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- Enclosures:
1. Amendment No. 38
 2. Safety Evaluation
 3. Federal Register Notice

George Lear, Chief
 Operating Reactors Branch #3
 Division of Operating Reactors

Tom Wall

Original signed by

Sincerely,

Copies of the Safety Evaluation and the Federal Register Notice are also enclosed.
 The amendment reduces the Rod Block Monitor set point and reduces the full power/flow minimum critical power ratio.

The Commission has issued the enclosed Amendment No. 38 to Facility Operating License No. DPR-44 for the Peach Bottom Atomic Power Station, Unit No. 2. The amendment consists of changes to the Technical Specifications and are in response to your request dated November 30, 1977.

Gentlemen:
 Philadelphia Electric Company
 ATTN: Mr. Edward G. Bauer, Jr., Esquire
 Vice President and General Counsel
 2301 Market Street
 Philadelphia, Pennsylvania 19101

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Docket No. 50-277

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

PHILADELPHIA ELECTRIC COMPANY
PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-277

PEACH BOTTOM ATOMIC POWER STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 38
License No. DPR-44

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Philadelphia Electric Company, Public Service Electric and Gas Company, Delmarva Power and Light Company, and Atlantic City Electric Company (the licensees), dated November 30, 1977, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

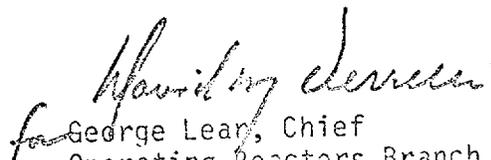
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C(2) of Facility Operating License No. DPR-44 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 38, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

for 
George Lear, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 27, 1977

ATTACHMENT TO LICENSE AMENDMENT NO. 38
TO THE TECHNICAL SPECIFICATIONS
FACILITY OPERATING LICENSE NO. DPR-44
DOCKET NO. 50-277

Replace pages 73, 133b, 140a, 140c and 140d with the attached revised pages.

TABLE 3.2.C

INSTRUMENTATION THAT INITIATES CONTROL ROD BLOCKS

Minimum No. of Operable Instrument Channels Per Trip System	Instrument	Trip Level Setting	Number of Instrument Channels Provided By Design	Action
2	APRM Upscale (Flow Biased)	$\leq (0.66W+42) \times \frac{A}{MPPF}$ (2)	6 Inst. Channels	(1)
2	APRM Upscale (Startup Mode)	$\leq 12\%$	6 Inst. Channels	(1)
2	APRM Downscale	≥ 2.5 indicated on scale	6 Inst. Channels	(1)
1 (7)	Rod Block Monitor (Flow Biased)	$\leq (0.66W+40) \times \frac{A}{MPPF}$ (2)	2 Inst. Channels	(1)
1 (7)	Rod Block Monitor Downscale	≥ 2.5 indicated on scale	2 Inst. Channels	(1)
3	IRM Downscale (3)	≥ 2.5 indicated on scale	8 Inst. Channels	(1)
3	IRM Detector not in Startup Position	(8)	8 Inst. Channels	(1)
3	IRM Upscale	≤ 108 indicated on scale	8 Inst. Channels	(1)
2 (5)	SRM Detector not in Startup Position	(4)	4 Inst. Channels	(1)
2 (5) (6)	SRM Upscale	$\leq 10^5$ counts/sec.	4 Inst. Channels	(1)

PBAPS

Unit 2

-73-

LIMITING CONDITIONS FOR OPERATIONSURVEILLANCE REQUIREMENTS3.5.J Local LHGR (Cont'd)

If at any time during operation it is determined by normal surveillance that limiting value for LHGR is being exceeded, action shall be initiated within one (1) hour to restore LHGR to within prescribed limits. If the LHGR is not returned to within prescribed limits within five (5) hours, reactor power shall be decreased at a rate which would bring the reactor to the cold shutdown condition within 36 hours unless LHGR is returned to within limits during this period. Surveillance and corresponding action shall continue until reactor operation is within the prescribed limits.

