cores. Specifically, will the APA predict the new cycles with the same level of accuracy traditionally seen in previous cycles before the transition?

The purpose of this memo is to address this question using a high level engineering analysis for a planned meeting with USNRC on this subject.

2. Overview of Westinghouse Core Design Codes

The Westinghouse core design code systems are based on two components: the lattice code (PHOENIX-P or PARAGON) and the nodal code ANC. The two code systems (either PHOENIX-P based or PARAGON based) are both licensed by USNRC and are both producing acceptable results. For this analysis we will use the PARAGON based APA code system, knowing that the conclusion remains the same for PHOENIX-P based system.

2.1. Lattice Code Methods

The [ ]^{a,c} modules composing the lattice code PARAGON are described in Ref. 2. The flux solver is using the [ ]^{a,c} methods. This method has been used in many industrial codes for many years and proved to yield good accuracy. The [ ]^{a,c} is of great importance for gadolinium fuel pins, [ ]^{a,c}. The method used in PARAGON accounts explicitly for this effect, while PHOENIX-P accounts for it through [ ]^{a,c}. The other [ ]^{a,c} modules [ ]^{a,c} use standard methodologies well proven in the industry.

In contrast to the typical case of gadolinium without IFBA rods, the only module that could be affected by the presence of a combination of gadolinia and IFBA rods is [ ]^{a,c}. To assess this fact, the Monte Carlo method will be used. The Monte Carlo neutron transport solution is well recognized in the nuclear industry as a reference high-order method. It is simply the best numerical solution that can be achieved.

2.2. Nodal Code

The ANC methodology is described in Ref. 1. Since the ANC methodology is based on homogenized few group data, there isn't a particular challenging effect that could rise by using the new fuel assembly design with IFBA and gadolinium. The ANC methodology is designed to reproduce the lattice code results; therefore, if the homogenized data accounts for all physics of the problem, the ANC results will be acceptable.

3. Westinghouse Experience with IFBA and Gadolinia Modeling

Almost all Westinghouse domestic customers use the IFBA as a burnable absorber in their core designs (or in some cases a mixture of IFBA and WABA rods). A couple of US utilities [ ]^{a,c} and several international customers or licensees that are using the APA codes employ the gadolinium as the burnable absorber (such as in [ ]^{a,c}). This has greatly helped the development of the APA codes in modeling these particular absorbers and, also had given Westinghouse confidence in the predictions of these types of cores especially the entire code system qualification, including the depletion and feedbacks models.

4. Model Validation of the new Assembly Design with both IFBA and Gadolinia rods

Westinghouse follows a systematic way to qualify the nuclear design code system that consists of the following steps:

a) Comparison to high order methods

This comparison is done at the assembly level between the lattice code and the MCNP [3] Monte Carlo code, which is considered as the high-order method. These numerical benchmarks consider all combinations of assembly designs and poison types that will be used in the design of the cores. The objective of this step is to validate the assumptions made in the [ ]^{a,c} of the lattice code. MCNP uses the continuous energy cross-section libraries and consequently has no resonance self-shielding calculation (at resolved range). Also, it does not suffer from the flat-flux assumptions and the angular and space domain decompositions used in the deterministic methods of the lattice codes. As stated above, Monte Carlo is the best known numerical method for benchmarking. Table 3-8 in Ref. 2 gives such comparison. This table has assemblies with IFBA and gadolinium (separately) as burnable absorbers. The main parameters of interest to compare are the reactivity (k-infinity) and the pin-power distribution. The accuracy of the pin-powers is tied to the accuracy of the flux calculation; therefore a good prediction of the pin-power distribution is an indication of a good flux distribution prediction. If the prediction of the flux is good, the other modules of the lattice code [ ]^{a,c} will be [ ]^{a,c}.

b) Comparison to critical experiments

At the early age of the nuclear industry, many cold zero-power critical experiments were performed in many facilities around the world. These experiments were designed to simulate the real reactor cores conditions with the objectives of qualifying the basic nuclear cross-section data (absorption, fission, scattering, etc.) and the numerical neutronics methods used in the core design analyses. Unfortunately, the facilities that can conduct these experiments are becoming very rare which forces the scientific community to rely more on high-fidelity simulations (like 3D Monte Carlo) whenever it is appropriate.

