

ATTACHMENT 5

PEACH BOTTOM ATOMIC POWER STATION  
UNITS 2 AND 3

Docket Nos. 50-277  
50-278

License Nos. DPR-44  
DPR-56

Supplement to  
License Amendment Request (LAR) 01-01190  
"PBAPS Measurement Uncertainty Recapture Power Uprate"

**NON-PROPRIETARY**  
**Responses to NRC Requests for Additional Information**  
**(Reference letter from US NRC to J. L. Skolds, dated August 12, 2002)**

The following Requests for Additional Information are contained in the Letter from USNRC to J. L. Skolds, dated August 12, 2002.

1. Attachment 1, Section 4.2.1, LEFM [leading edge flow meter] Inoperability

The licensee stated, "The LEFM./+TM feedwater mass flow and temperature inputs will also be used to adjust or calibrate the feedwater flow nozzle-based signals. If the LEFM system, or a portion of the system becomes inoperable, control room operators are promptly alerted by control room computer indications. Feedwater flow input to the core thermal power calculation would then be provided by the existing flow nozzles, or a combination of flow nozzle(s) and LEFM flow data. Power level will be adjusted as required to reflect the accuracy of the equipment in service. Calculations have been performed to support the uncertainty of different combinations of LEFM and flow nozzle inputs to the core thermal power calculation. In addition, if the flow nozzles are calibrated to the last available data from the LEFM system, it will be acceptable to remain at 3514 MWt for up to 72 hours to enact LEFM system repairs. The administrative control described above will be added to the PBAPS Technical Requirements Manual."

Describe the actions the licensee will take if the LEFM is not restored in 72 hours.

**Exelon Response:**

***If the LEFM is not restored in 72 hours, then after 1 hour, reactor power will be reduced to less than or equal to 3458 MWTH.***

2. Attachment 2, Section 1.1, Overview

Reference is made to the boiling water reactor thermal power optimization (TPO) report, NEDC-32938P, (which is also being reviewed by the NRC staff) for evaluations of several sections in the PBAPS report. However, the TPO report covers power uprate to 1.5% only. Additional evaluations are required to support the PBAPS application. In some cases, reference to TPO with 1.5% power uprate may be still valid. In other cases, the reference to the TPO report may not be valid.

Please identify the areas where the TPO is not valid and provide the bases for the additional .12% power uprate,

**Exelon Response:**

***Every reference made to the TPO Licensing Topical Report (TLTR), NEDC-32938P, in the Peach Bottom TPO Safety Analysis Report (TSAR), NEDC-33064P, is valid.***

***The methodology for the evaluation of the Peach Bottom TPO addressed one of the following three approaches:***

[Redacted]

***The discussion in each section of the TSAR represents one or more of these three methodologies.***

***As an example, TSAR Section 4.1 states that the previous containment evaluations are based on 102% or greater of CLTP and therefore bound the Peach Bottom uprate of 101.7% of CLTP. In another case, TSAR Section 3.2.1 presents the evaluation for the fracture toughness of the reactor vessel based on plant specific evaluation performed at Peach Bottom TPO conditions of 101.7% of CLTP. As a third example, TSAR Section 3.8 states that the generic evaluation for the Main Steam Isolation Valves (MSIV) provide in the TLTR is applicable to Peach Bottom because the requirements for the MSIVs remain unchanged for the Peach Bottom TPO conditions at 101.7% of CLTP.***

3. Attachment 2, Table 1-3, Summary of Effect of TPO Uprate on Licensing Criteria

The effect of a 1.7% thermal power increase for the anticipated transient without a scram (ATWS) peak vessel pressure is stated as a "slight increase".

Please specify the actual value.

**Exelon Response:**

***For the limiting Pressure Regulator Failure Open (PRFO) event, the value of the slight peak vessel pressure increase is 4 psig.***

4. Attachment 2, Figure 1-1, Power/Flow Map for PBAPS at TPO Uprate Power

Please define the 113.2% rod line.

**Exelon Response:**

***Figure 1-1 of the TPO Licensing Topical Report (NEDC32938P) provides a typical TPO-based power uprate power flow map. Similarly for the Peach Bottom TPO Safety Analysis Report (NEDC-33064P), the 113.2% rod line shown on Figure 1-1 is the current MELLLA Upper Boundary.***

[Redacted]

5. Attachment 2, Section 2.1, Fuel Design and Operation

Please describe the TPO core, specifying the numbers and types of General Electric fuel. Please discuss the impact of any new fuel type introduction on the power uprate.

