Station Support Department

10 CFR 50.90

PECO ENERGY

PECO Energy Company
Nuclear Group Headquarters
965 Chesterbrook Boulevard
Wayne, PA 19087-5691

September 30, 1994

Docket Nos. 50-277
50-278
License Nos. DPR-44
DPR-56

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Peach Bottom Atomic Power Station, Units 2 and 3
Response to Request for Additional Information
Regarding Power Rerate Program (RAI-9)

Dear Sir:

Attached is our response to your request for additional information (RAI-9) dated September 29, 1994 regarding our planned implementation of the Power Rerate Program at Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3. The Power Rerate Program was the subject of Technical Specifications Change Request (TSCR) No. 93-12 which was forwarded to you by letter dated June 23, 1993.

If you have any questions, please contact us.

Very truly yours,

G. A. Hunger, Jr.

G. A. Hunger, Jr.
Director - Licensing

Attachment

cc: T. T. Martin, Administrator, Region I, USNRC
W. L. Schmidt, USNRC Senior Resident Inspector, PBAPS
R. R. Janati, Commonwealth of Pennsylvania

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PDR ADOCK 05000277
P PDR

COMMONWEALTH OF PENNSYLVANIA :

: ss.

COUNTY OF CHESTER :

W. H. Smith, III, being first duly sworn, deposes and says:

That he is Vice President of PECO Energy Company; the Applicant herein; that he has read the enclosed response to the request for additional information concerning Technical Specifications Change Request (Number 93-12) for Peach Bottom Facility Operating Licenses DPR-44 and DPR-56, and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

Vice President

Subscribed and sworn to
before me this 30th day
of September 1994.

Notary Public

Notarial Seal
Erica A. Santon, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires July 10, 1995

Docket Nos. 50-277
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REQUEST FOR ADDITIONAL INFORMATION (RAI-9)
PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3

1. Is additional water to be withdrawn from the Conowingo Pond, Susquehanna River, or other water sources, such as ground water, in order to support the power uprate? If so, what are the effects of additional water withdrawal?

   Response: No. The flow rates of the circulating water and service water systems are not changed due to power rerate, as discussed in Section 6.4.2 of the Safety Analysis Report. PBAPS has once-through circulating water and service water systems. The circulating water and service water are directed through mechanical cooling towers (five are provided) on an as-needed basis prior to the water being released to the discharge canal and into the river. Other plant water requirements, such as, demineralized make-up water and domestic water are also unaffected.

2. If Peach Bottom has an environmental protection plan, are any changes needed to it?

   Response: The only change required to the Environmental Technical Specifications and Bases is to revise the definition of "rated thermal power" from 3293 MW_t to 3458 MW_t, and is included in the license amendment request for power rerate.

3. What are the reasons for needing a new NPDES permit? What are the effects of the power uprate on the NPDES permit? What is the status of the permit? If the permit is not available in time to support startup, what contingency plans does the licensee have?

   Response: As stated in Section III (page 21) of the license amendment request, the NPDES permit includes a table which indicates how many functioning cooling towers are required at various power levels and other relevant variables. This permit must be revised to reflect the higher power levels that will be achieved due to rerated power operation.

   The revision to the NPDES permit cooling tower operation table has been technically reviewed and approved by the Commonwealth of Pennsylvania, by the attached letter.

4. What are the effects of any increased noise levels attributed to the power uprate, including the noise from the cooling towers?

   Response: There are no new or revised noise contributors due to operation at rerate power level. Major plant equipment is housed within structures located on the plant site and are not major contributors to surrounding noise levels. Even so, most equipment such as the main turbines and generators will operate at the same speed as before. Equipment not housed in buildings, such as the cooling towers, will operate at the same speed and noise level as at the original plant conditions.

   The main station transformer is the only exception, and will operate at an increased kva level; however, the overall noise level increase due to this is not significant.

