

PROPRIETARY INFORMATION – WITHHOLD UNDER 10 CFR 2.390

10 CFR 50.4
10 CFR 2.390

August 20, 2015

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Peach Bottom Atomic Power Station, Unit 3
Renewed Facility Operating License No. DPR-56
NRC Docket No. 50-278

Subject: Extended Power Uprate: Unit 3 Replacement Steam Dryer Revised
Analysis Report

Reference: 1. NRC Letter to Exelon, “Peach Bottom Atomic Power Station, Units 2 and 3 – Issuance of Amendments Re: Extended Power Uprate (TAC Nos. ME9631 and ME9632),” dated August 25, 2014 (ADAMS Accession No. ML14133A046)

In accordance with 10 CFR 50.92, the NRC issued Reference 1, License Amendment Nos. 293 and 296 to the Peach Bottom Atomic Power Station (PBAPS) Renewed Facility Operating Licenses (FOLs) to increase the authorized maximum power level from 3514 megawatts thermal (MWt) to 3951 MWt. This change to power level is considered an extended power uprate (EPU).

The amended FOLs contain specific license conditions that control the monitoring, evaluating, and taking prompt action in response to potential adverse flow effects as a result of the EPU on plant structures, systems, and components (including verifying the continued structural integrity of the replacement steam dryer (RSD)) during initial EPU power ascension. This letter satisfies Unit 3 License Condition 2.C(15)(a)1 by providing the results of the Unit 3 revised RSD analysis utilizing the Unit 2 on-dryer strain gauge based end-to-end bias and uncertainties at EPU conditions including updated limit curves and a list of dominate frequencies for Unit 3.

Westinghouse Electric Company (WEC) considers portions of the information provided in the Attachment 1 response proprietary and, therefore, exempt from public disclosure pursuant to 10 CFR 2.390. In accordance with 10 CFR 2.390 and in support of this request for withholding, an affidavit executed by WEC is provided in Attachment 3.

There are no regulatory commitments contained in this letter.

**Attachment 1 contains Proprietary Information.
When separated from Attachment 1, this document is decontrolled.**

Should you have any questions concerning this letter, please call me at (610) 765-5528.

Respectfully,



Kevin F. Borton
Manager, Power Uprate Licensing
Exelon Generation Company, LLC

Attachments:

1. PBAPS Unit 3 Replacement Steam Dryer Revised Analysis Report – Proprietary, Westinghouse Electric Company LLC LTR-BWR-ENG-15-076-P
2. PBAPS Unit 3 Replacement Steam Dryer Revised Analysis Report – Non-Proprietary, Westinghouse Electric Company LLC LTR-BWR-ENG-15-076-NP
3. Affidavit

cc: USNRC Region I, Regional Administrator	w/attachments
USNRC Senior Resident Inspector, PBAPS	w/attachments
USNRC Project Manager, PBAPS	w/attachments
R. R. Janati, Commonwealth of Pennsylvania	w/o proprietary attachment
S. T. Gray, State of Maryland	w/o proprietary attachment

Attachment 2

Peach Bottom Atomic Power Station Unit 3

NRC Docket No. 50-278

PBAPS Unit 3 Replacement Steam Dryer Revised Analysis Report – **Non-Proprietary**
Westinghouse Electric Company LLC LTR-BWR-ENG-15-076-NP

The Nuclear Regulatory Commission (NRC) issued Amendment Nos. 293 and 296 to Renewed Facility Operating License Nos. DPR-44 and DPR-56 for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3 (ADAMS Accession No. ML14133A046). These amendments authorized an increase in the maximum licensed thermal power level for PBAPS, Units 2 and 3, from 3514 megawatts thermal (MWt) to 3951 MWt, which is an increase of approximately 12.4 percent.

In accordance with PBAPS Unit 3 License Condition 2.C (15) (a) 1, EGC is providing the Unit 2 replacement steam dryer (RSD) power ascension testing results.