**Exelon Response:**

***The cycle 15 reload for Peach Bottom Unit 2 has a mixed core of 188 GE13 and 576 GE14 fuel assemblies. There is no new fuel type introduced in the cycle 15 reload. If a new fuel type were to be introduced sometime in the future, it would be thoroughly evaluated for the licensed operating power at the time of introduction. The mix of GE13 and GE 14 has no discernable impact on cycle 15 operation. The fuel operating limits for cycle 15 with power uprate are not significantly different than previous cycles.***

6. Attachment 2, Section 3.1, Nuclear System Pressure Relief/Overpressure Protection

Please identify the approved methodology used for the overpressure analysis, and the peak pressure reached for the closure of all main steam isolation valves.

**Exelon Response:**

***The approved methodology used in the current overpressure analysis of the Main Steam Isolation Valve Closure event is ODYN, consistent with Table E-1 of the TPO Licensing Topical Report, NEDC-32938P.***

***The peak vessel pressure for the closure of all main steam isolation valves event is 1,293 psig for Unit 2, and is 1,300 psig for Unit 3.***

***As stated in the Peach Bottom TPO Safety Analysis Report (TSAR), Section 9.1, the analysis of the overpressure events are currently performed at 102% of current licensed thermal power. Therefore, those analyses are applicable and bounding for the TPO uprate.***

7. Attachment 2, Section 3.2, Reactor Vessel

On page 3-2 it is stated that "Considering TPO conditions, the Unit 3 P-T curves become bellline limited at 22 EFPY [effective full-power years] and will require modification for operation beyond 22 EFPY."

Please provide the following information:

- a) a statement that the vessel fluence has been recalculated using an NRC staff-approved code.

- b) for Unit 3, please identify the new limiting element and provide the process and the arithmetic in the estimation of the 22 EFPY limit.
- c) in Tables 3-2a and 3-2b, the lower-intermediate to intermediate weld has different values for Cu, Ni and chemistry factors. Please provide the correct values that apply.
- d) in the Unit 3 Technical Specifications (TS), Figures 3.4.9-1, 3.4.9-2 and 3.4.9-3 are designated as valid for 32 EFPY of operation. Because the vessel is now limited to 22 EFPY, the figures must change accordingly. Please submit revised figures for the Unit 3 TS.

**Exelon Response:**

- a) The vessel fluence presented in the Peach Bottom TPO Safety Analysis Report (TSAR), NEDC-33064P, was recalculated using an NRC approved methodology. The Peach Bottom fluence calculation for TPO is based on GE's methodology in NEDC-32983P, General Electric Methodology for Reactor Pressure Vessel Fast Neutron Flux Evaluation. The NRC's approval of the methodology is documented in an NRC letter dated September 14, 2001.***

***The use of the new fluence methodology is an exception to the TLTR Section 5.5.1.5. The recalculation of the fluence used the following computer code:***

Task	Computer Code	Version or Revision	NRC Approved	Comments
Neutron Transport Calculation (Fluence)	TORT-DORT Two- and Three- Dimensional Discrete Ordinates Transport	2.8.14	Y	CCC-543, "TORT-DORT Two- and Three- Dimensional Discrete Ordinates Transport Version 2.8.14," Radiation Shielding Information Center, Oak Ridge National Laboratory And Safety Evaluation for NEDC-32983P, "General Electric Methodology for Reactor Pressure Vessel Fast Neutron Flux Evaluation", (TAC No. MA9891), NRC Transmittal MFN 01-050 from S. A. Richards to J. F. Klapproth (GE), September 14, 2001

- b) The currently licensed Unit 3 32 EFPY P-T curves are based upon an ART of 74°F with a corresponding Shift of 64°F, as determined from a 1/4T fluence value of 5.5e17 n/cm2. There is a difference of approximately 4°F between the non-beltline and beltline curves, where the non-beltline curve is bounding. Using the new fluence, the limiting ART increases to 86°F with a corresponding Shift of 76°F, as determined from a 1/4T fluence value of 9.3e17 n/cm2; this represents an increase of 12°F, which then becomes 8°F greater than the non-beltline curve.***