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5. Will there be an increase in the amount of fuel used for the power uprate? If so, what are the potential environmental effects (e.g., waste volume, curie content, radiation exposure)? The Final Environmental Statement (FES) states that the licensee estimates that 60,000 kg of ^{235}U will be consumed during operation of the plant. Is this estimate still valid?

Response It is expected that the increased energy requirements associated with power rerate will be accommodated by an increase in the reload fuel enrichment. Thus, the number of fuel assemblies requiring ultimate disposal should not be significantly impacted by power rerate. Furthermore, the improvements in reload fuel nuclear efficiency since the FES was issued should offset the increased U-235 requirements associated with power rerate and result in approximately the same overall U-235 consumption.

Due to the higher steady state operating power associated with power rerate, the curie content of the reactor fuel will increase; however, the change in environmental impact of radioactive material releases due to operation at rerate power levels has been reviewed, and is not significant. These releases will remain well within the regulatory limits. More detailed discussions on changes in radiation levels are discussed in Sections 8.5 (Radiation Levels) and 9.2 (Design Basis Accidents) of the Safety Analysis Report.

6. If there are any, what are the changes and the effects from the changes to the river water (Susquehanna River or Conowingo Pond) discharge flow rate, velocity, temperature and thermal plume, or chemical composition of the discharge? What are the effects to the various aquatic plant and fish species (e.g., Will there be an increase in entrainment of planktonic organisms? Will there be an increase in impingement of fish?)

Response The discharge flow from the plant cooling towers to the discharge canal, and from the discharge canal to the river is not changed by operation at power rerate conditions. The discharge velocity is likewise, unchanged. Operating at power rerate will result in slightly higher heat loads being rejected by the cooling towers. The resulting contaminant concentration in the towers will increase because of evaporation; however, concentration changes in the cooling tower are not significant, so no significant change to the discharge composition will result.

The thermal plume characteristics are not expected to change as a result of power rerate since there are no changes in the circulating water and service water flow rates. The discharge temperature to the cooling towers may increase by no more than 2°F due to operation at power rerate conditions. The cooling towers have sufficient capacity to remove this increased heat load, and return the water to the Conowingo Pond within FES accepted limits.

There will be no change in the intake canal velocity, and only insignificant changes in the temperature and contaminant concentrations, thus there will be no effect on aquatic plant and fish species, i.e., there will be no change in entrainment of planktonic organisms or impingement of fish.

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PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3

7. Is the temperature at the point of discharge to the Conowingo Pond expected to rise as a result of the power uprate? The FES states that the heated effluent will not exceed 98 degrees F, is it still correct?

Response The combined circulating water and service water flow to the cooling towers will be increased by no more than 2°F due to operation at power rerate conditions. The number of cooling towers in operation is governed by the NPDES permit based on plant power level, number of circulating pumps running, and intake water temperature. The cooling towers have been evaluated and have adequate capacity so that the discharge water will not exceed these environmental limits.

8. Will there be an increase in the amount or activity level of gaseous, liquid, and solid radwaste produced as a result of the power uprate? If so, what are the environmental effects?

Response The amount of liquid radwaste generated increases very slightly due to operation at rerate power level, as discussed in Section 8.1 (Liquid Waste Management) of the Safety Analysis Report. The change in liquid radwaste activity levels is also small, as discussed in Section 8.4 (Radiation Sources in the Coolant) of the Safety Analysis Report.

Similarly, gaseous radwaste activity levels will increase very slightly due to operation at rerate power level; however, offsite doses for both liquid and gaseous radwaste will be a small fraction of 10 CFR 50 Appendix I design objectives. Solid radwaste activities will also increase very slightly due to operation at rerate power levels.

There are no significant environmental effects associated with the very slight increase in the amount and activity levels of gaseous, liquid, and solid radwaste produced due to operating at rerate power levels.

9. What are the effects on the terrestrial environment (vegetation and soils) due to the additional emissions from the cooling towers? What is the expected increase in the amount of cooling drift fog due to the power uprate and what are the environmental effects?