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

LTR-BWR-ENG-15-076-NP

**Peach Bottom Unit 3
Replacement Steam Dryer Report at Predicted EPU
Conditions**

Revision 0

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Executive Summary

A high-cycle fatigue assessment of the replacement steam dryer at Peach Bottom Atomic Power Station (PBAPS) Unit 3 has been completed at predicted extended power uprate (EPU) conditions. The assessment utilizes the Westinghouse steam dryer acoustic/structural methodology, ACE Revision 3.1, utilizing the Unit 2 on-dryer strain gauge based bias errors and uncertainties at EPU conditions. This report provides steam dryer information to fulfill the requirements found in Peach Bottom Unit 3 Renewed Facility Operating License condition 15(a)1 (Reference 1). The analysis [

] ^{a,b,c}

1 BACKGROUND AND PURPOSE

Following the September 2015 refueling outage, Peach Bottom Unit 3 will begin power ascension from 3514 MWt to 3951 MWt with a newly installed Westinghouse replacement steam dryer (RSD). [

] ^{a,c}

The purpose of this report is to provide the results of a revised high-cycle fatigue assessment for MSL and NMSLA loads at predicted EPU conditions based on subscale test data using the Unit 2 re-benchmark acoustic model, provide limit curves, and a list of dominant frequencies. Power ascension limits are defined to ensure reasonable assurance of RSD integrity from CLTP to EPU conditions. The report fulfills the requirements specified in the Peach Bottom Unit 3 Renewed Facility Operating License conditions 15(a)1 (Reference 1).

2 ACE REVISION 3.1 ACOUSTIC ANALYSIS

[

Table 2-1a: ACE Revision 3.1[

[

]^{a,c}

]^{a,c}

]^{a,c}
a,b,c

Table 2-1b: ACE Revision 3.1[

[

]^{a,c}

]^{a,c}
a,b,c

3 Non-MSL ACOUSTIC ANALYSIS

[

] ^{a,c}

4 HIGH CYCLE FATIGUE ANALYSIS SUMMARY

A structural evaluation was performed considering both the [

]^{a,c} Table 4-1

presents the limiting RSD high-cycle fatigue stress ratios.

Table 4-1: PBAPS Unit 3 Stress Ratio Summary at Predicted EPU Conditions

a,b,c

The MASR location above and below the support ring were further analyzed to determine the [

]^{a,c}

[

] ^{a,b,c}

[

] ^{a,b,c}

Figure 4-1: [

] ^{a,c}



Figure 4-2: [

]^{a,c}



Figure 4-3: [

]^{a,c}



Figure 4-4: [

]^{a,c}

5 PBAPS UNIT 3 POWER ASCENSION LIMITS

[

]^{a,c}

5.1 NMSLA Limit Curves

5.1.1 Correlation for defining NMSLA Limit Curves

[

]^{a,c}



Figure 5-1: [

]^{a,c}



Figure 5-2: [**]**^{a,c}

$$\left[\begin{matrix} \\ \\ \\ \end{matrix} \right]^{a,c} \left[\begin{matrix} \\ \\ \\ \end{matrix} \right]^{a,b,c} \quad \begin{matrix} \text{Equation 5-1} \\ \text{Equation 5-2} \end{matrix}$$

5.1.2 NMSLA Limits

$$\left[\begin{matrix} \\ \\ \\ \end{matrix} \right]^{a,c} \left[\begin{matrix} \\ \\ \\ \end{matrix} \right]^{a,b,c} \quad \begin{matrix} \text{Equation 5-3} \\ \text{Equation 5-4} \end{matrix}$$

$$\left[\begin{matrix} \\ \\ \\ \end{matrix} \right]^{a,c} \left[\begin{matrix} \\ \\ \\ \end{matrix} \right]^{a,b,c} \quad \begin{matrix} \text{Equation 5-5} \\ \text{Equation 5-6} \end{matrix}$$

Where:

$$\left[\begin{matrix} \\ \\ \\ \end{matrix} \right]^{a,b,c}$$

$$\left[\begin{matrix} \\ \\ \\ \end{matrix} \right]^{a,b,c}$$

Table 5-1: Unit 3 []^{a,c} Limit Curves

--	--	--

[

]^{a,c}

[

]

a,b,c

Equation 5-7

Equation 5-8

[

]^{a,c} This

process will be repeated until EPU power level is achieved.