***This demonstrates that the beltline curve is limiting at 32 EFPY using the new fluence. At 22 EFPY, the ART is 79°F with a corresponding Shift of 69°F, based upon a 1/4T fluence value of 6.3e17 n/cm<sup>2</sup>; this represents the same value as the non-beltline bounding curve in the currently licensed P-T curves. Hence, the currently licensed P-T curves may be used for 22 EFPY of operation in order to bound the new fluence with TPO. These values are provided in the following table. Also, the limiting element has not changed and remains as the lower intermediate shell, heat no. C2773-2, which is the same for all three conditions of the following table.***

Operating Condition	EFPY	1/4T Fluence (n/cm <sup>2</sup> )	Shift (°F)	ART (°F)	Non-Beltline P-T Curve Basis (°F)
Current License Basis	32	5.5e17	64	74	79
TPO	32	9.3e17	76	86	79
TPO	22	6.3e17	69	79	79

***c) The incorrect table was inadvertently included in Table 3-2b (54 EFPY). The following are the corrected tables for both 32 and 54 EFPY.***

***32 EFPY ART Table for Peach Bottom Unit 3 TPO:***

Thickness in inches = 6 13	Plates	32 EFPY Peak I D fluence = 1.3E+18 n/cm <sup>2</sup> 32 EFPY Peak 1/4 T fluence = 9.3E+17 n/cm <sup>2</sup> 32 EFPY Peak 1/4 T fluence = 9.3E+17 n/cm <sup>2</sup>
Thickness in inches = 6 13	Welds	32 EFPY Peak I D fluence = 1.3E+18 n/cm <sup>2</sup> 32 EFPY Peak 1/4 T fluence = 9.3E+17 n/cm <sup>2</sup> 32 EFPY Peak 1/4 T fluence = 9.3E+17 n/cm <sup>2</sup>

COMPONENT	HEAT OR HEAT/LOT	%Cu	%Ni	CF	Initial RTndt °F	1/4 T Fluence n/cm <sup>2</sup>	32 EFPY Δ RTndt °F	σ <sub>1</sub>	σ <sub>Δ</sub>	Margin °F	32 EFPY Shift °F	32 EFPY ART °F
<b>PLATES</b>												
Lower Shell												
6-146-1	C4689-2	0.12	0.56	82	-10	5.9E+17	26	0	13	26	53	43
6-146-3	C4684-2	0.13	0.58	90	-20	5.9E+17	29	0	15	29	58	38
6-146-7	C4627-1	0.12	0.57	82	-20	5.9E+17	26	0	13	26	53	33
Lower-Intermediate Shell												
6-139-10	C2773-2	0.15	0.49	104	10	9.3E+17	42	0	17	34	76	86
6-139-11	C2775-1	0.13	0.46	87	10	9.3E+17	35	0	17	34	69	79
6-139-12	C3103-1	0.14	0.60	100	10	9.3E+17	40	0	17	34	74	84
Intermediate												
6-146-5	C4608-1	0.12	0.55	82	10	5.9E+17	26	0	13	26	53	63
6-146-4	C4689-1	0.12	0.56	82	10	5.9E+17	26	0	13	26	53	63
6-146-2	C4654-1	0.11	0.55	74	10	5.9E+17	24	0	12	24	47	57
<b>WELDS</b>												
<b>Vertical Welds</b>												
Lower Shell												
D1, D2, D3	37C065	0.182	0.181	94.5	-45	5.9E+17	30	16	15	45	75	30
Lower-Intermediate Shell												
E1, E2, E3	37C065	0.182	0.181	94.5	-45	9.3E+17	38	16	19	50	88	43
Intermediate												
F1, F2, F3	37C065	0.182	0.181	94.5	-45	5.9E+17	30	16	15	45	75	30
<b>Girth</b>												
Lower to Lower-Intermediate												
DE	3P4000 Linde 124 Lot 3932	0.020	0.934	27	-50	5.9E+17	9	0	4	9	17	-33
Lower-Intermediate to Intermediate												
EF	1P4217 Linde 124 Lot 3929	0.102	0.942	137	-50	5.9E+17	44	0	22	44	88	38