Response The circulating water and service water flow through the cooling towers is not changed due to power rerate. The cooling towers' duty cycle will increase due to power rerate, resulting in slightly increased evaporation, but no increase in the drift emissions per tower. The number of cooling towers and the total time of cooling tower operation may increase slightly; however, due to the conservatism in the original cooling tower design, power rerate should have no impact on the deposition of solids. In addition, most of the drift is carried over Conowingo Pond due to prevailing wind conditions (Final Environmental Statement Section III.C.2.d). The amount of cooling drift fog will also increase very slightly due to the increased duty cycle of the cooling towers. The slight increase in drift fog and the slight increase in cooling tower operation time will have no significant environmental effects.

REQUEST FOR ADDITIONAL INFORMATION (RAI-9)
PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3

10. Are there any increases in the makeup requirements for various plant systems (condensate system, feedwater system, component cooling water, recirculation system, etc.) and if so what are the environmental effects?

Response: Makeup water requirements do not change due to operation at rerate power levels for any of the systems listed.

The only potential change is due to increased reactor operating pressure, which could slightly increase leakage through valve packing, etc. This higher leakage increases the liquid radwaste processing load slightly, which is then processed for recycle to the condensate storage system for reuse.

11. What is the basis for the need for the additional power?

Response: The additional power will be added at modest capital expenditure; thus, the cost of generating this additional power will be low and will reduce the unit cost of generation, i.e., cents per kilowatt hour. This lower unit cost of generation will provide economic benefit to the region, will cause less use of fossil fuel, and may delay the need for additional generating capacity in the future.

12. Is there an increase in the fuel burnup? If so, what are the effects in relation to Table S-3 and S-4?

Response: Power Rerate is expected to result in an increase in fuel burnup. However, the fuel burnup will remain within the licensed burnup limits of the fuel designs in operation. Furthermore, an assessment was performed by the NRC (Environmental Effects of Transportation Resulting From Extended Fuel Enrichment and Irradiation) which concluded that the environmental impacts summarized in Table S-4 of 10 CFR 51.52 for a burnup level of 33 GWD/MT are conservative and bound the corresponding impacts for burnup levels up to 60 GWD/MT and uranium enrichments up to 5 percent by weight. Fuel enrichment and burnup at PBAPS will continue to be below these limits. The impact of Power Rerate relative to Table S-3 is discussed in the responses to questions 1, 6 and 8.

PENNSYLVANIA DER

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
SOUTHCENTRAL REGION - FIELD OPERATIONS
Water Management Program
One Ararat Boulevard
Harrisburg, Pennsylvania 17110
(717) 657-4590

Mr. Robert M. Matty, Jr., Engineer
PECO Energy Company
Environmental Affairs
2301 Market Street
Philadelphia, PA 19101

Re: Industrial Waste
Peach Bottom Atomic Station
Peach Bottom Township
York County

Dear Mr. Matty:

After review of our central and regional office biological staff and the Pennsylvania Fish and Boat Commission, a recommendation has been made to extend the 316(a) thermal variance for the Peach Bottom Atomic Power Station. The review of this variance involved investigating the effect that an increase in the generating plant's rated power levels will have on the relative fish abundance, distribution and species composition in Conowingo Pond. It was concluded that no change will occur as long as the station is operated according to the revised matrix that is attached. The NPDES permit will be renewed in the near future to include the revised matrix. However, considering the cost to the public of any delay of the project, we see no reason why the power rerating project can not proceed under the conditions of the revised matrix. This matrix assures that the discharge temperatures approved in the original 316(a) variance are maintained. These discharge temperatures levels were established to conservatively protect the most sensitive species in the Conowingo Pond.

If there are any questions in this regard, please contact Paul Yarnell of our Permits Section.

