Exelon Generation®

200 Exelon Way
Kennett Square, PA 19348

www.exeloncorp.com

PROPRIETARY INFORMATION – WITHHOLD UNDER 10 CFR 2.390

10 CFR 50.90
10 CFR 2.390

January 31, 2014

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

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: Extended Power Uprate License Amendment Request – Supplement 19
Response to Request for Additional Information

References:
1. Exelon letter to the NRC, "License Amendment Request - Extended Power Uprate," dated September 28, 2012 (ADAMS Accession No. ML122860201)
2. NRC letter to Exelon, "Request for Additional Information Regarding License Amendment Request for Extended Power Uprate (TAC Nos. ME9631 and ME9632)," dated January 15, 2014 (ADAMS Accession No. ML14002A176)

In accordance with 10 CFR 50.90, Exelon Generation Company, LLC (EGC) requested amendments to Facility Operating License Nos. DPR-44 and DPR-56 for Peach Bottom Atomic Power Station (PBAPS) Units 2 and 3, respectively (Reference 1). Specifically, the proposed changes would revise the Renewed Operating Licenses to implement an increase in rated thermal power from 3514 megawatts thermal (MWt) to 3951 MWt. During their technical review of the application, the NRC Staff identified the need for additional information.

The NRC provided a second round of requests for additional information in Reference 2. The response to EMCB-SD-RAIs 19, 21-26, 28-29, 31 and 33-39 are provided in this letter (EMCB-SD-RAIs 18, 20 and 27 have been deleted). The response to EMCB-SD-RAIs 16-17, 30, 32, 40 and 41 will be provided by February 28, 2014.

Attachment 1 contains the response to EMCB-SD-RAIs-19, 21-26, 28-29, 31 and 33-39. Westinghouse Electric Company (WEC) considers portions of the information provided in the response to be 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, affidavits executed by the respective parties are provided in Attachment 3. A non-proprietary version of the responses is provided in Attachment 2.

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

A001
NRR

EGC has reviewed the information supporting a finding of no significant hazards consideration and the environmental consideration provided to the U. S. Nuclear Regulatory Commission in Reference 1. The supplemental information provided in this submittal does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration. Further, the additional information provided in this submittal does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

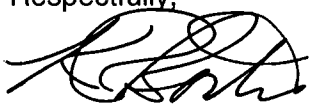
In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), EGC is notifying the Commonwealth of Pennsylvania and the State of Maryland of this application by transmitting a copy of this letter along with the non-proprietary attachments to the designated State Officials.

There are no regulatory commitments contained in this letter.

Should you have any questions concerning this letter, please contact Mr. David Neff at (610) 765-5631.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 31st day of January 2014.

Respectfully,



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

Attachments:
1. Response to Request for Additional Information – EMCB-SD - Proprietary
2. Response to Request for Additional Information – EMCB-SD
3. Affidavits in Support of Request to Withhold Information

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 3

Peach Bottom Atomic Power Station Units 2 and 3

NRC Docket Nos. 50-277 and 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.

CAW-14-3892

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF BUTLER:

Before me, the undersigned authority, personally appeared Bradley F. Maurer, 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:

Bradley F. Maurer, Principal Engineer
Plant Licensing

Sworn to and subscribed before me
this 30th day of January 2014

Notary Public

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Renee Giampole, Notary Public
Penn Twp., Westmoreland County
My Commission Expires Sept. 25, 2017
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

(1) I am Principal Engineer, Plant Licensing, in Engineering, Equipment and Major Projects, 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 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.

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

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iv) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390, it is to be received in confidence by the Commission.

(v) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.

(vi) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in Attachment 1 "Response to Request for Additional Information – EMCB-SD - Proprietary," attached to Exelon Generation submittal to the NRC "Extended Power Uprate License Amendment Request – Supplement 19, Response to Request for Additional Information" 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 to assist the NRC in their review of the Peach Bottom Atomic Power Station, Units 2 and 3, License Amendment Request for Extended Power Uprate 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 obtaining NRC review of the Peach Bottom Atomic Power Station Units 2 and 3 License Amendment Request.

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

(i) Westinghouse plans to sell the use of this information to its customers for purposes of plant specific replacement steam dryer analysis for licensing basis applications.

(ii) Its use by a competitor would improve their competitive position in the design and licensing of a similar product for BWR steam dryer analysis methodology.

