

ATTACHMENT 1

REVISIONS TO THE

SALEM 2, CYCLE 2

STARTUP REPORT

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Zero Power Test Results

The zero power test schedule for Cycle 2 was essentially identical to that done for Unit 1 Cycle 5. The rod exchange technique was used for measuring the bank rodworth rather than the traditional boron dilution method. Comparisons of swap mode rodworth measurements and design values along with review criteria are shown in Table 2. Comparisons of dilution mode measurements and design values along with acceptance criteria are shown in Table 3.

As shown in Table 3, the dilution mode worth for bank C fails the acceptance criteria by 23 pcm. This failure was predicted prior to the test based on comparisons of PSE&G and Westinghouse rodworth calculations. The cause of the predicted deviations was a difference in the flux distributions as calculated by PSE&G and Westinghouse. Relative to PSE&G, the Westinghouse power distribution was radially tilted, with higher flux levels at the center. According to PSE&G analyses performed prior to the test, this tilt would cause some of the Westinghouse test predictions to deviate from measurements. PSE&G calculations predicted that the measurements of bank C and A would be 20% and 96 pcm lower than the W predictions. The observed deviations were 16% and 67 pcm lower respectively.

Additional confirmation of the presence of a radial flux tilt in the W models was obtained from the HZP flux map measurement, and a special dilution measurement of the bank C worth. Comparisons of the measured and predicted HZP flux distributions are shown in Figure 3 for Map #2200. The results confirm that the Westinghouse predictions were approximately 10% too high at the core center.

The special dilution measurement of the bank C worth was performed using the boron dilution technique. The measured value was 736 pcm, which confirms the exchange mode measurement shown in Table 3.

The deviation of the bank C measurement from vendor design predictions was reviewed by the Station Operations Review Committee. Based on the composite of test results, and the PSE&G calculations performed prior to the test, it was concluded that the deviation did not significantly effect the conclusions of the Salem 2, Cycle 2 Reload Safety Evaluation.

A Boron end point measurement was conducted with all rods out and was within the ± 50 ppm acceptance criteria. The measured value of 1364 ppm was 44 ppm lower than predicted.

An Isothermal temperature coefficient measurement was performed with all rods out. The value obtained was very close to the predicted value and well within tolerances.

Results of the zero power flux map (#2200) are shown in Table 4. A tilt in the power distribution of 2.3% was discovered in the N. W., quadrant and the resulting peaking factor F_{xy} exceeded the full power Technical Specification limits, but was below the zero power limits. The observed tilt was within the range predicted by the Fuel Vendor (Westinghouse).

Map 2200 was taken to evaluate the potential that the quantity $F_{\Delta H}$ may violate the Technical Specification for low power, rodded operation at BOC. The vendor's evaluation of this potential violation on the appropriate accident analysis showed that there would be no adverse effects. NFG analyzed that the cause for the potential violation would be a radial, in-out flux tilt.

The results of Map 2200 (Figure 3) confirmed the existence of the radial tilt. Administrative limits on rod insertion were imposed to ensure that $F_{\Delta H}$ would not be violated for low power rodded operation (See Figure 13).



Public Service Electric and Gas Company P.O. Box 236 Hancocks Bridge, New Jersey 08038

Nuclear Department

July 30, 1984

Dr. Thomas E. Murley
Regional Administrator, Region 1
631 Park Avenue
King of Prussia, PA 19406

Dear Dr. Murley:

STARTUP TEST REPORT
SALEM NO. 2 CYCLE 2
LICENSE NO. DPR-75
DOCKET NO. 50-311

Attached please find two (2) copies of revised pages to the Salem No. 2 Cycle 2 Startup Test Report.

Sincerely,

A handwritten signature in cursive script, appearing to read "E. A. Liden", is written over a horizontal line.

E. A. Liden
Manager - Nuclear Licensing
and Regulation

RAB:dgh
Attachment

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C Director, Office of Inspection and Enforcement att.(36)
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. Donald C. Fischer att.
Licensing Project Manager

Mr. James Linville att.
Senior Resident Inspector