5.2 ACE Limits

[

] ^{a,c}

[

] ^{a,c} are shown in Appendix B for reference.

[

] ^{a,b,c}

Figure 5-3: Unit 3 [] ^{a,c} Limit Curves

[

] ^{a,b,c}

Figure 5-4: Unit 3 [] ^{a,c} Limit Curves



Figure 5-5: Unit 3 []^{a,c} Limit Curves



Figure 5-6: Unit 3 []^{a,c} Limit Curves

[]^{a,c}
 []^{a,c} This process will be repeated until EPU power level is achieved.

6 REFERENCES

1. Peach Bottom Atomic Power Station, Unit 3 Renewed Facility Operating License, Unit 3 License Condition (15).
2. Westinghouse Document No. LTR-BWR-ENG-15-066, "Transmittal of Peach Bottom Unit 2 Replacement Steam Dryer Report at EPU Conditions," August 6, 2015.
3. Westinghouse Report WCAP-17655-P, Rev. 4, "Peach Bottom Unit 3 Replacement Steam Dryer Power Ascension Program Description for Extended Power Uprate," April 2014.

Appendix A Additional Correlation Plots for NMSLA Limit Curve Development

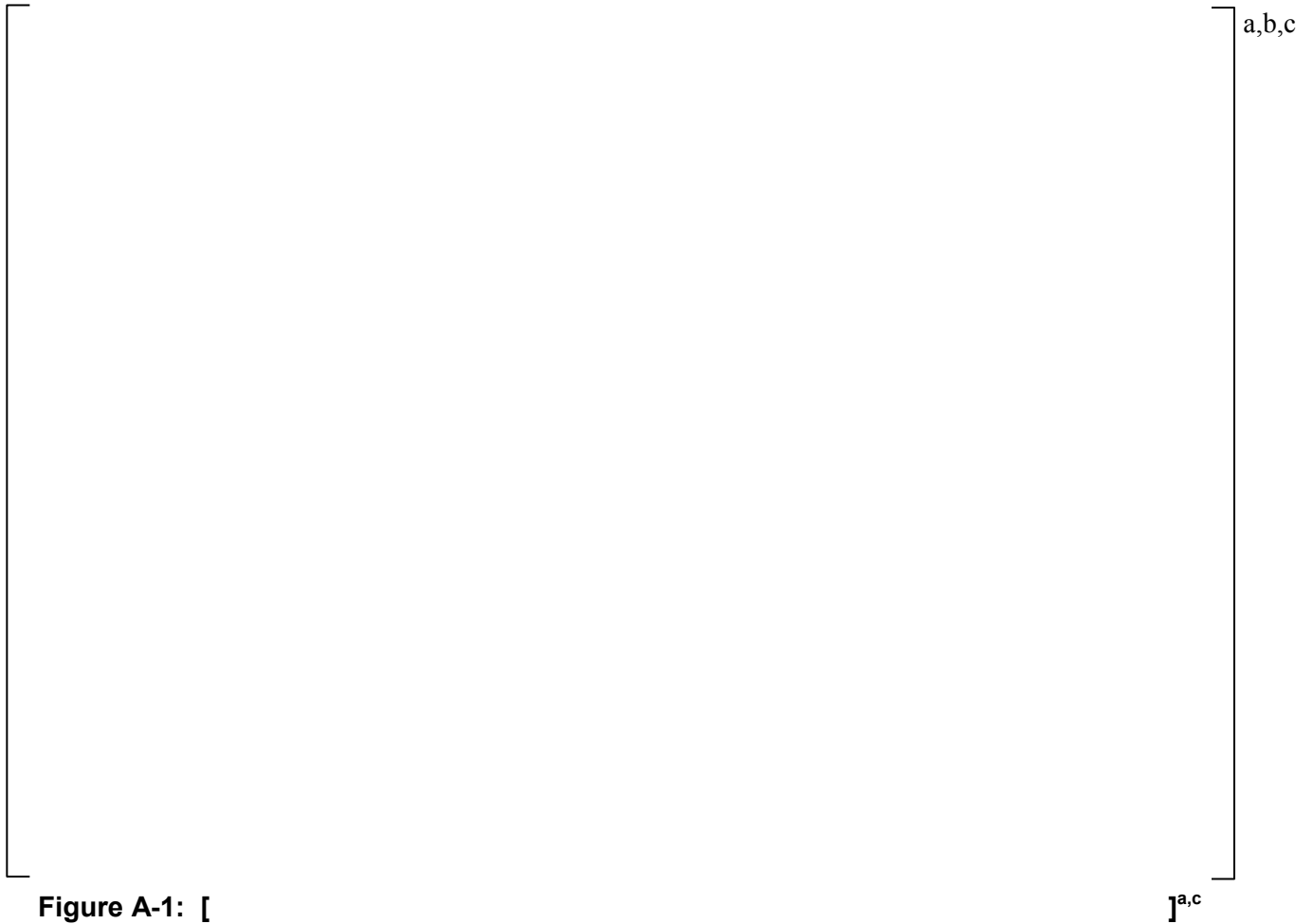




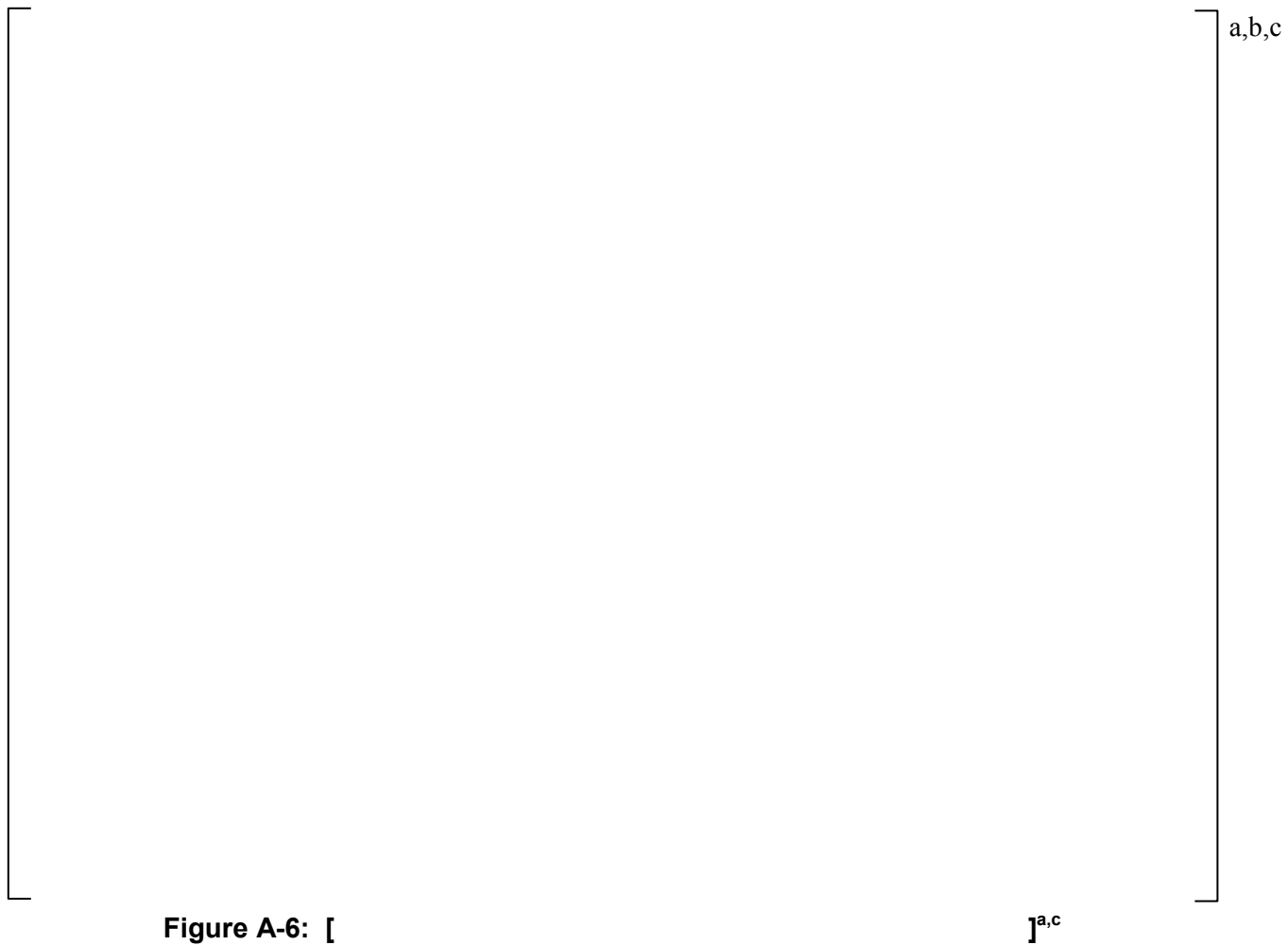


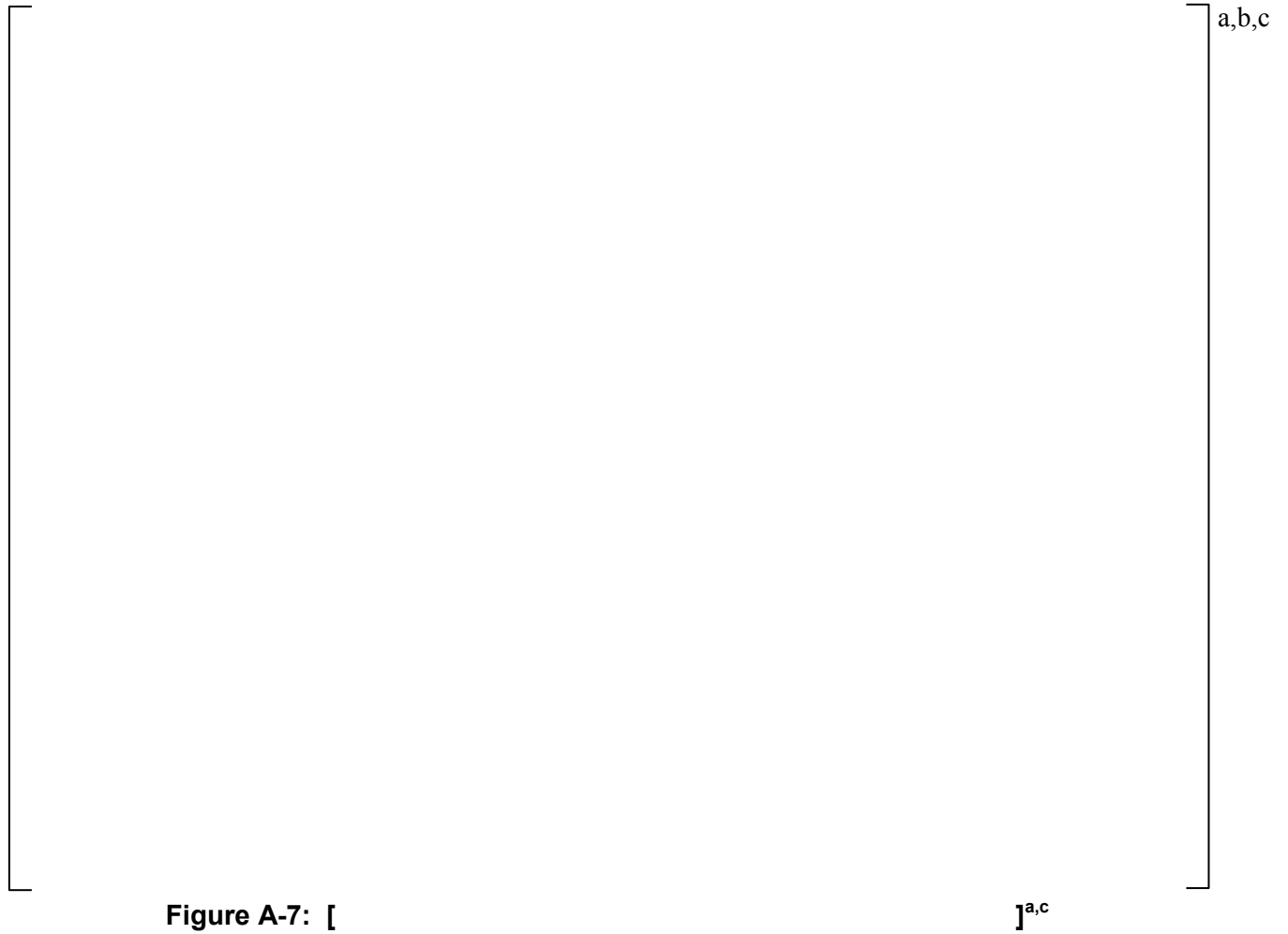
Figure A-3: [

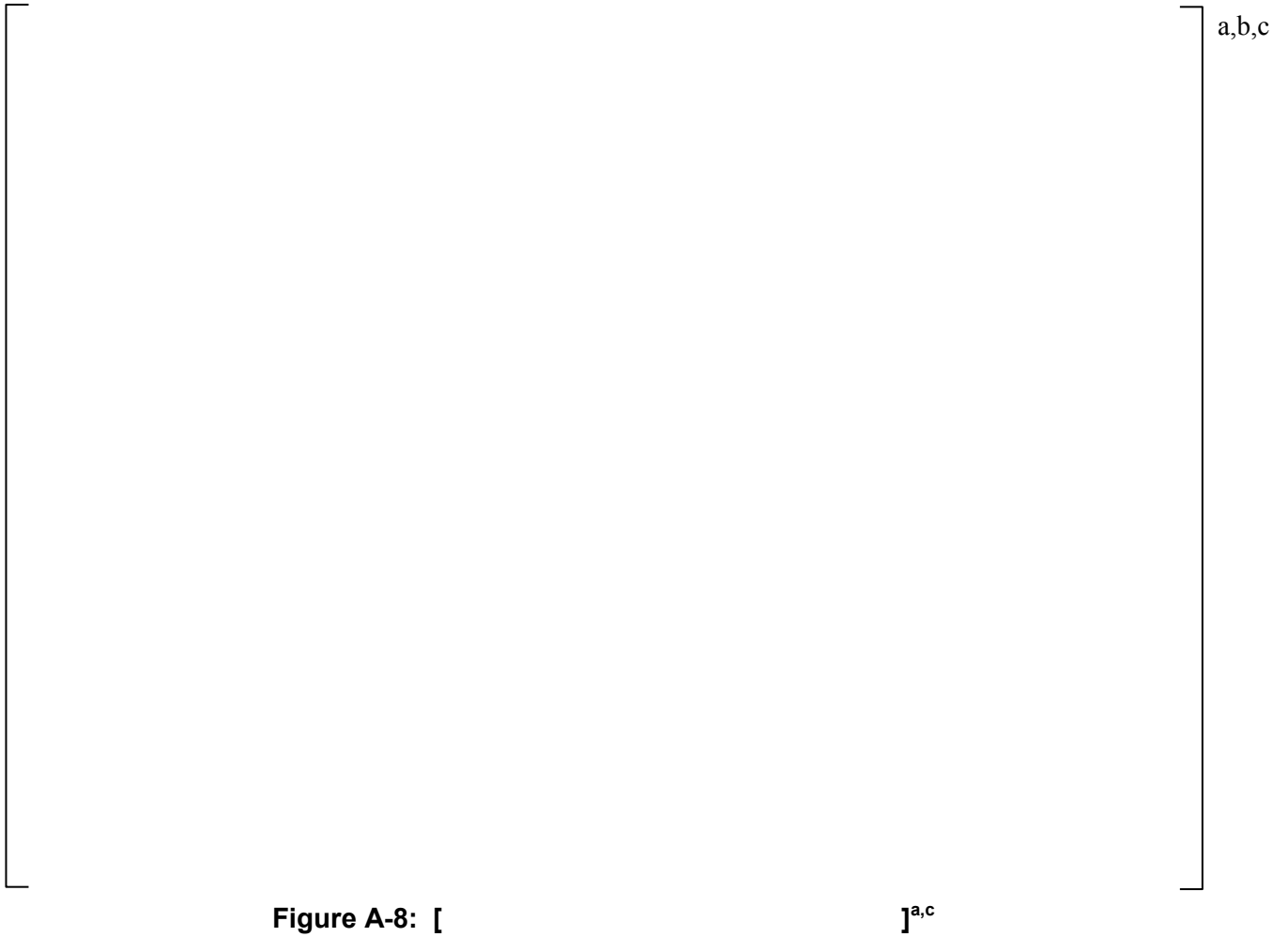
]^{a,c}











Appendix B CLTP-based Limit Curves

[

 $]^{a,c}$ **Table B-1: Unit 3 [** **$]^{a,c}$ Limit Curves** $]^{a,b,c}$

The Unit 3 [

 $]^{a,c}$ are shown in Figure B-1 through Figure B-4. $]^{a,b,c}$ **Figure B-1: Unit 3 [** **$]^{a,c}$ Limit Curves**



Figure B-2: Unit 3 []^{a,c} Limit Curves



Figure B-3: Unit 3 []^{a,c} Limit Curves



Figure B-4: Unit 3 []^{a,c} Limit Curves

Attachment 3

Peach Bottom Atomic Power Station Unit 3

NRC Docket No. 50-278

AFFIDAVIT

Note

Attachment 1 contains proprietary information as defined by 10 CFR 2.390. WEC, as the owner of the proprietary information, has executed the enclosed affidavit, which identifies that the proprietary information has been