



PECO NUCLEAR

A Unit of PECO Energy

10 CFR 50.90

PECO Energy Company
200 Exelon Way
Kennett Square, PA 19348

August 9, 2000

Docket No. 50-277

License No. DPR-44

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

Subject: Peach Bottom Atomic Power Station, Unit 2
Clarifications Regarding License Change Application ECR 00-00759

Dear Sir/Madam:

In our letter dated June 14, 2000, PECO Energy Company (PECO Energy) submitted License Change Application ECR 00-00759, in accordance with 10 CFR 50.90, requesting a change to the Peach Bottom Atomic Power Station (PBAPS), Unit 2 Facility Operating License. This proposed change will revise Technical Specifications (TS) TS 2.1.1.2 ("Reactor Core SLs") and 5.6.5.b.2 ("Core Operating Limits Report").

As a result of conference call on Monday, August 7, 2000, additional clarifications are being made to this submittal. These clarifications are contained in Attachment 1 (letter from J. A. Baumgartner (Global Nuclear Fuel) to K. W. Hunt (PECO Energy Company), "Peach Bottom Unit 2 Cycle 14 SLMCPR Clarifications," dated August 9, 2000). Additionally, the revised Technical Specification pages 2.0-1 and 5.0-21 are being resubmitted in Attachment 2 to clearly identify the revision bars.

If you have any questions, please do not hesitate to contact us.

Very truly yours,

James A. Hutton
Director - Licensing

Enclosures: Affidavit, Attachment 1, Attachment 2

cc: H. J. Miller, Administrator, Region I, USNRC
A. C. McMurtry, USNRC Senior Resident Inspector, PBAPS
R. R. Janati, Commonwealth of Pennsylvania

A001

COMMONWEALTH OF PENNSYLVANIA:

: ss.

COUNTY OF CHESTER :

J. W. Langenbach, being first duly sworn, deposes and says:

That he is Vice President of PECO Energy Company; the Applicant herein; that he has read the foregoing letter concerning additional clarifications regarding License Change Application ECR 00-00759, for Peach Bottom Facility Operating License DPR-44, 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 *9th* day
of *August* 2000.


Notary Public

Notarial Seal
Carol A. Walton, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires May 28, 2002
Member, Pennsylvania Association of Notaries



ATTACHMENT 1

PEACH BOTTOM ATOMIC POWER STATION
UNIT 2

Docket No. 50-277

License No. DPR-44

LICENSE CHANGE APPLICATION
ECR 00-00759

Letter from J. A. Baumgartner (Global Nuclear Fuel) to K. W. Hunt (PECO Energy Company),
"Peach Bottom Unit 2 Cycle 14 SLMCPR Clarifications," dated August 9, 2000



Global Nuclear Fuel

John A. Baumgartner
Fuel Project Manager

A Joint Venture of GE, Toshiba, & Hitachi
Global Nuclear Fuel – Americas, LLC
Castle Hayne Road, Wilmington, NC 28401
(910) 675-5821, Fax (910) 675-5684
John.Baumgartner@gnf.com

August 9, 2000
JAB:P00-063PB

cc: A. Giancatarino
G. F. Ruppert
T. Loomis
C. L. Heck
G. A. Watford
P. J. Vescovi

Mr. K. W. Hunt
Fuel & Services Division
PECO NUCLEAR
200 Exelon Way
Kennett Square, PA 19348

SUBJECT: Peach Bottom Unit 2 Cycle 14 SLMCPR Clarifications

REFERENCE: 1. "Peach Bottom 2 Cycle 14 Safety Limit MCPR", May 22, 2000.

Dear Ken:

The following clarifications are supported by a separate transmittal of GE Class III proprietary reports from GNF-A. These reports include:

Reference Number	Rev.	Issue Date	Title
NEDC-32601P-A	none	Aug. 1999	Methodology and Uncertainties for Safety Limit MCPR Evaluations
NEDC-32694P-A	none	Aug. 1999	Power Distribution Uncertainties for Safety Limit MCPR Evaluations
NEDC-32851P	1	Sept. 1999	GEXL14 Correlation for GE14 Fuel

They are being transmitted by letter FLN-2000-012 from G. A. Watford (GNF-A) to NRC Document Control Desk dated August 8, 2000 together with an affidavit requesting that the proprietary information be withheld from public disclosure.