PARAGON topical report [2] contains many critical experiments for various fuel types with broad enrichment range, burnable types and control rod types. For the problem discussed in this memo, the Babcock & Wilcox (B&W) criticals are of interest since their configurations are close to the one of the assembly with an IFBA and gadolinia intra-assembly mixture. The relevant B&W cases are cores 15 and 17 described in Table 3-6 of Ref. 2, all these experiments have both gadolinia rods (with 4w/o Gd_2O_3 and 1.94w/o U235 enrichments) and B_4C control rods in their configurations. In fact, the presence of the control rods instead of IFBA rods is even more challenging for the methods adopted in the lattice code, in particular in the flux solution module (flat-flux and current coupling approximations). From standard industry knowledge, if the thermal neutrons are transported correctly between various regions of these critical experiments that have strong absorbers, there are no known physics reasons why they won't be for a configuration with IFBA rods that have less boron (compared to the control rod) and consequently less absorption. For the resonance calculations in the lattice code, the presence of IFBA with gadolinia will make the spectrum a little harder but within the range encountered in the PWR cores (spectral index of ~10 for IFBA/gadolinia mixture vs. ~9.3 for pure IFBA). The resonance calculations for fuel cross-sections depend only on the geometry (assembly and pins) and fuel compositions. The thermal absorbers like boron and gadolinium have practically no impact on the resonance self-shielding methodology, especially for IFBA rods. The gadolinium isotopes present some resonances at epithermal energies, but the impact of these resonances is covered in the previous qualifications and the presence of IFBA will not negate these previous results.

The results in Table 3-6 of Ref. 2 show that the reactivity of the cores of interest here (cores 15 and 17) are very well predicted by PARAGON with a difference in k-eff within [ ]^{a,c} which is less than one standard deviation of [ ]^{a,c} of all B&W criticals reported in Ref. 2. The power distribution prediction for the gadolinia rods is also presented in Figure 3-11 of Ref. 2, the difference measured and predicted seen is less than [ ]^{a,c}. The power distribution for the IFBA pins behaves like non-IFBA pins, especially if soluble boron is present in the moderator regions, which makes the thermal flux gradient smoother. The statistics shown in Ref. 2 [ ]^{a,c} indicate that the PARAGON predictions for non-IFBA pins are excellent, and that same accuracy is seen for assemblies with IFBA rods. These results show that the methodology adopted in PARAGON predicts with acceptable accuracy the critical experiments that are close to the assembly configuration intended to be used in the Prairie Island reactor cores. For the basic nuclear cross-sections data of the burnable absorbers considered (boron and gadolinium) these criticals constitute a very confident qualification.

c) Comparison to plant data measurement

This last step in the process aims to qualify the entire core design APA code system with of course its physics backbone contained in lattice and nodal codes. Table 4-1 in Ref. 2 shows the variety of the reactor cores used to qualify APA. Many cycles in this table have IFBA rods and six cycles use gadolinia burnable absorber. The mixture of IFBA and gadolinia will not introduce any challenging methodology in modeling the presence of these two absorbers in the same assembly since the tracking and the depletion of the boron and gadolinium isotopes will be the same. If the cross-section data generated by the lattice code is accurate, the ANC prediction will be as accurate as for current cores with either IFBA or gadolinium rods in separate assemblies.

The analysis above shows that the qualification of the basic nuclear data is well covered in Ref. 2 for all the material that will be used in the new proposed fuel assembly to be loaded in Prairie Island. The only item left to check is the accuracy of the lattice code flux solver. The Monte Carlo high order numerical method will be used for this purpose. In References 4 and 5, the exact same fuel types of 14x14 lattices that will be used in Prairie Island were modeled using the lattice codes (PHOENIX-P and PARAGON) and the MCNP code [3]. The following assembly characteristics were considered in these models:

- The fuel enrichments used were: [ ]^{a,c}
- Two IFBA patters were used: [ ]^{a,c}
- Number of gadolinia rods used were: [ ]^{a,c} gadolinium enrichment

The following assembly configurations were analyzed:

- Assemblies without burnable absorbers
- Assemblies with only IFBA rods
- Assemblies with only gadolinia rods
- Assemblies with the mixture of IFBA and gadolinia rods

A snapshot of burned fuels with burnups of [ ]^{a,c} were also simulated in both MCNP and lattice codes.