**54 EFPY ART Table for Peach Bottom Unit 3 TPO:**

Thickness in inches = 6 13

**Plates**

54 EFPY Peak I D fluence = 2.3E+18 n/cm<sup>2</sup>  
54 EFPY Peak 1/4 T fluence = 1.6E+18 n/cm<sup>2</sup>  
54 EFPY Peak 1/4 T fluence = 1.6E+18 n/cm<sup>2</sup>

Thickness in inches= 6 13

**Welds**

54 EFPY Peak I D fluence = 2.3E+18 n/cm<sup>2</sup>  
54 EFPY Peak 1/4 T fluence = 1.6E+18 n/cm<sup>2</sup>  
54 EFPY Peak 1/4 T fluence = 1.6E+18 n/cm<sup>2</sup>

COMPONENT	HEAT OR HEAT/LOT	%Cu	%Ni	CF	Initial RTndt °F	1/4 T Fluence n/cm <sup>2</sup>	54 EFPY Δ RTndt °F	σ <sub>1</sub>	σ <sub>2</sub>	Margin °F	54 EFPY Shift °F	54 EFPY ART °F
<b>PLATES</b>												
Lower Shell												
6-146 1	C4689-2	0 12	0 56	82	-10	1 0E+18	34	0	17	34	68	58
6-146 3	C4684-2	0 13	0 58	90	-20	1 0E+18	38	0	17	34	72	52
6-146 7	C4627-1	0 12	0 57	82	-20	1 0E+18	34	0	17	34	68	48
Lower-Intermediate Shell												
6-139-10	C2773-2	0 15	0 49	104	10	1 6E+18	53	0	17	34	87	97
6-139-11	C2775-1	0 13	0 46	87	10	1 6E+18	45	0	17	34	79	89
6-139-12	C3103-1	0 14	0 60	100	10	1 6E+18	51	0	17	34	85	95
Intermediate												
6-146 5	C4608-1	0 12	0 55	82	10	1 0E+18	34	0	17	34	68	78
6-146 4	C4689-1	0 12	0 56	82	10	1 0E+18	34	0	17	34	68	78
6-146 2	C4654-1	0 11	0 55	74	10	1 0E+18	31	0	15	31	61	71
<b>WELDS</b>												
<b>Vertical Welds</b>												
Lower Shell												
D1, D2, D3	37C065	0 182	0 181	94 5	-45	1 0E+18	40	16	20	51	91	46
Lower-Intermediate Shell												
E1, E2, E3	37C065	0 182	0 181	94 5	-45	1 6E+18	49	16	24	59	107	62
Intermediate												
F1, F2, F3	37C065	0 182	0 181	94 5	-45	1 0E+18	40	16	20	51	91	46
<b>Girth</b>												
Lower to Lower-Intermediate												
DE	3P4000 Linde 124 Lot 3932	0 020	0 934	27	-50	1 0E+18	11	0	6	11	23	-27
Lower-Intermediate to Intermediate												
EF	1P4217 Linde 124 Lot 3929	0 102	0 942	137	-50	1 0E+18	57	0	28	56	113	63

**d) Section 5.5.1.2 of the TPO Licensing Topical Report (TLTR), NEDC-32938P provides the generic evaluation for reactor vessel fracture toughness. It concludes that the existing Pressure-Temperature (P-T) curves are expected to have sufficient margin for a potential change in the adjusted reference temperature and that TPO is not expected to result in a change to the Pressure-Temperature curves.**

**The Peach Bottom P-T curves, for both Units 2&3, are currently non-beltline limited through 32 EFPY of operation. An evaluation demonstrated that with the TPO increase applied to the currently licensed P-T curves for both Units, there is no change to the P-T curves as a result of TPO. Hence, the Peach Bottom Units 2&3 P-T curves, as a result of TPO, are non-beltline limited through 32 EFPY of operation. However, the currently licensed Pressure-Temperature (P-T) curves for Peach Bottom Units 2&3 were developed using dosimetry results from each plant's surveillance capsule, prior to the implementation of Regulatory Guide 1.190.**

**The analysis for Thermal Power Optimization (TPO) presented in the Peach Bottom TSAR was performed for Units 2&3 and was based upon the new fluence methodology. Although TSAR Section 3.2.1 states that the calculated surface fluences are due to the TPO increase, the recalculated fluences presented in the**

