



Westinghouse Electric Company
Nuclear Power Plants
1000 Westinghouse Drive
Cranberry Township, Pennsylvania 16066
USA

Document Control Desk
U S Nuclear Regulatory Commission
Two White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Direct tel: 412-374-6919
Direct fax: 724-940-8505
e-mail: delongra@westinghouse.com

Your ref: Project No. 0794
Our ref: DCP_NRC_003224

September 28, 2012

Subject: Transmittal of WCAP-17577, "Topical Report on ASME Section III Piping Fatigue Analysis Utilizing the WESTEMS™ Computer Code," Revision 1, for Safety Evaluation

References:

- 1) Westinghouse Letter No. DCP_NRC_003203, "Transmittal of WCAP-17577, "Topical Report on ASME Section III Piping Fatigue Analysis Utilizing the WESTEMS™ Computer Code," for Safety Evaluation, dated February 29, 2012.
- 2) Westinghouse Letter No. DCP_NRC_003212, "Withdrawal Request for WCAP-17577-P and -NP," dated May 9, 2012.
- 3) Enclosure to USNRC Letter to Westinghouse (ML12151A221) "Withdrawal Acknowledgement Letter for WCAP-17577, 'Topical Report on ASME Section III Piping Fatigue Analysis Utilizing the WESTEMS™ Computer Code' for Safety Evaluation (TAC No. RP8500)" dated June 1, 2000.
- 4) NUREG-1793, Supplement 2, "Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design, Docket No. 52-006"

Westinghouse Electric Company, LLC is submitting WCAP-17577, "Topical Report on ASME Section III Piping Fatigue Analysis Utilizing the WESTEMS™ Computer Code," Revision 1, for US Nuclear Regulatory Commission (USNRC) review and safety evaluation in accordance with the topical report review process outlined in NRC guidance document LIC-500. Westinghouse is seeking USNRC review and approval for use of the WESTEMS™ computer program NB-3600 and NB-3200 modules to perform ASME Section III fatigue evaluations on piping design for the AP1000® Pressurized Water Reactor (PWR). The scope of this review should be focused solely for application to the AP1000® PWR.

It should be noted that Revision 1 of this Topical Report replaces Revision 0 which was submitted to the Document Control Desk by Reference 1, and subsequently withdrawn by Reference 2.

Revision 1 of WCAP-17577 summarizes the Westinghouse position that ASME Section III fatigue analysis performed using the WESTEMS™ Computer Code is in accordance with ASME Section III NB-3600/NB-3200 and meets ASME NQA-1 requirements. It also documents the actions Westinghouse has taken in order to address USNRC documented concerns with the program features and includes the additional content requested by the staff during the acceptance review of Rev. 0 of

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this report. The manner in which these concerns have been addressed was presented to the USNRC staff in a pre-submittal meeting held on September 13, 2012 in Rockville, MD, and is summarized below.

Following submittal of Rev. 0 of WCAP-17577 to the USNRC on February 29, 2012, the NRC staff requested that additional information be added to the report from referenced documents. These missing pieces of information were documented in Reference 3 and have been incorporated in Rev. 1 of this report as requested. Also, Westinghouse released a new code version of WESTEMS™, which reduces the complexity of user inputs and confirmation of results in order to improve the fatigue evaluation and documentation process. Specifically,

- Rev. 0 of the report did not sufficiently address the purpose of using the algebraic summation option in the program. This option has been eliminated from the new program version, and therefore no further justification is required.
- Rev. 0 of the report did not sufficiently describe how the program yields repeatable results when user intervention is necessary. The technical bases for decision points in the peak selection process have been included in Section 4.1.5 of the report. All decision points in the evaluation are properly documented and subject to independent verification in accordance with Westinghouse Quality Assurance Procedures.
- Rev. 0 of the report did not include a flow chart description of the ASME NB-3200 and NB-3600 fatigue analysis process utilized in the program. The description and flowchart of the fatigue calculations performed by the program are provided in Revision 1 of the report in Figure 4-1 (NB-3600) and Figure 4-8 (NB-3200).
- Rev. 0 of the report did not include design limitations and input adjustment requirements of the program. Design limitations of the software have been included in Section 3.3 of Revision 1 of the report. There are no input adjustment requirements of the ASME Code in the new version of the program.

Rev. 0 of the report did not include a sufficient discussion on the validation and verification of the computer program. The validation and verification process for the new program version has been documented in detail in Section 5.0 of Revision 1 of the report. The content includes description of test problems, variables tested, method of validations and results compared.

Reference 4 included two concerns raised by the USNRC staff during the AP1000® Design Certification Amendment Application review. The first concern identified that that the WESTEMS program allowed for an option to identify stress peaks and valleys using an approach that could be erroneously applied to algebraically sum orthogonal moments. This user option has been eliminated with the release of the new program version. The second concern identified that the program allows for the elimination of peak and valley points during the calculation. Most occurrences of redundant peak times have been eliminated with the release of the new program version. The program does allow for the sufficiently justified elimination of conservative redundant peak times in a restart file for input in a reanalysis. The final output of the calculation is never modified.