1. Additional clarification is provided regarding applicability of the approved topical reports NEDC-32505P-A, NEDC-32601P-A and NEDC-32694P-A to GE14 fuel.

The topical report NEDC-32505P-A, Revision 1, "R-Factor Calculation Method for GE11, GE12 and GE13 Fuel" does not specifically refer to GE14 fuel. Nevertheless, this document is applicable to GE14 fuel since the R-factor methodology depends only on the lattice designs. The GE12 and GE14 10x10 lattice geometries are identical. Thus the pin power comparisons in Table 3.1 of NEDC-32601P-A (August 1999) for GE12 are directly applicable to GE14. The uncertainty calculation

for the R-factors for a GE 10x10 lattice is provided in Appendix C of NEDC-32601P-A (August 1999). The information in the appendix was previously provided to the NRC and is cited as Reference 8 of the SER and Reference 18 of the Technical Evaluation Report transmitted by letter MFN-003-99 from Frank Akstulewicz (NRC) to Glen A. Watford (GE) dated March 11, 1999. A copy of NEDC-32601P-A (August 1999) and NEDC-32601P-A (August 1999) were provided by letter FLN-2000-012 from G. A. Watford (GNF-A) to NRC Document Control Desk dated August 8, 2000.

The NRC technical position stated as item 1 in Section 4.0 of the Technical Evaluation Report stipulates that "the 3D-MONICORE bundle power calculational uncertainty should be verified when applied to fuel and core designs not included in the benchmark comparisons of Tables 3.1 and 3.2 of NEDC-32694P". Although this requirement pertains only to the application of the reduced power distribution uncertainties and methodology given in NEDC-32694P, comparisons have been performed verifying that the bundle power calculational uncertainties for core designs using GE 10x10 fuel are not statistically different from the values reported in Tables 3.1 and 3.2 of NEDC-32694P. These results are documented in the GNF-A Design Record File (DRF) J11-03724 titled "Core Power Uncertainties for 10x10 Fuel".

2. Additional clarification is provided regarding documentation of the GEXL14 correlation and databases. Justification that the correlation is accurate enough at the low R-factor and the low subcooling is also provided.

An overview of the evaluations performed for GE14 fuel was provided previously in NEDC-32868P, Revision 0, December 1998 titled "GE14 Compliance with Amendment 22 of NEDE-24011-P-A (GESTAR II)". This document was transmitted by G. A. Watford (GE) letter MFN-045-98 to the attention of M. J. Davis at the NRC Document Control Desk dated December 11, 1998. Section 2.8.3 of this document describes the GEXL14 correlation.

Additional supporting details have been provided by separate transmittal of "GEXL14 Correlation for GE14 Fuel", NEDC-32851P, Revision 1, September 1999. This later revision supersedes Revision 0 originally issued in June 1998.

Table 4-8 in NEDC-32851P, Revision 1 shows that the trend of the GEXL14 correlation as a function of subcooling is consistent with the trend predicted from the theoretical model. The fact that the observed linear trend with subcooling is typical is the justification for extrapolating to 0 subcooling.

Even though it is difficult to predict and therefore detect the rod location of the boiling transition in a bundle with low R-factor because many rods show the same vulnerability to boiling transition, the critical power value itself is well-predicted. Discernible biases from rod-to-rod within the bundle are explicitly accounted for in the development of the additive constants. These are the reasons why the GEXL14 correlation (and the other GEXL correlations) are accurate for use in predicting the CPR response for a bundle of rods even for low R-factors.

The GEXL14 correlation like previous GEXL correlations is derived as a best fit to the ATLAS critical power data. The GEXL correlation is not intended to be conservative. The GEXL correlation is derived

following the process described in GESTAR II (NEDE-24011-P-A-14) Section 1.1.7.C.iv "*Correlation fit to data shall be best fit*". The bias and uncertainty in the correlation is determined as specified in GESTAR Section 1.1.7. Both the bias and the uncertainty are explicit inputs to the approved SLMCPR methodology. Since all statistically discernible trends in the data including the impacts of low R-factor and low subcooling are reflected in developing the overall bias and uncertainty, inaccuracies associated with the GEXL correlation are accounted for in the SLMCPR calculation.

3. Clarification is being provided for several items presented in the Reference 1 document.

The number of bundles for each fuel type in the cycle 14 core and the cycle for which they were introduced into the core is provided in Table 1 below.

