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Our ref: LTR-NRC-09-53

November 4, 2009

Subject: Response to NRC's Draft Safety Evaluation for Westinghouse Electric Company Topical Report WCAP-16500-P, Supplement 1, Revision 1, "Application of CE Setpoint Methodology for CE 16x16 Next Generation Fuel (NGF)" (TAC No. ME0143) (Proprietary/Non-Proprietary)

Enclosed is Westinghouse's proprietary review of NRC's Draft Safety Evaluation for Westinghouse Electric Company Topical Report WCAP-16500-P, Supplement 1, Revision 1, "Application of CE Setpoint Methodology for CE 16x16 Next Generation Fuel (NGF)" (TAC No. ME0143) (Proprietary/Non-Proprietary). There is proprietary information identified in the draft safety evaluation and comments to provide technical accuracy.

Also enclosed is:

1. One (1) copy of the Application for Withholding, AW-09-2697 (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 Proprietary Information 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-09-2697 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,

R. M. Span / FOR

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

Enclosures

cc: E. Lenning, NRR
P. Clifford, NRR

T007
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Our ref: AW-09-2697
November 4, 2009

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: LTR-NRC-09-53 P-Enclosure, "Response to NRC's Draft Safety Evaluation for Westinghouse Electric Company Topical Report WCAP-16500-P, Supplement 1, Revision 1, 'Application of CE Setpoint Methodology for CE 16x16 Next Generation Fuel (NGF)' (TAC No. ME0143)" (Proprietary)

Reference: Letter from J. A. Gresham to Document Control Desk, LTR-NRC-09-53, dated November 4, 2009

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 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-09-2697 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-09-2697 and should be addressed to J. A. Gresham, Manager of Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P. O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Very truly yours,

R. M. Span / FOR

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

Cc: E. Lenning, NRR
P. Clifford, NRR

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

SS

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared R. M. Span, 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:

Richard M. Span

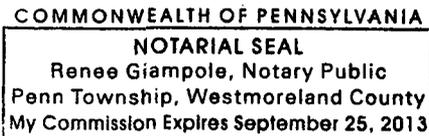
Richard M. Span, Principal Engineer

Regulatory Compliance and Plant Licensing

Sworn to and subscribed
before me this 4th day of November 2009.

Renee Giampole

Notary Public



- (1) I am Principal Engineer, 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 LTR-NRC-09-53 P-Enclosure, "Response to NRC's Draft Safety Evaluation for Westinghouse Electric Company Topical Report WCAP 16500-P, Supplement I, Revision 1, 'Application of CE Setpoint Methodology for CE 16x16 Next Generation Fuel (NGF)' (TAC No. ME0143)" (Proprietary), for submittal to the Commission, being transmitted by Westinghouse letter (LTR-NRC-09-53) and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse Electric Company is that associated with the response to the NRC's draft safety evaluation for WCAP-16500-P, Supplement I, Revision 1.

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

- (a) Clarify the application of CE setpoint methodology for CE 16x16 NGF.
- (b) Assist customers in implementing an improved methodology.

Further this information has substantial commercial value as follows:

- (a) Westinghouse can use the CE 16x16 NGF fuel design with associated setpoint methodology to further enhance their licensing position over their competitors.
- (b) Assist customers 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.

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.

**Response to NRC's Draft Safety Evaluation for Westinghouse Electric
Company Topical Report WCAP-16500-P, Supplement 1, Revision 1,
"Application of CE Setpoint Methodology for CE 16x16 Next Generation Fuel
(NGF)" (TAC No. ME0143) (Non-Proprietary)**

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The following Westinghouse comments are provided in response to the NRC staff's proposed draft safety evaluation (SE) for WCAP-16500-P, Supplement 1, Revision 1. Also included is a markup of the draft SE in order to provide a line-by-line identification of text containing proprietary information and the associated bases for its designation pursuant to the criteria of 10 CFR 2.390.