Sincerely,

Leon M. Oberdick
Program Manager

Recycled Paper

TABLE 1 - NUMBER OF COOLING TOWERS REQUIRED BASED ON THE NUMBER OF CIRCULATING WATER PUMPS OPERATING AND INLET WATER TEMPERATURE (7-DAY MOVING AVERAGE)

COMBINED 2 UNIT REACTOR POWER LEVEL

REQUIRED NUMBER OF TOWERS	650 - 1339 MWTH PUMPS 2	3	4	1340 - 1989 MWTH PUMPS 2	3	4	1990 - 2649 MWTH PUMPS 2	3	4	2650 - 2979 MWTH PUMPS 2	3	4	2980 - 3309 MWTH PUMPS 2	3	4	5	6
0	32-80	32-82	32-85	32-69	32-77	32-83	32-51	32-68	32-80	32-46	32-59	32-78	32-45	32-53	32-76	32-78	32-80
1	80+	82+	85+	69-81	77-83	83-86	51-72	68-78	80-83	46-60	59-75	78-81	45-49	53-68	76-80	78-81	80-82
2	- -	- -	- -	81+	83+	86+	72+	78+	83+	60+	75-85	81-85	49-81	68-81	80-84	81-84	82-85
3	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	85+	85+	81+	81+	84+	84+	85+
4	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
5	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

CORRECTED VALUES

RERATED 1 UNIT FULL POWER

REQUIRED NUMBER OF TOWERS	3310 - 3639 MWTH PUMPS 2	3	4	5	6	3640 - 3969 MWTH PUMPS 4	5	6	3970 - 4299 MWTH PUMPS 4	5	6	4300 - 4629 MWTH PUMPS 4	5	6	4630 - 4959 MWTH PUMPS 4	5	6
0	- -	32-62	32-73	32-78	32-79	32-69	32-75	32-77	32-65	32-72	32-76	- -	32-69	32-73	- -	32-65	32-71
1	32-47	52-64	73-78	78-80	79-81	69-76	75-79	77-80	65-73	72-77	76-79	32-69	69-74	73-77	32-64	65-72	71-76
2	47-80	64-80	78-82	80-83	81-84	76-81	79-82	80-83	73-79	77-81	79-82	69-76	74-79	77-81	64-75	72-78	76-79
3	80+	80+	82+	83+	84+	81+	82+	83-87	79-85	81-85	82-85	76-84	79-83	81-84	75-82	78-83	79-83
4	- -	- -	- -	- -	- -	- -	- -	87+	85+	85+	85+	84+	83+	84+	82+	83+	83+
5	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

RERATED 2 UNIT FULL POWER

REQUIRED NUMBER OF TOWERS	4960 - 5289 MWTH PUMPS 4	5	6	5290 - 5609 MWTH PUMPS 4	5	6	5610 - 5939 MWTH PUMPS 4	5	6	5940 - 6269 MWTH PUMPS 4	5	6	6270 - 6599 MWTH PUMPS 4	5	6	6600 - 6916 MWTH PUMPS 4	5	6
0	- -	32-60	32-68	- -	- -	32-65	- -	- -	32-61	- -	- -	32-56	- -	- -	32-53	- -	- -	32-51
1	32-56	60-68	68-74	32-53	32-64	65-71	32-49	32-59	61-68	32-47	32-54	56-64	32-46	32-51	53-59	32-46	32-49	51-55
2	56-72	68-76	74-78	53-68	64-73	71-76	49-60	59-71	68-75	47-53	54-66	64-72	46-49	51-60	59-69	45-47	49-52	55-64
3	72-81	76-82	78-82	68-80	73-80	76-81	60-78	71-79	75-80	53-75	66-77	72-78	49-71	60-74	69-77	47-53	52-72	64-73
4	81+	82+	82+	80+	80+	81+	78+	79+	80+	75+	77+	78+	71+	74+	77+	53+	72+	73+
5	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

CORRECTED VALUE

** TOTAL PAGE.002 **