***TSAR reflect changes due to both the TPO increase and the use of the new fluence methodology. Because the new fluence is used in the TPO evaluation, an increase in Shift occurs which causes the currently licensed Unit 3 P-T curves to become beltline limited beyond 22 EFPY of operation. The Unit 2 P-T curves remain non-beltline limited through 32 EFPY of operation.***

***Attachment 2 contains the marked-up and camera-ready Peach Bottom Unit 3 P-T curves, noting that they are acceptable through 22 EFPY of operation.***

8. Attachment 2, Section 3.5.1, Reactor Coolant Pressure Boundary Piping

The submittal contains statements that a minor increase in the erosion/corrosion FAC (flow accelerated corrosion) is expected, that FAC concerns are covered by the existing piping monitoring program, and that no changes to piping inspection scope and frequency are required to ensure margins for the changing process conditions.

Please provide the following information:

- a) the analysis for the most critical components that are expected to receive the higher increase.
- b) a justification that the program ensures that the power uprate has no adverse effect on high energy piping systems potentially susceptible to pipe wall thinning due to erosion/corrosion.

**Exelon Response:**

***A sensitivity study was performed on the steam cycle piping using the CHECWORKS FAC model. The study provided a comparison of the changes in wear rates from the pre-uprate operating condition to the post-uprate operating conditions.***

**The following modeled lines were evaluated:**

***Condensate  
Feedwater  
Feedwater Heater Drains  
Moisture Separator Drains  
Feedwater Minimum Flow Recirculation  
Main Steam Bypass Valve Discharge***

***In general, the increases in wear rates were less than 10%. When applied, the increases correspond to less than 0.001 inches/year. No significant increases in wear rates were identified except for the Moisture Separator Drain Lines as noted below.***



**Moisture Separator Drain Line evaluation:**

***The pre-uprate models for these lines indicate very low wear rates. The sensitivity study updated the model and refined the existing analysis. The post-uprate predicted wear rates increased between 0.001 inches/year and 0.008 inches/year. A review of the current inspection data shows that the refined model predictions, although somewhat higher than the pre-uprate predictions, are very close to the actual measured current wear rates. Therefore, based on the agreement of the current measured data and the post-uprate model predictions, there will be no significant actual change in wear rates in this line due to this power uprate.***

**The following lines were not modeled and were evaluated qualitatively:**

***Main Steam Lines- Low susceptibility due to high steam quality  
Extraction Steam- Low susceptibility due to FAC resistant material  
Reactor Water Cleanup- Low susceptibility due to FAC resistant material  
High Pressure Coolant Injection – Low wear due to short operating time  
Reactor Core Isolation Cooling – Low wear due to short operating time***

9. Attachment 2, Section 3.6, Reactor Recirculation System

Please provide the licensed maximum core flow for Peach Bottom in units of millions of pounds per hour.

**Exelon Response:**

***The licensed maximum core flow rate is 112.75 Mlb/hr, which is 110% of 102.5 Mlb/hr. Increased core flow (ICF) is described in Section 3.7.5.4 of the PB UFSAR.***

10. Attachment 2, Section 4.3, Emergency Core Cooling Performance

Please identify the loss-of-coolant accident analyses evaluations used. State if PBAPS is in compliance with Title 10 of the *Code of Federal Regulations* Section 50.46.

**Exelon Response:**

***As stated in Section 4.3 of the Peach Bottom TPO Safety Analysis Report, NEDC-33064P, the current 10CFR50, Appendix K LOCA analysis for Peach Bottom was conducted at greater than 102% of current licensed thermal power (CLTP), which bounds the TPO uprate of 1.7% of CLTP. Consequently, revision of the current ECCS-LOCA analysis was unnecessary for Peach Bottom TPO.***

***The current ECCS-LOCA results for Peach Bottom were generated using the standard four GE-NE computer models: LAMB, SCAT/TASC, SAFER and GESTR-LOCA. The current Peach Bottom ECCS-LOCA results comply with 10CFR50.46.***

***The ECCS-LOCA analysis results for the GE13 fuel types are presented in NEDC-32163P, Peach Bottom Atomic Power Station SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis, January 1993. The ECCS-LOCA analysis results for GE14 are presented in GENE-J11-03716-09-02P, Peach Bottom Atomic Power Station ECCS-LOCA Evaluation for GE14, June 2000. These analyses yielded a licensing basis peak cladding temperature (PCT) of 1645 degree F for GE13 and 1450 degree F for GE14, a peak local oxidation fraction of less than 1% for both fuel types, and a core-wide metal-water reaction of 0.1% for both fuel types.***

11. Attachment 2, Section 5.2.3, Leak Detection System

In describing the effect of an approximate 1 degree F increase in feedwater (FW) temperature on main steam tunnel temperature based leak detection, the licensee stated, "The --1 °F increase in FW temperature for the TPO uprate decreases leak detection trip avoidance margin."