Comment 1)

The last sentence in Section 3.0 paragraph 1 states, "...separate temperature-dependent, pressure-dependent, and flow-dependent biases as a function of axial power shape."

Westinghouse proposes this is changed to read, "...separate temperature-dependent, pressure-dependent, flow-dependent and axial shape index (ASI)-dependent biases."

Comment 2)

The first sentence in Section 3.1 paragraph 2 states, "...separate temperature-dependent, pressure-dependent, and flow-dependent biases as a function of axial power shape."

Westinghouse proposes this is changed to read, "...separate temperature-dependent, pressure-dependent, flow-dependent and ASI-dependent biases."

Comment 3)

The second sentence in Section 3.1 paragraph 7 states, "[

Westinghouse proposes this is changed to read, "[

Comment 4)

The fifth sentence in Section 3.1 paragraph 7 states, "[

Westinghouse proposes this is changed to read, "[

Markup of draft SE text to identify proprietary information and bases

The following page markups have been copied from the draft SE to provide a line by line markup of the identified proprietary information and suggested text changes.

DRAFT SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

TOPICAL REPORT WCAP-16500-P, SUPPLEMENT 1, REVISION 1

"APPLICATION OF CE SETPOINT METHODOLOGY FOR

CE 16X16 NEXT GENERATION FUEL (NGF)"

WESTINGHOUSE ELECTRIC COMPANY

PROJECT NO. 700

1.0 INTRODUCTION AND BACKGROUND

By letter dated October 24, 2008 (Reference 1), as supplemented by letter dated August 21, 2009 (Reference 2), Westinghouse Electric Company (Westinghouse) submitted for U.S. Nuclear Regulatory Commission (NRC) staff review Topical Report (TR) WCAP-16500-P, Supplement 1, Revision 1, "Application of CE [Combustion Engineering] Setpoint Methodology for CE 16X16 Next Generation Fuel (NGF)." This TR describes a revised analytical process for calculating COLSS and CPCS addressable constants and database constants for plant reloads with CE 16x16 NGF (CE16NGF) assemblies.

2.0 REGULATORY EVALUATION

Regulatory guidance for the review of fuel system designs and adherence to General Design Criteria (GDC) – 10, GDC-27, and GDC-35 is provided in NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants" (SRP), Section 4.2, "Fuel System Design" (Reference 3). In accordance with SRP Section 4.2, the objectives of the fuel system safety review are to provide assurance that:

- a. The fuel system is not damaged as a result of normal operation and anticipated operational occurrences,
- b. Fuel system damage is never so severe as to prevent control rod insertion when it is required,
- c. The number of fuel rod failures is not underestimated for postulated accidents, and
- d. Coolability is always maintained.

In addition to licensed reload methodologies, an approved mechanical design methodology is utilized to demonstrate compliance to SRP 4.2 fuel design criteria. The NRC staff's prior review of WCAP-16500-P (Reference 4) was to ensure that the approved reload and fuel mechanical design methodologies (1) remain applicable to the CE16NGF design and (2) adequately addresses the applicable regulatory requirements identified in SRP 4.2. In addition, based upon Lead Test Assemblies, post-irradiation examinations, mechanical testing, past operating experience of similar designs and materials, and fuel performance model predictions, the NRC staff reviewed expected performance of the CE16NGF assembly to ensure it satisfied these requirements.

Supplement 1, Revision 1 addresses deficiencies in the CE digital setpoint methodology identified during review of WCAP-16500-P. Hence, the NRC staff's review builds on its prior review of the CE setpoint methodology described in WCAP-16500-P Supplement 1 as supplemented by request for additional information (RAI) responses (Reference 4).