handled and classified as proprietary, is customarily held in confidence, and has been withheld from public disclosure. The proprietary information has been faithfully reproduced in the attachment such that the affidavit remains applicable.



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CAW-15-4256

August, 18, 2015

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: LTR-BWR-ENG-15-076-P, Revision 0, "Peach Bottom Unit 3 Replacement Steam Dryer Report at Predicted EPU Conditions" (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-15-4256 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 Exelon Generation.

Correspondence with respect to the proprietary aspects of the Application for Withholding or the Westinghouse Affidavit should reference CAW-15-4256, 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.

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

James A. Gresham, Manager
Regulatory Compliance


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.

A handwritten signature in black ink, appearing to read "J. Gresham", is written over a horizontal line.

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, 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 LTR-BWR-ENG-15-076-P, Revision 0, "Peach Bottom Unit 3 Replacement Steam Dryer Report at Predicted EPU Conditions" (Proprietary), for submittal to the Commission, being transmitted by Exelon Generation 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 high-cycle fatigue assessment of the replacement steam dryer at Peach Bottom Atomic Power Station (PBAPS) Unit 3 at predicted extended power uprate (EPU) conditions, and may be used only for that purpose.

- (a) This information is part of that which will enable Westinghouse to:
 - (i) Assist Exelon Generation in fulfilling the requirements specified in the PBAPS Unit 3 Renewed Facility Operating License.
- (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 plant specific replacement steam dryer analysis for licensing basis applications.
 - (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 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 high-cycle fatigue assessment of the replacement steam dryer at predicted extended power uprate (EPU) conditions for PBAPS Unit 3 with regards to the PBAPS Unit 3 license condition, and may be used only for that purpose.

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 that Westinghouse customarily holds in confidence is identified in Sections (4)(ii)(a) through (4)(ii)(f) of the Affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).

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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.