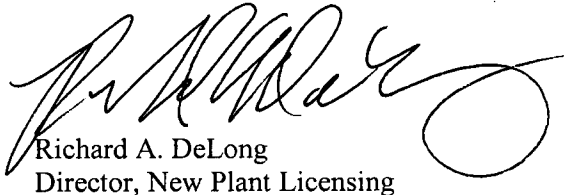
As discussed with the USNRC, Westinghouse intends to utilize the WESTEMS™ computer program to apply Class 1 piping fatigue methodology for AP1000® piping design in support of Class 1 Piping installation at Vogtle Units 3&4, VC Summer Units 2&3 and subsequent AP1000® plant construction projects. The piping fatigue analysis will be reviewed by the USNRC as part of the Piping Design Acceptance Criteria (DAC) closure process. The license conditions associated with Piping DAC require that the piping design be complete and made available for USNRC inspection prior to the installation of that piping in its final location in the plant. The expected duration of the staff review for this report is approximately 8 months with expected issuance of a Safety Evaluation by May 31, 2013.

The safety evaluation schedule is requested to support the activities described above in support of the installation of the first Class 1 piping at Vogtle Units 3&4 and VC Summer Units 2&3.

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 one copy of the Application for Withholding, AW-12-3536 (non-proprietary, Enclosure 1), and one copy of the associated Affidavit (non-proprietary, Enclosure 2) with Proprietary Information and Copyright Notices. The affidavit sets forth the basis on which the information identified as proprietary may be withheld from public disclosure by the Commission. Pursuant to 10 CFR 50.30(b), WCAP-17577-P, Rev. 1 (proprietary) and WCAP-17577-NP, Rev. 1 (non-proprietary) are submitted as Enclosures 3 and 4. Correspondence with respect to the affidavit or Application for Withholding should include our reference number AW-12-3536 and should be addressed to James A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company, LLC, 1000 Westinghouse Drive, Cranberry Township, Pennsylvania 16066.

Questions or requests for additional information related to the content and preparation of this report should be directed to Westinghouse. Please direct questions to the undersigned.

Very truly yours,



Richard A. DeLong
Director, New Plant Licensing

/Enclosures

1. AW-12-3536 "Application for Withholding Proprietary Information from Disclosure," dated September 28, 2012
2. AW-12-3536, Affidavit, Proprietary Information Notice, Copyright Notice dated September 28, 2012
3. WCAP-17577-P, "Topical Report on ASME Section III Piping Fatigue Analysis Utilizing the WESTEMSTM Computer Code," Revision 1 (Proprietary)
4. WCAP-17577-NP, "Topical Report on ASME Section III Piping Fatigue Analysis Utilizing the WESTEMSTM Computer Code," Revision 1 (Non-proprietary)

cc: B. Bovol - U.S. NRC
M. Tonacci - U.S. NRC
J. McInerney - Westinghouse
P. Russ - Westinghouse

ENCLOSURE 1

AW-12-3536

APPLICATION FOR WITHHOLDING
PROPRIETARY INFORMATION FROM DISCLOSURE



Westinghouse Electric Company
Nuclear Power Plants
1000 Westinghouse Drive
Cranberry Township, Pennsylvania 16066
USA

Document Control Desk
U S Nuclear Regulatory Commission
Two White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Direct tel: 412-374-5290
Direct fax: 724-720-0909
e-mail: winterjw@westinghouse.com

Your ref: Project No. 0794
Our ref: AW-12-3536

September 28, 2012

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

Subject: Transmittal of WCAP-17577, "Topical Report on ASME Section III Piping Fatigue Analysis Utilizing the WESTEMSTM Computer Code," Revision 1 for Safety Evaluation

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 is 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-12-3536 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-12-3536 and should be addressed to James A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, 1000 Westinghouse Drive, Cranberry Township, Pennsylvania, 16066.

Very truly yours,

A handwritten signature in black ink, appearing to read 'James W. Winters'.

James W. Winters
Manager, Passive Plant Technology

ENCLOSURE 2

AFFIDAVIT

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss


COUNTY OF BUTLER:

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



James W. Winters
Manager, Passive Plant Technology

Sworn to and subscribed
before me this 28th day
of September 2012.



Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Linda J. Bugle, Notary Public
City of Pittsburgh, Allegheny County
My Commission Expires June 18, 2013
Member, Pennsylvania Association of Notaries

- (1) I am Manager, Passive Plant Technology, Westinghouse Electric Company LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.
- (2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Westinghouse "Application for Withholding" accompanying this Affidavit.
- (3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged or as confidential commercial or financial information.
- (4) Pursuant to the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.
 - (i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.
 - (ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

 - (a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of

Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

- (b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.
- (c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.
- (d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.
- (e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.
- (f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

- (a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.
- (b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.
- (c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

- (d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.
 - (e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.
 - (f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.
- (iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390, it is to be received in confidence by the Commission.
- (iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.
- (v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in attachment to DCP_NRC_003224, Transmittal of WCAP-17577, "Topical Report on ASME Section III Piping Fatigue Analysis Utilizing the WESTEMSTM Computer Code," Revision 1 for Safety Evaluation, to the Document Control Desk.

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

- (a) Manufacture and deliver products to utilities based on proprietary designs.
- (b) Advance the AP1000 Design and reduce the licensing risk for the application of the AP1000 Design Certification

- (c) Determine compliance with regulations and standards
- (d) Establish design requirements and specifications for the system.

Further this information has substantial commercial value as follows:

- (a) Westinghouse plans to sell the use of similar information to its customers for purposes of plant construction and operation.
- (b) Westinghouse can sell support and defense of safety systems based on the technology in the reports.
- (c) The information requested to be withheld reveals the distinguishing aspects of an approach and schedule 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 digital technology safety systems 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.