Please provide the temperature setpoint for leak detection in the main steam tunnel, and the typical temperature in the main steam tunnel during the summer months.

**Exelon Response:**

***The temperature setpoint for the leak detection system in the main steam tunnel is 192 degree F. The normal tunnel temperature is 140 to 150 degree F.***

***As stated in the TPO Licensing Topical Report (TLTR), NEDC-32938P, TPO is not expected to significantly affect the margin to trip avoidance compared to current licensed power because the steamline temperature is unchanged and the increase in feedwater temperature is approximately 1 deg F.***

***[Redacted]***

***Consequently, GE generically considers the current setpoints would remain unchanged for TPO.***

***A plant-specific quantitative analysis was not performed for Peach Bottom. Rather, GE confirmed that the margin between the Main Steam Tunnel temperature and the Main Steam Tunnel leak detection system setpoint is sufficient to address TPO. Therefore, the current setpoint would remain unchanged for TPO since the approximately 40 deg F margin is sufficient to address the less than 1 deg F increase in tunnel temperature.***

12. Attachment 2, Section 6.1, AC Power

Please provide details about the grid stability analysis including assumptions and results and conclusions for the power uprated condition. Also, provide in detail (including the ratings) the effect of the power uprate on the following equipment:

- i. main generator
- ii. isophase bus
- iii. main power transformer
- iv. startup transformer
- v. unit auxiliary transformer

**Exelon Response:**

***Peach Bottom initiated the process encompassing the grid stability analysis with the PJM Interconnection, LLC on July 24<sup>th</sup>, 2001 (Queue G46). The first step in the process, the Feasibility Study, was completed on January 31, 2002. The results of the study show no impact on generator deliverability, tower line outages( MAAC Criteria IIC), short circuit, or current system reinforcements. New system reinforcements are not needed.***

***The study assumed a 70 MWe capacity injection (the actual for this power uprate is only estimated at 19 MWe /unit, 38 total ). The current generator MVA base is 1280 MVA at 0.906 power factor (1159 MWe). The post uprate analysis evaluated the generator capability at 1178 MWe and a 0.95 power factor. The present Peach Bottom MVAR rating of record at PJM is 450. The post uprate analysis confirmed there is no change to this MVAR rating. All other design inputs used in the grid stability analysis are those of record previously provided to PJM and reflect current PBAPS operating conditions and design basis.***

***The next phase of the process, the System Impact Study, is ongoing. If necessary, a Facility Study will be performed. PJM has indicated it is unlikely the small Peach Bottom capacity increase will require any system upgrades, and that a Facilities Study will most likely not be required. Final determination is dependent on the status of other planned system capacity increases in the "G" Queue.***

***An Interim Interconnect Service Agreement was submitted to PJM on 06/12/02. This agreement provides for the increased capacity to be placed onto the grid while the System Impact Study and Facility Study Agreement are completed, if required. It is projected the final Interconnection Service Agreement will be in place mid-2003.***

<b>Equipment</b>	<b>Design Rating</b>	<b>Current Load</b>	<b>Post-Power Uprate Load</b>
<b>Main Generator</b>	<b>1280MVA</b>	<b>1159MWe</b>	<b>1178MWe</b>
<b>Isophase Bus</b>	<b>35.3KA</b>	<b>35.1KA</b>	<b>35.1KA</b>
<b>Main Power Transformer</b>	<b>1206MVA</b>	<b>1130MWe</b>	<b>1149MWe</b>
<b>Startup Transformer 2SU</b>	<b>50.4MVA</b>	<b>&lt; 2MWe</b>	<b>&lt; 2MWe</b>
<b>Startup Transformer 3SU</b>	<b>50.4MVA</b>	<b>&lt; 2MWe</b>	<b>&lt; 2MWe</b>
<b>Startup Transformer 343SU</b>	<b>50MVA</b>	<b>&lt; 2MWe</b>	<b>&lt; 2MWe</b>
<b>Unit Auxiliary Transformer</b>	<b>45.4MVA</b>	<b>29MWe</b>	<b>29MWe</b>