3.5.K Minimum Critical Power Ratio (MCPR)

During steady state power operation, MCPR shall be ≥ 1.25 for 7x7 fuel and ≥ 1.29 for 8x8 fuel at rated power and flow. For core flows other than rated the MCPR shall be ≥ 1.25 times k_f for 7x7 fuel and ≥ 1.29 times k_f for 8x8 fuel where k_f is as shown in Figure 3.5.1-E. If at any time during operation it is determined by normal surveillance that the limiting value for MCPR is being exceeded, action shall be initiated within one (1) hour to restore MCPR to within prescribed limits. If the MCPR is not returned to within prescribed limits within five (5) hours, reactor power shall be decreased at a rate which would bring the reactor to the cold shutdown condition within 36 hours unless MCPR is returned to within limits during this period. Surveillance and corresponding action shall continue until reactor operation is with the prescribed limits.

4.5.K Minimum Critical Power Ratio (MCPR)

MCPR shall be checked daily during reactor power operation at $\geq 25\%$ rated thermal power.

3.5.1 BASES (Cont'd.)

A list of the significant plant input parameters to the loss-of-coolant accident analysis is presented in Table 3.5-1.

J. Local LHGR

This specification assures that the linear heat generation rate in any rod is less than the design linear heat generation if fuel pellet densification is postulated. The power spike penalty specified is based on the analysis presented in Section 3.2.1 of Reference 1 and References 2 and 3, and assumes a linearly increasing variation in axial gaps between core bottom and top, and assures with a 95% confidence, that no more than one fuel rod exceeds the design linear heat generation rate due to power spiking. The LHGR as a function of core height shall be checked daily during reactor operation at 25% power or greater to determine if fuel burnup, or control rod movement has caused changes in power distribution. For LHGR to be a limiting value below 25% rated thermal power, the MTRP would have to be greater than 10 which is precluded by a considerable margin when employing any permissible control rod pattern.

Densification analyses for 8x8 fuel are presented in Section 3.3.4.3 and Appendix B of Reference 7.

K. Minimum Critical Power Ratio (MCPR)

The required operating limit MCPR's at steady state operating conditions as specified in Specification 3.5.K are derived from the established fuel cladding integrity Safety Limit MCPR of 1.06, and analyses of the abnormal operational transients presented in References 6 and 8. For any abnormal operating transient analysis evaluation with the initial condition of the reactor being at the steady state operating limit it is required that the resulting MCPR does not decrease below the Safety Limit MCPR at any time during the transient assuming instrument trip setting given in Specification 2.1.

To assure that the fuel cladding integrity Safety Limit is not exceeded during any anticipated abnormal operational transient, the most limiting transients have been analyzed to determine which result in the largest reduction in critical power ratio (CPR). The type of transients evaluated were loss of flow, increase in pressure and power, positive reactivity insertion, and coolant temperature decrease.

3.5.K BASES (Cont'd.)

A brief summary of the analytical method used to determine the nuclear characteristics is given in Section 5.3 of Reference 7.

Analysis of the abnormal operational transients is presented in Section 6.3 of Reference 6 and in Reference 8. Input data and operating conditions used in this analysis are shown in Table 6-2 of Reference 6 and in Reference 8.

L. Average Planar LHGR (APLHGR), Local LHGR, and Minimum Critical Power Ratio (MCPR)

In the event that the calculated value of APLHGR, LHGR or MCPR exceeds its limiting value, a determination is made to ascertain the cause and initiate corrective action to restore the value to within prescribed limits. The status of all indicated limiting fuel bundles is reviewed as well as input data associated with the limiting values such as power distribution, instrumentation data (Traversing In-core Probe-TIP, Local Power Range Monitor - LPRM, and reactor heat balance instrumentation), control rod configuration, etc., in order to determine whether the calculated values are valid.

In the event that the review indicates that the calculated value exceeding limits is valid, corrective action is immediately undertaken to restore the value to within prescribed limits. Following corrective action, which may involve alterations to the control rod configuration and consequently changes to the core power distribution, revised instrumentation data, including changes to the relative neutron flux distribution for up to 43 incore locations is obtained and the power distribution, APLHGR, LHGR and MCPR calculated. Corrective action is initiated within one hour of an indicated value exceeding limits and verification that the indicated value is within prescribed limits is obtained within five hours of the initial indication.