Bundle Name	Number Bundles in Cycle 14 Core	Cycle when Introduced
GE14-P10DNAB396-14GZ-100T-150-T-2408	72	14
GE14-P10DNAB397-15GZ-100T-150-T-2407	28	14
GE14-P10DNAB396-14GZ-100T-150-T-2408	48	14
GE14-P10DNAB397-15GZ-100T-150-T-2407	48	14
GE14-P10DNAB396-14GZ-100T-150-T-2408	16	14
GE13-P9DTB397-13GZ-100T-146-T	68	12
GE13-P9DTB392-15GZ-100T-146-T	112	12
GE13-P9DTB409-13GZ-100T-146-T	228	13
GE13-P9DTB406-12GZ-100T-146-T	64	13
GE14-P10DNAB397-15GZ-100T-150-T-2407	80	14

The revised non-power distribution uncertainties that were used to calculate the SLMCPR are those documented in column 3 of Table 2.1 in NEDC-32601P-A. The reference made to "Table 4.1" in the last sentence at the bottom of page 2 of 8 in "*Additional Information Regarding the Cycle Specific SLMCPR for Peach Bottom Unit 2 Cycle 14*" should have been a reference to "Table 2.1".

The statement that the GETAB methodology and uncertainties produces SLMCPR values that are higher (more conservative) than those produced using the reduced uncertainties defined in NEDC-32694P-A is supported by the comparison of the values in the last two columns of Table 4.3 of NEDC-32694P-A. Note that the more conservative GETAB methodology and power distribution uncertainties have been used to calculate the SLMCPR for Peach Bottom Unit 2 Cycle 14.

Very truly yours,



J. A. Baumgartner
 Fuel Project Manager
 PECO Nuclear

ATTACHMENT 2

PEACH BOTTOM ATOMIC POWER STATION
UNIT 2

Docket No. 50-277

License No. DPR-44

TECHNICAL SPECIFICATIONS CHANGES

Attached Pages

Unit 2

TS Page 2.0-1
TS Page 5.0-21

2.0 SAFETY LIMITS (SLs)

2.1 SLs

2.1.1 Reactor Core SLs

2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow:

THERMAL POWER shall be \leq 25% RTP.

2.1.1.2 With the reactor steam dome pressure \geq 785 psig and core flow \geq 10% rated core flow:

MCPR shall be \geq 1.09 for two recirculation loop operation or \geq 1.10 for single recirculation loop operation.

2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.

2.1.2 Reactor Coolant System Pressure SL

Reactor steam dome pressure shall be \leq 1325 psig.

2.2 SL Violations

With any SL violation, the following actions shall be completed:

2.2.1 Within 1 hour, notify the NRC Operations Center, in accordance with 10 CFR 50.72.

2.2.2 Within 2 hours:

2.2.2.1 Restore compliance with all SLs; and

2.2.2.2 Insert all insertable control rods.

2.2.3 Within 24 hours, notify the Plant Manager and the Vice President - Peach Bottom Atomic Power Station.

(continued)

5.6 Reporting Requirements (continued)

5.6.5 CORE OPERATING LIMITS REPORT (COLR)

- a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:
1. The Average Planar Linear Heat Generation Rate for Specification 3.2.1;
 2. The Minimum Critical Power Ratio for Specifications 3.2.2 and 3.3.2.1;
 3. The Linear Heat Generation Rate for Specification 3.2.3; and
 4. The Control Rod Block Instrumentation for Specification 3.3.2.1.
- b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:
1. NEDE-24011-P-A, "General Electric Standard Application for Reactor Fuel" (latest approved version as specified in the COLR);
 2. NEDC-32162P, "Maximum Extended Load Line Limit and ARTS Improvement Program Analyses for Peach Bottom Atomic Power Station Units 2 and 3," Revision 2, March, 1995;
 3. PECo-FMS-0001-A, "Steady-State Thermal Hydraulic Analysis of Peach Bottom Units 2 and 3 using the FIBWR Computer Code";
 4. PECo-FMS-0002-A, "Method for Calculating Transient Critical Power Ratios for Boiling Water Reactors (RETRAN-TCPPECo)";
 5. PECo-FMS-0003-A, "Steady-State Fuel Performance Methods Report";
 6. PECo-FMS-0004-A, "Methods for Performing BWR Systems Transient Analysis";

(continued)