*Please note that the TSAR table 6.1 contains a value of 1244MVA for the Main Power Transformer. This was the value of record with PJM Interconnection, Inc. The 1206MVA value above is based on new analysis from Pennsylvania Transformer Technology, Inc (PTTI) titled, "Transformer Overload Study," that was recently performed for PBAPS.*

*An assessment of the capability of the Unit 2 and 3 Main Generators to support an uprate of 1.7% was performed by GE. The report concludes that the main generators for both units can achieve the power uprate without hardware modification. The isophase bus was previously evaluated to carry 35.1KA which is less than the design rating for the bus. The post uprate current value does not exceed the previously evaluated loading. A review of the Main Transformers was performed by PTTI. The review indicates the transformers can be loaded to 1206MVA on a continuous basis with no impact on transformer expected life. A review of the maximum expected MVAR for the power system was also performed to ensure the Main Transformers could support the MVAR rating of the Main Generator without impact under both normal and abnormal power distribution line-ups. The Startup Transformers are not normally used to feed plant auxiliary loads thus they are not impacted. The Unit Auxiliary Transformers typically operate with approximately a 30% margin with the unit at full power. Since there is no significant additional loading on the plant auxiliary systems, the Unit Auxiliary Transformers are not impacted by the uprate.*

13. Attachment 2, Section 8.4.2, Activated Corrosion and Fission Products

The submittal contains a statement that although the activated corrosion product activities are expected to increase approximately proportionally to the power uprate, the sum of the total activated corrosion activity and the total fission product activity is expected to remain a fraction of the original design-basis activity in the reactor water.

Please state the design basis for radioactivity in the reactor water, the current levels of this radioactivity, and the expected increase.

**Exelon Response:**

***As stated in Section 8.4.2 of the TSAR (NEDC-33064P),  
[Redacted]  
, which is 1.7%.***

***The design basis for radioactivity in the reactor water is dose equivalent iodine (DEI). There is no Technical Specification (TS) limit for RCS corrosion product activity. The TS limit for DEI is 0.2 uCi/gm. The value for DEI is typically in the (low)E-05 to (mid)E-04 uCi/gm range. This is three to four orders of magnitude less than the limit. If a 1.7% increase in activity is expected, there would be virtually no impact due to this increase. The DEI limit would remain the same (0.2 uCi/gm).***

14. Attachment 2, Section 9.2, Design-Basis Accidents (DBAs)

The licensee stated that "Radiological consequences due to postulated DBA events, as documented in the UFSAR [updated final safety analysis report], have previously been evaluated and analyzed to show that NRC regulations are met for 2% above the CLTP [current licensed thermal power. Therefore, the radiological consequences associated with a postulated DBA from TPO uprate conditions are bounded by the previous analyses."

Please list the DBA events analyzed for the radiological consequences and reference appropriate PBAPS UFSAR sections where the postulated DBA events are evaluated with its reactor power level assumed for each event.

**Exelon Response:**

***The design-basis radiological accidents considered in the PBAPS UFSAR and in the Appendix K power uprate evaluation, are the following:***

- ***Loss of Coolant Accident (LOCA)***
- ***Main Steam Line Break Accident (MSLBA)***
- ***Control Rod Drop Accident (CRDA)***
- ***Fuel Handling Accident (FHA)***

- ***Instrument Line Break (ILBA)***

***These accidents were analyzed in UFSAR Section 5.2.3.5 for the ILBA and UFSAR Section 14.9 for the LOCA, MSLBA, CRDA, and FHA. These five DBAs were the same five accidents that were re-analyzed as part of the PBAPS 5% power uprate effort which used a power level basis of 3528MWt.***

DBA type	Reference	Rx Power Lvl
LOCA	UFSAR 14.9.2.1	3528 MWt
MSLBA	UFSAR 14.9.2.3	3528 MWt
CRDA	UFSAR 14.9.2.4	3528 MWt
FHA	UFSAR 14.9.2.2	3528 MWt
ILBA	UFSAR 5.2.3.5	3528 MWt