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LTR-NRC-09-50

November 10, 2009

Subject: Response to NRC Request for Additional Information Re: Westinghouse Electric Company Topical Report (TR) WCAP-16182-P-A, Addendum 1, "Westinghouse BWR Control Rod CR 99 Licensing Report - Addendum 1, Updated Design Limits," dated November 6, 2008 (TAC NO. MD7989) and

Submittal of WCAP-16182-P-A/WCAP-16182-NP-A, Revision 1, "Westinghouse BWR Control Rod CR 99 Licensing Report - Update to Mechanical Design Limits," dated October 2009 (Proprietary/Non-Proprietary).

Enclosed are Proprietary (P) and Non-Proprietary (NP) copies of responses and requested supporting information to the NRC's Request for Additional Information (RAI), Re: Westinghouse Electric Company Topical Report (TR) WCAP-16182-P-A, Addendum 1, "Westinghouse BWR Control Rod CR 99 Licensing Report - Addendum 1, Updated Design Limits," dated November 6, 2008.

As follow-up to the actions discussed between Westinghouse's Tom Rodack and NRC Branch Chief Tony Mendiola on March 11-12, 2009, and later with the NRC review staff during a teleconference on March 18, 2009, this response submits a revised and reformatted Revision 1 version of the proposed update to the CR 99 control rod design limits previously submitted as WCAP-16182-P-A, Addendum 1. The enclosed P and NP copies of WCAP-16182-P-A/NP-A, Revision 1, "Westinghouse BWR Control Rod CR 99 Licensing Report - Update to Mechanical Design Limits," are provided to incorporate overall staff comments and to supersede the previous Addendum 1 version of the proposed update to the CR 99 topical design report in its entirety.

Also as requested in the RAI, copies of proprietary references (Refs. 33-37) added by Revision 1, are enclosed for staff information in support of the proposed topical review. Should additional information be needed in regard to the enclosed response, please contact Michael Riggs in Westinghouse Fuel Engineering Licensing at 254-396-6392.

Also enclosed is:

1. One (1) copy of the Application for Withholding, AW-09-2700 (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.

Correspondence with respect to the affidavit or Application for Withholding should reference AW-09-2700 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.

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AW-09-2700

November 10, 2009

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: Response to NRC Request for Additional Information Re: Westinghouse Electric Company Topical Report (TR) WCAP-16182-P-A, Addendum 1, "Westinghouse BWR Control Rod CR 99 Licensing Report - Addendum 1, Updated Design Limits," dated November 6, 2008 (TAC NO. MD7989) and

Submittal of WCAP-16182-P-A/WCAP-16182-NP-A, Revision 1, "Westinghouse BWR Control Rod CR 99 Licensing Report - Update to Mechanical Design Limits," dated October 2009 (Proprietary/Non-Proprietary).

Reference: Letter from J. A. Gresham to Document Control Desk, LTR-NRC-09-50, dated November 10, 2009

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 and enclosures. The enclosed information only copies of proprietary References 33-37 (WCAP-16182-P-A/NP-A, Revision 1) are considered as proprietary in total and have therefore been marked as Westinghouse Proprietary Class 2 with no further markings. In conformance with 10 CFR Section 2.390, Affidavit AW-09-2700 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-09-2700 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,

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

Cc: E. Lenning, NRR
G. A. Bacuta, NRR

Very truly yours,

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

Enclosures

cc: E. Lenning, NRR
G. A. Bacuta, NRR

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AW-09-2700

November 10, 2009

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: Response to NRC Request for Additional Information Re: Westinghouse Electric Company Topical Report (TR) WCAP-16182-P-A, Addendum 1, "Westinghouse BWR Control Rod CR 99 Licensing Report - Addendum 1, Updated Design Limits," dated November 6, 2008 (TAC NO. MD7989) and

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Reference: Letter from J. A. Gresham to Document Control Desk, LTR-NRC-09-50, dated November 10, 2009

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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-09-2700 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,

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

Cc: E. Lenning, NRR
G. A. Bacuta, NRR

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 November 2009.

Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Renee Giampole, Notary Public
Penn Township, Westmoreland County
My Commission Expires September 25, 2013

(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 "Response to NRC Request for Additional Information Re: Westinghouse Electric Company Topical Report (TR) WCAP-16182-P-A, Addendum 1, 'Westinghouse BWR Control Rod CR 99 Licensing Report - Addendum 1, Updated Design Limits,' dated November 6, 2008 (TAC NO. MD7989) and Submittal of WCAP-16182-P-A/WCAP-16182-NP-A, Revision 1, "Westinghouse BWR Control Rod CR 99 Licensing Report - Update to Mechanical Design Limits," dated October 2009 (Proprietary/Non-proprietary)," and information only copies of the following proprietary references (Revision 1 References 33-37);
(33.) Westinghouse Report, BTK 06-1597, "Mechanical Design Report CR 99 Control Rods for S-Lattice BWR6," dated 2007 (Proprietary),
(34.) Westinghouse Report BTM 09-0624, G. Eriksson, "BWR Control Rod CR 99 for BWR/2-4 and BWR/6 Reactors with D- and S-Lattice. Mechanical End of Life prediction and Stress analysis," dated 2009 (Proprietary),
(35.) Westinghouse Report BTF 06-1583, "Nuclear Design Characteristics of Westinghouse Control Rod CR 99 for BWR6 S-Lattice Reactors," dated 2007 (Proprietary),
(36.) Westinghouse Report BTF 06-1584, "Nuclear Design Characteristics of Westinghouse Control Rod CR 99 for BWR2/3/4 D-Lattice Reactors," dated 2007 (Proprietary), and
(37.) Westinghouse Report BTF 06-1623, "Nuclear Design Characteristics of Westinghouse Control Rod CR 99 for BWR4/5 C-Lattice Reactors," dated 2007 (Proprietary),
for submittal to the Commission, being transmitted by Westinghouse letter (LTR-NRC-09-50) 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 NRC Request for Additional Information Re: Westinghouse Electric Company Topical Report (TR) WCAP-16182-P-A, Addendum 1, dated November 6, 2008.

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

(a) Obtain generic NRC licensed approval for revised design criteria which will allow for extended component life of the Westinghouse CR 99 BWR control rods.

(b) Meet NRC regulatory requirements in support of a Westinghouse product.

Further, this information has substantial commercial value as follows:

(a) Westinghouse can use this topical design report 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 Request for Additional Information by the Office of Nuclear Reactor Regulation for Topical Report WCAP-16182-P-A, Addendum 1, "Westinghouse BWR Control Rod CR 99 Licensing Report - Addendum 1, Updated Design Limits" (Non-Proprietary)

November 2009

Westinghouse Electric Company
P.O. Box 355
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RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION (RAI) FOR WESTINGHOUSE BWR CONTROL ROD CR 99 LICENSING REPORT (WCAP-16182-P-A, ADDENDUM 1)

Overall response to RAI and submittal of enclosed Revision 1 in lieu of Addendum 1

As follow-up to the actions discussed between Westinghouse's Tom Rodack and NRC Branch Chief Tony Mendiola on March 11-12, 2009, and later with the NRC review staff during a teleconference on March 18, 2009, this response submits a revised and reformatted Revision 1 version of the proposed update to the CR 99 control rod design limits previously submitted as WCAP-16182-P-A, Addendum 1.

The enclosed Proprietary (P) and Non-Proprietary (NP) of WCAP-16182-P-A/NP-A, Revision 1, "Westinghouse BWR Control Rod CR 99 Licensing Report - Update to Mechanical Design Limits," are provided to incorporate overall staff comments and to supersede the previous Addendum 1 version of the proposed update to the CR 99 topical design report in its entirety.

Also as requested in the RAI, copies of updated proprietary references (Revision 1 Refs. 33-37) which have been added to the list of references in Revision 1, are enclosed for staff information in support of the proposed topical's review. Should additional information be needed in regard to the enclosed response, please contact Michael Riggs at Westinghouse Fuel Engineering Licensing.

Responses to individual RAI questions

1. **Provide the justification of [ ]^{a,c} If the justification is based on Westinghouse proprietary reports, then the reports have to be submitted for review.**

   Response to RAI 1

   As described above, the enclosed Revision 1 of the proposed update to CR 99 topical report WCAP-16182-P-A is submitted to supersede the previous Addendum 1 version of the CR 99 topical report in its entirety.