(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 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

Attachment 2

Peach Bottom Atomic Power Station Units 2 and 3

NRC Docket Nos. 50-277 and 50-278

Response to Request for Additional Information – EMCB-SD

Note

This attachment includes the non-proprietary version of the response; brackets identify where proprietary information has been redacted.

Response to Request for Additional Information

Mechanical and Civil Engineering Branch (EMCB) - Steam Dryer (SD)

By letter dated September 28, 2012, Exelon Generation Company, LLC (EGC) submitted a license amendment request for Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The proposed amendment would authorize an increase in the maximum power level from 3514 megawatts thermal (MWt) to 3951 MWt. The requested change, referred to as an extended power uprate (EPU), represents an increase of approximately 12.4 percent above the current licensed thermal power level.

The NRC staff has reviewed the information supporting the proposed amendment and, by letter dated January 15, 2014 (NRC Accession No. ML14002A176), requested additional information. The response to EMCB-SD-RAIs 19, 21-26, 28-29, 31 and 33-39 is provided in this letter (EMCB-SD-RAIs 18, 20 and 27 have been deleted). The response to EMCB-SD-RAIs 16-17, 30, 32, 40 and 41 will be provided by February 28, 2014.

EMCB-SD-RAI-18

This RAI question has been deleted.

EMCB-SD-RAI-19

Reference 2 notes that one of the blind-flanged standpipes on the dead-ended leg of MSL C will be replaced with a Dresser SRV. Please provide the standpipe dimensions for the new Dresser SRV in comparison to the existing SRV standpipes.

RESPONSE

It should be noted that the additional valve location in each unit is not in the active steam flow region of the MSL and is therefore not susceptible to flow induced resonance during normal plant operation.

Dimensionally, the existing standpipe for the new Steam Safety Valve (SSV) is similar to the other existing SSV standpipes. The standpipes utilize dimensionally identical Bonny Forge Sweepolets connected to 6" schedule 160 pipe provided with identical flanges. The length of the pipes vary slightly (by less than an inch) to compensate for the MSL pipe slope. The Dresser SSVs are mounted on the flanges.

EMCB-SD-RAI-20

This RAI question has been deleted.

EMCB-SD-RAI-21

In Section 5.3 of Reference 3, it appears that some peaks other than those caused by the [[ ]]^{a,c} were filtered. Please provide information about any peaks, other than those due to [[ ]]^{a,c}, which have been filtered from the signals of the MSL strain gages.

RESPONSE

AC electrical motor drive, electrical supply, low frequency bias (0-2 Hz) and vane passing frequency peaks were filtered as discussed in Tables 5-3 through 5-6 of Section 5.3 of Reference 3. No additional peaks were filtered from the raw data.

EMCB-SD-RAI-22

Figures 3-2 to 3-5 of Reference 1 show [[ ]]^{a,c} Please provide the following:

a) The averaging of pressure spectra over large dryer areas (e.g., quadrants) does not provide an accurate description of the load distribution on the dryer. Explain whether these pressure spectra are averaged over the respective quadrants or they represent local spectra at selected points on the quadrants.

b) Explain the nature of the [[ ]]^{a,c} which appears in the estimated EPU load on the RSD for PBAPS Unit 3.

RESPONSE

a) Figures 3-2 through 3-5 of Reference 1 show PSDs corresponding to the locations of [[

]]^{a,c}

b) Figures 3-2 through 3-5 of Reference 1 will be revised as a result of the updated analyses being performed using ACE. [[ ]]^{a,c}

EMCB-SD-RAI 23

Explain how the acoustic pressure field in the [[ ]]^{a,c}, as presented in Reference 1, is mapped to the curved continuous structural surfaces of the PBAPS RSD structural finite element model mesh. Discuss any bias errors associated with this mapping and how are they accounted for in the dryer stress analyses.

RESPONSE

The acoustic field determined from the Helmholtz analysis is [[

]]^{a,c}

EMCB-SD-RAI-24

The dryer skirt is partially submerged in boiling or saturated water, which imparts random fluctuating pressure pulsations to the bottom of the structure. These loads were not accounted for in the Acoustic Circuit Model (ACM), or in the Quad Cities Unit 2 based bias errors and uncertainties. Please provide details on how you will account for the effects of these loads in: (a) the dryer stress analysis prior to EPU approval; and (b) the instrumented dryer test plan.

RESPONSE

Consistent with [[

]]^{a,c}

EMCB-SD-RAI-25

The NRC staff experience indicates that minor changes in vessel conditions (static pressure, core flow, and MSL inlet flow rates) can lead to modest (>10%) changes in dryer alternating stresses. Please provide the allowable range of operating conditions at EPU power for the remaining life of the PBAPS Units 2 and 3 (including the historical plant data at CLTP, the methodology for determining the worst-case alternating stresses for all dryer regions over these operating conditions, and the effects of these operating conditions on the remaining fatigue life).