3.0 TECHNICAL EVALUATION

During its review of WCAP-16500-P (Reference 4), the NRC staff identified potential problems with the application of the CE digital setpoints process, known as Modified Statistical Combination of Uncertainties (MSCU), to reload cores containing CE16NGF assemblies. Specifically, the application of MSCU methods to reloads where the critical heat flux (CHF) correlation within core operating limit supervisory system (COLSS) (i.e., plant monitoring system) and core protection calculator system (CPCS) (i.e., plant protection system) were inconsistent with the axial-dependent CHF correlations of the CE16NGF design. In this application, the two NGF CHF correlations each have the potential to introduce separate temperature-dependent, pressure-dependent, and flow-dependent and axial shape index (ASI)-dependent biases as a function of axial power shape.

In response to NRC staff concerns, Westinghouse submitted Supplement 1-P, which detailed the application of CE digital setpoint methodology for CE16NGF assemblies. Section 3.7 of the NRC staff's safety evaluation (Reference 4) documents the NRC staff's review of Supplement 1 along with several subsequent RAIs and an audit. In the end, the NRC staff was unable to reach a safety finding, concluding:

Based upon these concerns, the NRC staff is unable to conclude that the proposed digital setpoints methodology is (1) consistent with the currently approved methods and (2) will preserve the required 95/95 protection level when applied to the NGF assemblies.

To support batch implementation of CE16NGF assemblies (which offer many advanced features designed to benefit fuel performance), the NRC staff developed an interim departure from nucleate boiling (DNB) margin penalty which was included as a condition on the staff's approval of WCAP-16500-P.

WCAP-16500-P-A Condition #5:

To compensate for NRC staff concerns related to the digital setpoints process, an interim margin penalty of 6 percent must be applied to the final addressable constants

(e.g., $BERR1 * 1.06$, $[(1+EPOL2)*1.06 - 1.0]$) calculated following the 1/64 hypercube setpoints process (Response No. 6 of Reference 6). Removal of this interim margin penalty will be considered after the digital setpoints methods have been formalized, documented (e.g., revision to TR WCAP-16500-P), and approved by the NRC (SE Section 3.7).

Revision 1 of WCAP-16500-P-A, Supplement 1 (Reference 1), documents a revised analytical procedure for performing the MSCU digital setpoint process which accounts for inconsistent CHF correlations in an attempt to remove the above interim DNB penalty. The proposed analytical procedure does not change the underlying MSCU methodology (depicted in Figure 1 of Reference 1) previously approved by the NRC.

In addition to reviewing the material presented in Supplement 1, Revision 1 and in response to RAIs, the NRC staff conducted an audit of the supporting Westinghouse engineering calculations on August 12, 2009, at the Westinghouse Rockville office.

3.1 Revised MSCU Setpoints Process

Section 2 of WCAP-16500-P, Supplement 1, Revision 1, describes the revised MSCU setpoints process for application to core reloads with a full core of CE16NGF. A detailed description of each analytical step is documented in Section 2.4 of WCAP-16500-P, Supplement 1, Revision 1. This revised analytical process is intended to address NRC staff concerns documented in Reference 4.

The two CE16NGF CHF correlations (i.e., above and below elevation of first mixing grid) each have the potential to introduce separate temperature-dependent, pressure-dependent, and flow-dependent and ASI-dependent biases as a function of axial power shape. Analytical steps #1 - #3 describe the process for separately evaluating these potential biases and defining the limiting operating space within the 1/64th hypercube. In response to an RAI regarding the []^{a,c} acceptance criterion on DNB power operating limit (POL) used to assess whether to perform the MSCU within a limited range of temperature, pressure, and mass flux (i.e., 1/64 hypercube) (RAI #2, Reference 2), Westinghouse stated that [

] ^{a,c} The NRC staff finds this acceptance criterion acceptable.

Westinghouse states that the hypercube "divide operating space into sufficiently small regions such that any correlation in DNBR [departure from nucleate boiling ratio] uncertainty within the hypercube is insignificant" (Section 2.3 of WCAP-16500-P Supplement 1 Revision 1). Based upon an evaluation of the sample []^{a,c} reload analyses documented in Section 2.5 of WCAP-16500-P, Supplement 1, Revision 1, and the []^{a,c} reload analyses reviewed during the NRC staff audit (Reference 5), the NRC staff finds the level of division in the 1/64th hypercube methodology acceptable.