   To address the staff's comments that; [

   ]^{a,c}

   As such, the enclosed Revision 1 update to the CR 99 topical report [

   ]^{a,c}

[

]^{a,c}

2. Explain [

]^{a,c}

Response to RAI 2

As described above, the enclosed Revision 1 of the proposed update to CR 99 topical report WCAP-16182-P-A is submitted as part of the overall RAI response and to supersede the previous Addendum 1 version of the CR 99 topical report in its entirety.

The Revision 1 updated includes that [_

]^{a,c}

3. **Provide the basis of Equation 6.5 on page 6-7 and elaborate the results in D, C, and S lattices. If the justification is based on Westinghouse proprietary reports, then the reports have to be submitted for review.**

Response to RAI 3

The bases for Equation 6.5, as previously used in Addendum 1, was provided in Reference 20 of Addendum 1. Included in the previous Reference 20 was the [

]^{a,c} As discussed above and in response to the staff's comments, Revision 1 of the proposed update to the CR 99 topical report does not include the use of [ ]^{a,c}

As such, the corresponding equation has since been renumbered and replaced by Equation 6.6 in the enclosed Revision 1 update. Also, the Revision 1 update no longer includes the previous Reference 20 from Addendum 1. Instead, the corresponding bases discussion has been revised and is described in more detail in Section 6.4.2 of the Revision 1 update. Typical values for D, C, and S Lattices are also provided at the end of this section.

[

]^{a,c} Reference 19 is the same reference as included in the approved CR 99 topical design report, WCAP-16182-P-A, Revision 0 (March 2005).

Also, as requested by this RAI, copies of the updated proprietary references (Refs. 33-37) which have been added to the list of references in Revision 1, are enclosed for staff information in support of the proposed CR 99 topical review.

4. **In determining [**

]^{a,c} Please provide the justification of the dose level. If Westinghouse proprietary reports are involved, then the reports have to be submitted for review.

Response to RAI 4

The discussion of [

]^{a,c}

As requested by this RAI, copies of the updated proprietary references (Refs. 33-37) which have been added to the list of references in Revision 1, are also enclosed for staff information in support of the proposed CR 99 topical review.

5. **In Table 6-4 "Mechanical Related Critical Attributes for CR99," (a) Define [ ]^{a,c} (b) Provide the basis of the criteria for D, C, and S Lattices, and (c) Explain what analyses were performed to meet the criteria.**

Response to RAI 5

The terms [

]^{a,c}

In the enclosed Revision 1 update, the corresponding bases for the Mechanical End of Life (MEOL) and Stress Analysis are further described in new Reference 34. As described above, copies of updated proprietary references (Refs. 33-37) which have been added to the list of references in Revision 1, are enclosed for staff information in support of the proposed CR 99 topical review.

6. **In the REFERENCES section, there are un-reviewed Westinghouse proprietary reports. These reports need to be submitted for the staff review to determine the safety significance. These reports in accordance with the reference number is listed: 14, 15, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30, and 31.**

Response to RAI 6

As discussed above, the enclosed Revision 1 of the proposed update to CR 99 topical report WCAP-16182-P-A is provided to supersede the previously submitted Addendum 1 version of the topical report in its entirety.

From the list of proprietary references requested by RAI 6, References 14, 20, 21, 27, 28, and 29 were previously referenced by Addendum 1. These references are now shown in Revision 1 as additional new Refs. 33-37 to the existing list of references already included in approved CR 99 topical report WCAP-16182-P-A, Revision 0. As requested by the above RAIs, copies of these new proprietary references 33-37 which were added in Revision 1, are enclosed for staff information in support of the proposed topical review.

In Revision 1, the above proprietary references 15, 18, 19, 23, 24, 25, 26, 30, and 31 continue to refer to the same documents and revision numbers as currently included in approved CR 99 topical report

WCAP-16182-P-A, Revision 0. Copies of these proprietary references were previously either submitted as responses to RAIs or otherwise made available in support of the staff's review of the currently approved CR 99 topical report (Revision 0).