RESPONSE

Plant procedures currently allow for operation of PBAPS Units 2 and 3 at pressures which range from 1015 psig to 1035 psig at rated conditions. This pressure range will not change due to EPU implementation.

Between 90-100% CLTP, EGC will vary reactor dome pressure by approximately 6 psi as part of the EPU power ascension testing. Observed variance in loads upon the dryer attributed to the pressure change will be extrapolated to the limiting pressure conditions. This additional loading will be incorporated into the acoustic/structural model benchmarking developed between 90-100% CLTP and used in determination of minimum stress ratios.

EMCB-SD-RAI-26

Tables 5-3 and 5-4 of Reference 3 show [[the PBAPS Unit 2 reactor recirculation pump drive

]]^{a,c} However, Table 5-5 of Reference 3 shows [[ ]]^{a,c} whereas Table 5-6 of Reference 3 shows [[ ]]^{a,c} Please provide the frequencies of the [[ ]]^{a,c} in both PBAPS Units. Also provide the motor and pump design specifications, along with any formulas explaining how the [[ ]]^{a,c} are computed based on the pump and motor design parameters.

RESPONSE

The PBAPS recirculation systems in each unit operate through the use of a pair of variable speed A/C motor driven pumps. The pumps utilize five vane impellers so that the VPF is five times the pump rotational frequency. The pumps are driven by 3-phase, 4-pole motors. The motors are driven by motor/generator sets which supply variable frequency power.

A wide range of pump speeds and VPFs are possible. At rated CLTP conditions (3514 MWt), the pump speed range is limited by the licensed core flow range of 83% to 110% of rated flow (rated flow is 102.5 Mlb/hr). At EPU conditions (3951 MWt), minimum core flow will be limited to 99% of rated with a maximum core flow of 110% of rated.

Three phase motor drive frequency is derived from the following formula assuming 1% drive slippage:

$$f_{drive} = rpm*poles/118.8$$

Pump motor rpm is derived empirically from curves fitted to plant data. Both PBAPS units operate similarly with respect to pump speeds for a given core flow. The table below presents the range of typical values for motor and pump speeds as they relate to reactor core recirculation flow.

	CLTP Low	CLTP High	EPU Low	EPU High
Percent Rated Core Flow	83	110	99	110
Motor Drive Frequency (Hz)*	43.4	56.2	51.5	56.2
Pump Motor RPM	1290	1668	1530	1668
Pump Frequency (Hz)	21.5	27.8	25.5	27.8
Pump VPF (Hz)	109	139	128	139

* Assumes 1 percent slippage per the motor design specification

The following table supplies the additional information requested as calculated from Tables 5-5 and 5-6 of Reference 3. Note that in Tables 5-5 and 5-6 only the filtered signals were listed. In the case of Table 5-5, VPF effects were not significant and as such were not considered for filtering. As can be seen in the table below, VPFs corresponding to Table 5-5 motor drive frequencies are 94.0 Hz and 101.3 Hz. In the case of Table 5-6, Motor Drive AC signal effects were not significant enough to adversely impact the strain gage signals and as such were not filtered. The Motor Drive AC frequencies corresponding to Table 5-6 VPFs are 47.8 Hz and 48.0 Hz.

It can also be noted that the two recirculation loops were operating at slightly different speeds, resulting in the two separate motor drive frequency and VPF tones.

	Table 5-5 1st Row	Table 5-5 2nd Row	Table 5-6 2nd Row	Table 5-6 3rd Row
Motor Drive Frequency (Hz)*	38.0	41.0	**47.8**	**48.0**
Pump Motor RPM	1128	1215	1419	1427
Pump Frequency (Hz)	18.8	20.3	23.7	23.8
Pump VPF (Hz)	**94.0**	**101.3**	118.3	118.9

* Assumes 1 percent slippage per the motor design specification

EMCB-SD-RAI-27

This RAI question has been deleted.

EMCB-SD-RAI-28

Attachment 9 of Reference 4 contains estimates of the PBAPS RSD alternating stresses induced by [[ ]]^{a,c} Please include these stress components in your proposed revision of Reference 4. Also, include the consideration of peak [[ ]]^{a,c} stresses in this forthcoming submission, describing on-dryer instrumentation locations, such that you ensure that a few of the on-dryer strain gages will measure the [[ ]]^{a,c} Provide the spectra of the motor bearing vibration measurements referred to in Reference 4 and discuss the impact on the dryer stresses of any [[ ]]^{a,c} frequency peaks which may be present in the data contained in Reference 4, Attachment 9.