In the event that the calculated value of APLHGR, LHGR or MCPR exceeding its limiting value is not valid, i.e., due to an erroneous instrumentation indication etc., corrective action is initiated within one hour of an indicated value exceeding limits. Verification that the indicated value is within prescribed limits is obtained within five hours of the initial indication. Such an invalid indication would not be a violation of the limiting condition for operation and therefore would not constitute a reportable occurrence.

3.5.1 BASES (Cont'd.)

Operating experience has demonstrated that a calculated value of APLHGR, LHGR or MCPR exceeding its limiting value predominately occurs due to this latter cause. This experience coupled with the extremely unlikely occurrence of concurrent operation exceeding APLHGR, LHGR or MCPR and a Loss of Coolant Accident or applicable Abnormal Operational Transients demonstrates that the times required to initiate corrective action (1 hour) and restore the calculated value of APLHGR, LHGR or MCPR to within prescribed limits (5 hours) are adequate.

M. References

1. "Fuel Densification Effects on General Electric Boiling Water Reactor Fuel", Supplements 6, 7, and 8 NEDM-10735, August 1973.
2. Supplement 1 to Technical Report on Densifications of General Electric Reactor Fuels, December 14, 1974 (Regulatory Staff).
3. Communication: V. A. Moore to I. S. Mitchell, "Modified GE Model for Fuel Densification", Docket 50-321, March 27, 1974.
4. General Electric Company Analytical Model for Loss-of-Coolant Analysis in Accordance with 10 CFR 50, Appendix K, NEDE-20566 (Draft), August 1974.
5. General Electric Refill Reflood Calculation (Supplement to SAFE Code Description) transmitted to the USAEC by letter, G. L. Gyorey to Victor Stello, Jr., dated December, 1974.
6. "General Electric Boiling Water Reactor Reload-2 License Amendment for Peach Bottom Atomic Power Station Unit 2," NEDO-21578, February 1977.
7. General Electric BWR Generic Reload Application for 8x8 fuel, NEDO-20360, Revision 1, Supplement 4, April 1976.
8. "Rod Block Monitor Set Point Change Supplemental Information For Reload 2 Licensing Amendment For Peach Bottom Atomic Power Station Unit 2," NEDO-21578-1, Supplement 1, October 1977.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 38 TO FACILITY LICENSE NO. DPR-44

PHILADELPHIA ELECTRIC COMPANY

PEACH BOTTOM ATOMIC POWER STATION UNIT NO. 2

DOCKET NO. 50-277

1. Introduction

By letter dated November 30, 1977 the Philadelphia Electric Company (licensee) has filed an application for amendment of Facility Operating License, DPR-44, for Peach Bottom Atomic Power Station Unit No. 2. The proposed amendment consists of a reduction in the Rod Block Monitor (RBM) set point with an associated reduction in the fuel type dependent Minimum Critical Power Ratio (MCPR) operating limits contained within the plant's Technical Specifications. The Rod Block Monitor set point would be lowered from 107% to 106% at the full power and core flow conditions. The MCPR operating limits would be reduced from 1.26 to 1.25 and 1.33 to 1.29 for the 7x7 and 8x8 fuel types respectively. The licensee has proposed these changes in order to alleviate the less than full power operating restriction, necessitated by the existing MCPR operating limits.