Analytical step #4 is used to investigate the axial power distribution (referred to as axial shape index (ASI)) dependence of the DNB POL error in both the COLSS range (narrow) and CPCS range (wide) of operating space. Examination of Figure 20 of WCAP-16500-P, Supplement 1,

Revision 1, reveals this evaluation for the sample []^{a,c} reload analysis and illustrates two distinct, non-poolable data sets. These distinct regions result from the placement of mixing vanes in the top 2/3 of the CE16NGF assembly and differences between the WSSV-T and critical heat flux correlation for non-vaned fuel (ABB-NV) CHF correlations (relative to CE-1 CHF correlation). It is expected that these differences will always result in two distinct, non-poolable data sets. Nevertheless, the revised set point process includes a statistical test to assess poolability (see analytical step #6). The result of analytical step #4 is a set of ASI ranges defining the breakpoints and transition zone for these two regions.

Analytical step #5 runs the core protection calculators (CPC) MSCU using the limiting 1/64th hypercube of step #3 over the entire ASI range and [

] ^{a,c} In analytical step #7, the three raw BERR1 values are used to calculate ASI-dependent COLSS and CPCS database constants which will act as heat flux penalties in the on-line DNBR calculations in the transition region and more positive ASI range (lower portion of the core below 1st mixing vane). Incorporating ASI-dependent database penalties allows the use of the more benign BERR1 values (and EPOL2 in COLSS) associated with the top portion of the core. This strategy promotes more DNB margin benefit since the BERR1/EPOL2 values associated with the WSSV-T CHF are employed during normal operating conditions.

Analytical step #8 performs the final COLSS and CPC MSCU analyses incorporating the limiting 1/64th hypercube of step #3 [

] ^{a,c} defined in step #4 at each time in cycle applying the COLSS and CPC database ASI-dependent adjustment factors from step #7. [

] ^{a,c}

In the proposed setpoint methodology, [

] ^{a,c} (RAI #1, Reference 2). These modified codes would subsequently be utilized to calculate new addressable constants and provide a thermal margin benchmark. In response to RAI #1, Westinghouse proposed an alternative approach which [

] ^{a,c} Note that this approach is different from just replacing the CE-1 correlation with the NGF correlations in that it [

] ^{a,c} Further, Westinghouse stated that this work scope would not be complete until March 2010. In the interim, the NRC staff recommends that a 3 percent margin penalty be applied to the final addressable constants (e.g., $BERR1 * 1.03$, $[(1+EPOL2) * 1.03 - 1.0]$) calculated in accordance with the revised analytical steps until such time as Westinghouse provides an acceptable written response to RAI #1. This 3 percent margin penalty supersedes the previous 6 percent interim margin penalty (condition specified in Reference 4) and provides reasonable assurance that the

COLSS and CPCS DNBR calculations remain conservative (given the revised analytical steps which address the staff's earlier concerns).

In response to an RAI regarding treatment of CETOP-D/TORC correction factors within the revised setpoint process (RAI #3, Reference 2), Westinghouse stated that the [

] ^{a,c} The staff finds this approach acceptable.

In response to an RAI regarding the historical basis for the values of CPC constants E1 and E2 (RAI #4, Reference 2), Westinghouse described the use of these CPC constants in the new process as well as their historic values. While the values may be changing, the functional basis of E1 and E2 remain consistent with the approved methodology.

In response to an RAI regarding the DNB POL error in the ASI transition region (RAI #5, Reference 2), Westinghouse stated that the revised process will compensate for any points where the ASI dependent functions are non-conservative due to unexpected non-linearity. [

] ^{a,c} This assures that the combination of the addressable values and ASI-dependent database adjustments yield conservative results over the entire ASI range.