RESPONSE

The updated high cycle fatigue analysis (WCAP-17609) will include [[

]]^{a,c}

EMCB-SD-RAI-29

Provide the bias errors and uncertainties for all on-dryer instrumentation, including the effects of cabling and data acquisition systems.

RESPONSE

Based upon discussions with Staff reviewers during the audit of December 16, 2013, [[

]]^{a,c}

EMCB-SD-RAI-31

Explain how end-to-end benchmarking will be performed using the on-dryer upper and lower strain gages on PBAPS Unit 2.

RESPONSE

The Peach Bottom Unit 2 replacement steam dryer will be instrumented with [[

]]^{a,c} Details of strain gages locations are provided in response to EMCB-SD-RAI-15, which will be provided by February 28, 2014.

EGC will perform [[

]]^{a,c}

EMCB-SD-RAI-33

Please provide details on how you will project dryer minimum alternating stress ratios at higher power levels during power ascension. Also, provide details of how you will address projections that reveal stresses that violate acceptable limits.

RESPONSE

For power ascension above CLTP, the Limit Curve method described in Enclosure B.4U2 of the original submittal (Ref. 7) will be utilized. Two levels of limit curves will be used as described below:

- [[

]]^{a,c}

The following situations may occur depending upon the magnitude of the pressure load:

Condition	Action
Pressure Load < Level 2	Increase power to the next level
Level 2 < Pressure Load < Level 1	[[
Pressure Load > Level 1	]]^{a,c}

A second method will also be utilized [[

]]^{a,c}

EMCB-SD-RAI-34

Provide comparisons of the MSL spectra in PBAPS Unit 2 with those from Quad Cities Unit 2 at comparable EPU power levels. This information should be provided for MSLs with resonances (not all MSLs).

RESPONSE

The following table compares the velocities from Quad Cities Unit 2 to PBAPS [[

		]]^{a,c}

The spectra of MSL data is provided below in Figures 34-1 and 34-2 for PBAPS Units 2 and 3 and Quad Cities Unit 2. The EPU conditions are presented for Quad Cities Unit 2 and predicted EPU conditions for the two PBAPS units.

Figures 34-1 and 34-2 present [[

]]^{a,c}

[[

]]^{a,c}

Figure 34-1 – Spectrum for MSL A Data at the Upper Strain Gage Location

[[

]]a,c

Figure 34-2 – Spectrum for MSL D Data at the Upper Strain Gage Location

EMCB-SD-RAI-35

The PBAPS RSDs [[ ]]a,c With respect to the fatigue assessment, please provide information showing whether the section properties of the fillet welds are as good as or better than the section properties of the plates being welded. If the fillet weld properties are not equal to or better than that of the plates, provide the following information:

a) Identify which fillet welds are one-sided and which are two-sided.

b) Provide sketches of the different types of fillet welds along with the dimensions.

c) Explain what steps will be taken to estimate the fatigue stress.

RESPONSE

The replacement steam dryers at Peach Bottom will utilize [[

]]^{a,c}

[[

]]^{a,c}

Figure RAI-35-1: Fillet Weld W 13 joining the Perforated Plate to the Vane Bank Top Plate.

[[

]]^{a,c}

Figure RAI-35-2: Fillet Weld W 14 joining the Perforated Plate to the Vane Bank Side Plate

[[

]]^{a,c}

Figure RAI-35-3: Fillet Weld W 16 joining the Perforated Plate to the Vane Bank Trough.

c) The stress resultant [[

]]^{a,c}

EMCB-SD-RAI-36

Since stress convergence errors depend upon the mesh density, the stress gradient, and the local geometry of the RSDs, the stress convergence errors will be different at various locations in the RSDs. According to Section 3 of Reference 6, the finite element model for the PBAPS RSDs [[ ]]^{a,c} Therefore, the stress convergence errors at different locations are likely to be different. Please provide the stress convergence errors for the following locations on the RSDs: (1) locations having high stress gradients; (2) locations having high stresses at EPU power levels; and (3) at the on-dryer strain gage and accelerometer locations. Additionally, please explain how the stress convergence errors will be accounted for in estimating the stresses in the RSDs at EPU power levels.