The models of MCNP and lattice codes were kept consistent using same geometry, material and temperatures, with the purpose of only testing the flux solutions of the deterministic methods. MCNP was run with sufficient neutron histories to produce results with statistical errors of less than [ ]^{a,c} for the reactivity (k-infinity) and less than [ ]^{a,c} for pin powers.

The results from References 4 and 5 show the following:

- ✓ The magnitude of the difference in reactivity between deterministic and stochastic methods is consistent between all cases and is not affected by the presence of one type or two types of burnable absorbers in the assembly configuration. This difference is [ ]^{a,c} as expected for all cases.
- ✓ The burned fuel cases are predicted by the lattice codes with the same accuracy as the fresh fuel.
- ✓ The maximum difference in the power distribution between MCNP and lattice codes is less than [ ]^{a,c}.

These results show that the fuel assemblies with the mixture of IFBA and gadolinium burnable absorber rods behave like the assemblies without burnable absorbers or with a single type of them (either IFBA or gadolinia). Therefore, the new assemblies are expected to be predicted by APA code systems with the same accuracy as the ones that are currently in use in operating plants.

5. Conclusion

This memo gives an overview of the methods used in the Westinghouse APA core design code system. It identified the potential modules that could lead to poor predictions in modeling the new assemblies with a mixture of IFBA and gadolinium burnable absorbers. The selected modules were then benchmarked against high order methods to assess their predictions. This memo also analyzed the critical experiments in the licensing topical report to further prove the adequacy of the APA code system to model the fuel assemblies with both IFBA and gadolinium rods.

It is concluded that the new fuel assemblies with a mixture of IFBA and gadolinium rods will be predicted by APA code system with the same accuracy as the assemblies currently loaded in operating cycles. Based on the above assessment and Westinghouse's knowledge of NRC communications associated with approval of these Westinghouse neutronics methods, it is concluded that these methods are applicable to the use of Gadolinia and IFBA simultaneously as proposed (Reference 6) in the Prairie Island reactors; consistent with United States Code of Federal Regulation 10CFR 50.59 wording "approved by NRC for the intended application."

References

1. Nguyen, T. Q., et al., "Qualification of the PHOENIX-P/ANC Nuclear Design System for Pressurized Water Reactor Cores", WCAP-11596-P-A, June, 1988
2. Ouisloumen, M., et al., "Qualification of the Two-Dimensional Transport Code PARAGON", WCAP-16045-P-A, August, 2004
3. CE-06-452, "MCNP 5 Version 1.40 Installation Verification Report."
4. CN-PHNX-GEN-027, Rev. 1, "Benchmarking of PHOENIX-P for IFBA/Gadolinia Fuel Assemblies for Prairie Island", 2015

5. CN-PRGN-GEN-062, "Benchmarking of PARAGON for IFBA/Gadolinia Fuel Assemblies for Prairie Island", 2015
6. LTR-AMER-MKG-14-939, Rev. 2, "Xcel Energy Prairie Island Nuclear Generating Plant Revised Westinghouse Offer for the Potential Transition to IFBA/Gd for Prairie Island", October, 2014

Enclosure 8

Westinghouse Affidavits

Affidavit #	Enclosure number - Document number & Name
CAW-15-4311	Enclosure 4 – WCAP-17400-P, Supplement 1, Revision 1, “Prairie Island Units 1 and 2 Spent Fuel Pool Criticality Analysis Supplemental Analysis for the Storage of IFBA Bearing Fuel” (Proprietary)
CAW-15-4308	Enclosure 6 – Westinghouse Letter, Revision 0, “Modeling of Fuel Assemblies Containing both IFBA and Gadolinia Absorber Rods with Westinghouse Core Design Code Systems” (Proprietary)

14 pages follow

Westinghouse

Westinghouse Electric Company
1000 Westinghouse Drive
Cranberry Township, Pennsylvania 16066
USA

U.S. Nuclear Regulatory Commission
Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

Direct tel: (412) 374-4643
Direct fax: (724) 940-8560
e-mail: greshaja@westinghouse.com
Proj letter: NF-XCEL-15-117, Revision 1

CAW-15-4311

October 22, 2015

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: WCAP-17400-P, Supplement 1, Revision 1, "Prairie Island Units 1 and 2 Spent Fuel Pool Criticality Safety Analysis Supplemental Analysis for the Storage of IFBA Bearing Fuel" (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-15-4311 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 Xcel Energy Incorporated.

