

Duquesne Light Company

Beaver Valley Power Station
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May 30, 1991

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

Subject: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334, License No. DPR-66
Cycle 9 Reload and Core Operating Limits Report

Beaver Valley Power Station, Unit No. 1 completed the eighth cycle of operation on April 12, 1991, with a burnup of 14,640 MWD/MTU. This letter describes the Cycle 9 reload design, documents our review in accordance with 10 CFR 50.59, provides our determination that no technical specification changes or unreviewed safety questions are involved, and includes a copy of the Core Operating Limits Report (COLR) in accordance with Technical Specification 6.9.1.14.

The Cycle 9 core configuration is arranged in a low leakage loading pattern and involves replacing sixteen (16) Region 8 and fifty-six (56) Region 9 fuel assemblies with twenty (20) Region 11A fuel assemblies enriched to 3.6 w/o and fifty-two (52) Region 11B fuel assemblies enriched to 4.0 w/o. A Region 1 fuel assembly discharged at the end of Cycle 1 will be reinserted to replace the center fuel assembly. The mechanical design of the new Region 11 fuel assemblies is the same as the Region 10 fuel assemblies except for the following features:

- A modified fuel assembly bottom nozzle which includes a reinforcing skirt to enhance reliability during postulated adverse handling conditions while refueling.
- The Integral Fuel Burnable Absorber (IFBA) pellets contain enriched Boron which is chemically the same (except for a small reduction in density) as natural boron and provides flexibility in controlling core peaking factors.
- The fuel rod bottom end plug has an increased radius in the transition between the chamfer and the end of the plug.

These modifications meet all fuel assembly/rod design criteria and will not adversely affect the core safety considerations. Fuel rod design evaluations for the Cycle 9 fuel were performed using NRC approved methodology to demonstrate that all of the fuel rod design bases are satisfied.

Duquesne Light Company has performed a detailed review of the Cycle 9 reload core design including a review of the core characteristics to determine those parameters affecting the postulated accidents described in the UFSAR. The consequences of

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those incidents described in the UFSAF which could potentially be affected by the reload core characteristics were evaluated in accordance with the NRC approved methodology described in WCAP-9272-P-A "Westinghouse Reload Core Evaluation Methodology." The effects of the reload on the design basis and postulated incidents analyzed in the UFSAF were accommodated within the conservatism of the assumptions used in the current analysis design basis, or it was demonstrated through evaluation that the reload parameters would not change the conclusions of the UFSAF.

No technical specification changes are required as a result of the Cycle 9 reload design.

The NRC approved dropped rod methodology [WCAP-10298-A (non-proprietary), June 1983] was used for the Cycle 9 design evaluation and confirmed that the peaking factors did not exceed the safety analyses limits.


The reload core design will be verified by performing the standard Westinghouse reload core physics startup tests. The results of the following startup tests will be submitted in accordance with Technical Specification 6.9.1.3:

1. Control rod drive tests and rod drop time measurements.
2. Critical boron concentration measurements.
3. Control rod bank worth measurements.
4. Moderator temperature coefficient measurements.
5. Startup power distribution measurements using the incore flux mapping system.

The COLR (attached) has been updated for Cycle 9 to include new F_{xy} (RTP) limits for unrodded core planes and Figures 3 and 4 have been revised to incorporate a correction to the top of K(2) core limit.

The Beaver Valley Onsite Safety Committee (OSC) and the Duquesne Light Company Offsite Review Committee (ORC) have reviewed the Cycle 9 Reload Safety Evaluation and Core Operating Limits Report and determined that this reload design will not adversely affect the safety of the plant and does not involve an unreviewed safety question.

Sincerely,


J. D. Sieber
Vice President
Nuclear Group

cc: Mr. J. Beall, Sr. Resident Inspector
Mr. T. T. Martin, NRC Region 1 Administrator
Mr. A. W. DeAgazio, Project Manager
Mr. M. L. Bowling (VEPCO)