RESPONSE

Stress convergence errors are addressed [[

]]^{a,c}

EMCB-SD-RAI-37

Please explain whether the speed of the reactor recirculation pumps for PBAPS Units 2 and 3 would change when power is increased from CLTP to the EPU power level during power ascension. Please provide the speeds of the reactor recirculation pumps at CLTP and EPU for each of the PBAPS Units.

RESPONSE

Adjustment of reactor recirculation (RR) pump speed is a tool utilized by operations to finely vary reactor power throughout the operating cycle. During power ascension from CLTP to EPU, RR pump speed will be varied to adjust reactor power. However, control rod pattern changes during power ascension will determine at what power levels and to what degree RR pump speed will vary as power is increased. As shown in the table in the response to EMCB-SD-RAI-26, at 100% CLTP the pump speed ranges from 1290 rpm to 1668 rpm. At 100% EPU, with its smaller flow window, the pump speed range is from 1530 to 1668 rpm.

EMCB-SD-RAI-38

Please identify if any of the PBAPS RSD WCAP documents will be revised if you switch from using the Acoustic Circuit Model (ACM) 4.1 Version to the Acoustic Circuit Model Enhanced (ACE) 2.0 Version in the PBAPS RSD load evaluations.

RESPONSE

With the change in acoustic analysis methodology from ACM 4.1 to ACE and ACE+SPM, the following WCAPs will be revised:
[[

]]^{a,c}

All WCAPs will be provided by the end of February 2014.

EMCB-SD-RAI-39

Please provide the weights for the PBAPS original equipment manufacturer (OEM) steam dryer and the RSD. Also, address the impact of any increase in weight of the RSD compared to the OEM steam dryer on the reactor pressure vessel (RPV) lugs supporting the RSD and the RPV supports.

RESPONSE

The weight of the original steam dryer at PBAPS is approximately [[ ]]^{a,c} tons. The Replacement Steam Dryer will weigh approximately [[ ]]^{a,c} tons.

The increased loading from the RSD upon the RPV dryer support lugs has been evaluated. The dryer support lugs continue to meet American Society of Mechanical Engineers (ASME) standards.

EGC has evaluated the increased loading from the RSD upon the RPV support skirt and determined that the current evaluation continues to bound the case with a Replacement Steam Dryer.

REFERENCES

1) Attachment 17, Enclosure B.1 to Exelon letter to NRC dated September 28, 2012, Westinghouse Report WCAP-17590-P, Revision 0, "Peach Bottom Units 2 & 3 Replacement Steam Dryer Acoustic Load Definition," dated August 2012.

2) Attachment 17, Enclosure B.5 to Exelon letter to NRC dated September 28, 2012, Westinghouse Report WCAP-17611-P, Revision 1, "Peach Bottom Units 2 and 3 Replacement Steam Dryer Four-Line Subscale Acoustics Test Data Evaluation and Derivation of CLTP-to-EPU Scaling Spectra," dated August 2012.

3) Attachment 17, Enclosure B.6 to Exelon letter to NRC dated September 28, 2012, Westinghouse Report WCAP-17626-P, Revision 0, "Peach Bottom Units 2 & 3 MSL Strain Gage Data and Computation of Predicted EPU Signature," dated August 2012.

4) Attachment 9 to Exelon letter to NRC dated February 15, 2013, "Response to Request for Supplement Information, Issue 2, Steam Dryer Analysis."

5) Attachment 17, Enclosure B.7 to Exelon letter to NRC dated September 28, 2012, Westinghouse Report WCAP-17639-P, Revision 2, "Instrumentation Description for the Peach Bottom Unit 2 Replacement Steam Dryer," dated September 2012.

6) Attachment 17, Enclosure B.2 to Exelon letter dated to NRC dated September 28, 2012, Westinghouse Report WCAP-17609-P, Revision.1, "Peach Bottom Units 2 and 3 Replacement Steam Dryer Structural Evaluation for High-Cycle Acoustic Loads," dated September 2012.

7) Attachment 17, Enclosure B.4U2 to Exelon letter dated to NRC dated September 28, 2012, Westinghouse Report No. WCAP-17654-P (Revision 2), "Peach Bottom Unit 2 Replacement Steam Dryer Power Ascension Program Description for Extended Power Uprate." Dennis, R. 2012.

8) BWR Vessel and Internals Project Report BWRVIP-182-A, "Guidance for Demonstration of Steam Dryer Integrity for Power Uprate." Electric Power Research Institute, Palo Alto, CA: May 2010.