



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

ENCLOSURE

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

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

PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3, AND

LIMERICK GENERATING STATION, UNITS 1 AND 2

DOCKET NOS. 50-277, 50-278, 50-352, AND 50-353

1.0 INTRODUCTION

By letter dated June 16, 1992, Philadelphia Electric Company (PECO) requested to use NRC-approved General Electric Company's (GE) reactor analysis methods for Peach Bottom Atomic Power Station (PBAPS) core reload and cycle management calculations. Future PBAPS reloads are expected to use an advanced GE fuel product line which cannot currently be modeled with the existing NRC-approved PECO reactor analysis methods. By letter dated August 3, 1992, PECO described the planned reactor analysis strategy for both PBAPS and Limerick Generating Station (LGS). PECO will continue to perform reload design and cycle management evaluations in-house although PECO will now use NRC-approved GE methods. PECO requested approval to use these methods for any future PBAPS, Units 2 and 3 and LGS, Units 1 and 2 reload design and cycle management evaluations. PECO will continue to have GE perform system transient calculations.

PECO has obtained a license to use GE nodal physics methods, as described in a letter from PECO to the NRC dated November 18, 1991, that have been accepted for application to the GE-11 fuel design. The NRC-approved use of the new fuel design licensing acceptance criteria as described in Amendment 22 to the General Electric Licensing Topical Report NEDE-24011-P-A, "General Electric Standard Application For Reactor Fuel (GESTAR-II)." The NRC's approval of these criteria is documented in a letter from the NRC to General Electric dated July 23, 1990. General Electric issued a report, NEDE-31917P, "GE-11 Compliance with Amendment 22 of NEDE-24011-P-A," in April 1991, which verified that the GE-11 fuel design met the licensing criteria of Amendment 22 of GESTAR-II.

2.0 EVALUATION

In a letter dated November 18, 1991, PECO provided documentation of three analytical exercises to demonstrate the proficiency of PECO personnel in the use of GE reactor analysis software and models to perform core reload design and cycle management activities.

These exercises included evaluations of various aspects of core performance at both PECO's Limerick Generating Station and Peach Bottom Atomic Power Station. Specifically, PECO provided evaluations of:

- 1) cold shutdown margin conditions using GE methods for Peach Bottom Atomic Power Station, Unit 3, Cycle 8, GE-8 reload core and a comparison for consistency with calculations using the NRC-approved PECO analytical methods;
- 2) development of the reactivity anomaly curve for the Peach Bottom Atomic Power Station, Unit 3, Cycle 8 GE-8 reload core and a comparison for consistency with solutions obtained using the NRC-approved PECO methods;
- 3) a three dimensional steady state evaluation of a nominal Limerick Generating Station GE-11 reload core for both hot and cold shutdown conditions using the GE methods and a comparison to results obtained by GE using the same methods.

In a safety evaluation dated February 21, 1992, the NRC staff found that PECO's engineering staff had demonstrated sufficient ability to apply the NRC-approved GE steady state nodal analysis methods and models to reactivity anomaly and cold shutdown margin demonstration evaluations. Specifically, the staff found the differences between PECO calculations using the GE methods and using the NRC-approved PECO methods to be within expected tolerances, and therefore acceptable. In addition, the comparison between PECO and GE steady state evaluation of the nominal Limerick reload core for both hot and cold shutdown conditions demonstrated the ability of PECO to obtain results identical to those obtained by GE. In a letter accompanying that safety evaluation, the NRC approved PECO's use of the GE steady state nodal analysis methods for core reload 4 for Limerick Generating Station.

### 3.0 CONCLUSION

The calculations provided by PECO in the November 18, 1991 letter used Peach Bottom as a basis for two of the examples. The ability of PECO engineering staff to obtain acceptable results using NRC-approved GE nodal analysis methods was evaluated in the safety evaluation of February 21, 1992 and found acceptable. Therefore, the staff concludes that PECO's use of NRC-approved GE nodal analysis methods for evaluating Peach Bottom Atomic Power Station's and Limerick Generating Station's future core reloads and cycle management evaluations is also acceptable.

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