In response to an RAI regarding a minimum number of MSCU cases to ensure a statistically significant population (RAI #6, Reference 2), Westinghouse described the different sets of cases used in COLSS analyses relative to CPC analyses as well as time in cycle specific case sets. This approach ensures a large number of cases in the statistical analyses. Westinghouse further stated that the process has the capability of detecting a significant misdistribution of cases versus ASI. This ensures that each respective case set evenly and thoroughly encompasses the allowable ASI range.

On August 12, 2009, the NRC staff conducted an audit of Westinghouse engineering calculations supporting the [^{a,c} core reload. This reload is the first application of the revised analytical procedures described within WCAP-16500-P, Supplement 1, Revision 1. The audit report (Reference 5) captures the NRC staff's assessment of the modified MSCU process.

Based upon a review of the material presented in WCAP-16500-P, Supplement 1, Revision 1, and in response to RAIs, as well as the audit of [^{a,c} core reload calculations, the NRC staff finds that the revised MSCU analytical process adequately addresses earlier concerns with the application of the CE MSCU set points methodology to reload cores containing CE16NGF assemblies. As such, the interim DNB margin penalty (6 percent) dictated via WCAP-16500-P, SE Condition #5 (Reference 4) is no longer required.

4.0 LIMITATIONS AND CONDITIONS

Licensees referencing WCAP-16500-P, Supplement 1, Revision 1, must ensure compliance with the following conditions and limitations:

Until Westinghouse provides an acceptable written response to RAI #1, an interim margin penalty of 3.0 percent must be applied to the final addressable constants (e.g., $BERR1 * 1.03$, $[(1+EPOL2)*1.03 - 1.0]$) calculated following the analytical steps defined in WCAP-16500-P, Supplement 1, Revision 1.

5.0 CONCLUSION

Based upon a review of the material presented in WCAP-16500-P, Supplement 1, Revision 1, and in response to RAIs, as well as the audit of []^{a,c} core reload calculations, the staff finds that the revised MSCU analytical process adequately addresses earlier concerns with the application of the CE MSCU set points methodology to reload cores containing CE16NGF assemblies. As such, the interim DNB margin penalty (6%) dictated via WCAP-16500-P, SE Condition #5 (Reference 4) is no longer required. Licensees referencing this topical report will need to comply with the conditions listed in Section 4.0 of this SE.

6.0 REFERENCES

1. Letter from J. A. Gresham (W) to U.S. Nuclear Regulatory Commission, "Submittal of WCAP-16500-P Supplement 1 Revision 1 / WCAP-16500-NP Supplement 1 Revision 1, "Application of CE Setpoint Methodology for CE 16x16 Next Generation Fuel (NGF)," LTR-NRC-08-52, October 24, 2008.
2. Letter from J. A. Gresham (W) to U.S. Nuclear Regulatory Commission, "Response to the NRC's Request for Additional Information by the Office of Nuclear Reactor Regulation for Topical Report (TR) WCAP-16500-P Supplement 1 Revision 1, 'Application of CE Setpoint Methodology for CE 16x16 Next Generation Fuel (NGF),'" LTR-NRC-09-44, August 21, 2009.
3. NUREG-0800, Standard Review Plan, Section 4.2, "Fuel System Design," Revision 3, March 2007.
4. Letter from U.S. Nuclear Regulatory Commission to J. A. Gresham (W), "Final Safety Evaluation for Westinghouse Electric Company (Westinghouse) Topical Report (TR) WCAP-16500-P, Revision 0, 'CE [Combustion Engineering] 16X16 Next Generation Fuel [(NGF)] Core Reference Report'," July 30, 2007, ADAMS ML071920269.
5. NRC Memorandum, "Audit Report for WCAP-16500-P Supplement 1 Revision 1, 'Application of CE Setpoint Methodology for CE 16x16 Next Generation Fuel'," August 24, 2009.

Principle Contributor: Paul Clifford (NRR/DSS)

Date: October 26, 2009