The documentation submitted in support of the proposed amendment consists of the Rod Block Monitor set point change safety analysis (1) and proposed Technical Specification changes. (2)

2. Evaluation

The current MCPR operating limits for Peach Bottom Unit No. 2 during Cycle-3 are 1.33 for 8x8 fuel assemblies and 1.26 for 7x7 fuel assemblies. These operating limits result from the most severe operational transient, the Rod Withdrawal Error (RWE) with a RBM set point of 107%, previously presented in the Reload-2 licensing submittal. (3) The associated proposed changes to the plant's Technical Specifications (4) were also previously reviewed and approved by the Staff. (5)

The limiting Rod Withdrawal Error transient event during Cycle-3 was reanalyzed (1) by the licensee with the RBM set point decreased from 107% to 106% at the full power/flow condition. The reanalysis, using generic models and methods (6) previously reviewed and found acceptable by the Staff, shows that the change in critical power ratio (Δ CPR) is 0.19 for

7x7 fuel and 0.23 for 8x8 fuel. The results show a reduction in severity (Δ CPR) for this limiting event of .01 and .04 for the 7x7 and 8x8 fuel types respectively as a result of the reduced RBM set point. All other transient events previously analyzed are unaffected by the proposed change to the RBM set point and/or proposed MCPR operating limits.

The reanalysis of the RWE shows that operation with a MCPR operating limit of 1.29 for 8x8 fuel and 1.25 for 7x7 fuel will not violate the fuel cladding integrity safety limit MCPR (1.06) should a limiting RWE occur at Peach Bottom 2 during Cycle-3 operation with a RBW set point of 106%. Thus, the Staff finds that operation of Peach Bottom-2 during cycle 3 with the aforementioned revised RBM set point and MCPR operating limits are acceptable.

3. Technical Specification Changes

The proposed amendment to the Peach Bottom Unit No. 2 Technical Specifications consists of a reduction in the Rod Block Monitor set point from 107% to 106% and a reduction in the full power/flow MCPR operating limits from 1.26 to 1.25 for the 7x7 fuel and 1.33 to 1.29 for the 8x8 fuel. The Staff finds that these proposed Technical Specification changes are adequately supported by and in agreement with safety analysis submitted. The proposed Technical Specification changes are therefore acceptable.

Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: December 27, 1977

REFERENCES

1. "Rod Block Monitor Set Point Change Supplemental Information for Reload 2 Licensing Amendment For Peach Bottom Atomic Power Station Unit 2," NEDO-21578-1 Supplement 1, Class I, October, 1977.
2. Philadelphia Electric Company Application for Amendment of Facility License, DPR-44, November 30, 1977.
3. "General Electric Boiling Water Reactor Reload No. 2 Licensing Amendment For Peach Bottom Atomic Power Station Unit 2." NEDO-21578, 77NED27, Class 1, February, 1977.
4. Philadelphia Electric Company Application for Amendment of Facility Operating License DPR-44, March, 1977.
5. Staff Safety Evaluation Report Supporting Amendment No. 36 to Facility Licensee No. DPR-44, Philadelphia Electric Company, Peach Bottom Atomic Power Station Unit No. 2, August 18, 1977.
6. "General Electric Reload Licensing Application for 8X8 Fuel," Revision 1, Supplement 3, September 1975, NEDO 20360.

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-277PHILADELPHIA ELECTRIC COMPANY
PUBLIC SERVICE ELECTRIC AND GAS COMPANY
DELMARVA POWER AND LIGHT COMPANY
ATLANTIC CITY ELECTRIC COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 38 to Facility Operating License No. DPR-44 issued to Philadelphia Electric Company, Public Service Electric and Gas Company, Delmarva Power and Light Company, and Atlantic City Electric Company, which revised Technical Specifications for operation of the Peach Bottom Atomic Power Station, Unit No. 2. The amendment is effective as of its date of issuance.

The amendment reduces the Rod Block Monitor set point and reduces the fuel power/flow Minimum Critical Power Ratio.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

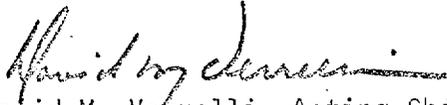
The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement, negative

declaration or environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated November 30, 1977, (2) Amendment No. 38 to License No. DPR-44, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Government Publications Section, State Library of Pennsylvania, Education Building, Commonwealth and Walnut Streets, Harrisburg, Pennsylvania 17126. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 27 day of December 1977.

FOR THE NUCLEAR REGULATORY COMMISSION


David M. Verrelli, Acting Chief
Operating Reactors Branch #3
Division of Operating Reactors