PHILADELPHIA ELECTRIC COMPANY

NUCLEAR GROUP HEADQUARTERS

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November 21, 1990

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
Qualification Fuel Bundles in Operating Cycle 9

Dear Sirs:

Philadelphia Electric Company plans to load twelve (12) commercially available qualification fuel bundles (QFBs) into Peach Bottom Unit 2 during the eighth refueling outage scheduled to begin January 12, 1991. These consist of four General Electric Company (GE) GE11 QFBs, four (4) ABB Atom, Inc. (ABB) SVEA-96 QFBs, and four (4) Advanced Nuclear Fuels Corp. (ANF) 9x9-9X+ QFBs. The GE11 QFBs are a 9x9 design featuring part length rods, the SVEA-96 QFBs are a 10x10 design featuring a water cross, and the 9x9-9X+ QFBs are a 9x9 design featuring a large central water channel. Fuel bundles similar to each of these designs are currently operating in a domestic Boiling Water Reactor. The remainder of the reload bundles will be GE9B fuel.

Detailed descriptions of the GE11, ABB SVEA-96, and ANF 9x9-9X+ QFBs are provided in Attachments 1, 4 and 5, respectively. Figures depicting the fuel rod layout of the QFBs including U-235 enrichment and gadolinia distributions are also provided in these Attachments. Attachments 1 through 3 list the major features and design specifications of the GE11, ABB SVEA-96 and ANF 9x9-9X+ QFBs, respectively.

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General Electric Company has designed and analyzed the GE11 QFBs using NRC approved methods. The GE11 QFBs are designed for, and meet, the same nuclear-thermal-mechanical criteria as standard reload bundles. Furthermore, licensing analyses will be performed for the GE11 QFBs specifically for operation during Cycle 9 and subsequent cycles wherein the effect of the four QFBs will be considered for each of the applicable licensing events to establish appropriate core thermal limits.

The ABB SVEA-96 and ANF 9x9-9X+ QFBs have been designed to be mechanically, thermal-hydraulically, and neutronically compatible with the Cycle 9 GE9B reload bundle (GE9B-P8DWB320-10GZ-80M-150-T). Analyses have been performed by ABB and ANF to verify this compatibility and to conservatively evaluate the response of these QFBs to each of the appropriate licensing events relative to the GE9B reload bundle. The results of these analyses demonstrate that the SVEA-96 and 9x9-9X+ QFBs are conservatively bounded by the GE9B reload bundle and can be safely operated in the core and monitored by the plant process computer. With regard to minimum critical power ratio (MCPR), the results of the analyses establish the effective operating limit MCPRs for the QFBs relative to the GE9B reload bundle. These results will be utilized to conservatively set the operating limit MCPR for each QFB in the Peach Bottom Unit 2 Cycle 9 Core Operating Limits Report. These limits will then be applied in the plant process computer for the monitoring of the QFBs during operation. No other ABB SVEA-96 or ANF 9x9-9X+ QFB specific data or constants need to be input to the plant process computer databank. The results of these analyses are summarized in Attachments 4 and 5.

Attachment 6 of this letter identifies the anticipated core loading positions for each of the QFBs. These positions, which are typically lower in power than more central core positions, will further assure that the QFBs will not lead the core with respect to bundle power or nodal power. As part of routine Philadelphia Electric Company core management activities, exposure-dependent control rod patterns have been developed to meet all core operating limits and to verify that operating margins exist between the QFBs and the leading core assemblies. These margins will be maintained by core monitoring activities.

Attachments 1 through 5 of this letter contain information which General Electric Company, ABB Atom, Inc., and Advanced Nuclear Fuels Corporation maintain in confidence and withhold from public disclosure. The information is handled and classified as proprietary to each of the aforementioned organizations as indicated in the attached affidavits. We hereby request that these attachments be withheld from public disclosure in accordance with the provisions of 10 CFR 2.790.

Very truly yours,

G. A. Hunger, Jr.

G. A. Hunger, Jr.
Manager, Licensing
Nuclear Engineering & Services

Attachment 1 - GE11 Lead Fuel Assembly Description
and accompanying affidavit
Attachment 2 - ABB SVEA-96 Design Features and Specifications
and accompanying affidavit
Attachment 3 - ANF 9x9-9X+ Design Features and Specifications
and accompanying affidavit
Attachment 4 - ABB Atom Report BR 90-004
and accompanying affidavit
Attachment 5 - ANF Report ANF-90-133(P), Rev. 1
and accompanying affidavit
Attachment 6 - QFB Core Loading Positions

Without Attachments

cc: T. T. Martin, Administrator, Region I, USNRC
J. J. Lyash, USNRC Senior Resident Inspector, PB