Correspondence with respect to the proprietary aspects of the Application for Withholding or the Westinghouse Affidavit should reference CAW-15-4311 and should be addressed to James A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company, 1000 Westinghouse Drive, Building 3 Suite 310, Cranberry Township, Pennsylvania 16066.

James A. Gresham, Manager
Regulatory Compliance

CAW-15-4311
October 22, 2015

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF BUTLER:

I, James A. Gresham, am 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 my knowledge, information, and belief.

James A. Gresham, Manager
Regulatory Compliance

(1) I am Manager, Regulatory Compliance, 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 Proprietary Information from Public Disclosure 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.

(iii) 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.

(iv) 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.

(v) 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.

(vi) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in WCAP-17400-P, Supplement 1, Revision 1, "Prairie Island Units 1 and 2 Spent Fuel Pool Criticality Safety Analysis Supplemental Analysis for the Storage of IFBA Bearing Fuel" (Proprietary), dated October 2015, for submittal to the Commission, being transmitted by Xcel Energy Incorporated 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 WCAP-17400, Supplement 1 and may be used only for that purpose.

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

  (i) Obtain NRC approval of WCAP-17400, Supplement 1, Revision 1 "Prairie Island Units 1 and 2 Spent Fuel Pool Criticality Safety Analysis Supplemental Analysis for the Storage of IFBA Bearing Fuel."

(b) Further this information has substantial commercial value as follows:

  (i) Westinghouse plans to sell the use of similar information to its customers for the purpose of demonstrating the sub-criticality of the spent fuel pool.

  (ii) Westinghouse can sell support and defense of industry guidelines and acceptance criteria for plant-specific applications.

  (iii) 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 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.

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

Westinghouse

Westinghouse Electric Company
1000 Westinghouse Drive
Cranberry Township, Pennsylvania 16066
USA

U.S. Nuclear Regulatory Commission
Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

Direct tel: (412) 374-4643
Direct fax: (724) 940-8560
e-mail: greshaja@westinghouse.com

CAW-15-4308

October 15, 2015

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: MT-15-147-P-Attachment, "Modeling of Fuel Assemblies Containing both IFBA and Gadolinia Absorber Rods with Westinghouse Core Design Code Systems" (Proprietary)

The Application for Withholding Proprietary Information from Public Disclosure 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 information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-15-4308 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 Xcel Energy Incorporated.

Correspondence with respect to the proprietary aspects of the Application for Withholding or the Westinghouse Affidavit should reference CAW-15-4308, and should be addressed to James A. Gresham, Manager, Regulatory Compliance, Westinghouse Electric Company, 1000 Westinghouse Drive, Building 3 Suite 310, Cranberry Township, Pennsylvania 16066.

William A. Brooks /FOR

James A. Gresham, Manager
Regulatory Compliance

CAW-15-4308
October 15, 2015

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF BUTLER:

I, Terry G. Rudek, am 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 my knowledge, information, and belief.

Terry G. Rudek, Vice President
Systems and Components Engineering

(1) I am Vice President, Systems and Components Engineering, 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 Proprietary Information from Public Disclosure 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.

(iii) 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.

(iv) 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.

(v) 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.

(vi) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in MT-15-147-P-Attachment, "Modeling of Fuel Assemblies Containing both IFBA and Gadolinia Absorber Rods with Westinghouse Core Design Code Systems" (Proprietary), for submittal to the Commission, being transmitted by Xcel Energy Incorporated 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 the NRC approval of Prairie Island Units 1 & 2 transition to IFBA/Gad Burnable Absorbers, and may be used only for that purpose.

(a) This information is part of that which will enable Westinghouse to obtain NRC approval for the use of APA code systems with either PHOENIX-P or

PARAGON in the analysis of Prairie Island Units 1 & 2 that contain both IFBA and Gad Burnable Absorbers.

(b) Further this information has substantial commercial value as follows:

(i) Westinghouse plans to sell the use of similar information to its customers for the purpose of core design analysis with nuclear fuel assemblies that contain both IFBA and Gad Burnable Absorbers.

(ii) Westinghouse can sell support and defense of industry guidelines and acceptance criteria for plant-specific applications.

(iii) 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 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.

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and non-proprietary versions of documents furnished to the NRC associated with the NRC approval of Prairie Island Units 1 & 2 transition to IFBA/Gad Burnable Absorbers.

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