U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-301/78-19

Docket No. 50-301 License No. DPR-27

Licensee: Wisconsin Electric Power Company
Wisconsin Michigan Power Company
231 West Michigan
Milwaukee, WI 52303

Facility Name: Point Beach Unit 2

Inspection At: Point Beach Site, Two Creeks, WI

Inspection Conducted: September 7-8, 1978

Inspectors: J. E. Kohler

J. F. Streeter

Approved By: R. F. Warnick, Chief
Reactor Projects Section 2

9-19-78

Inspection Summary

Inspection on September 7-8, 1978 (Report No. 50-301/78-19)
Areas Inspected: Routine, announced inspection of reactor physics testing performed prior to full power operation for Unit 2 Cycle 5. The inspection involved 15 hours onsite by two NRC inspectors.
Results: Of the areas inspected, no items of noncompliance or deviations were identified. Two open items, control rod worth calculations using rod swap technique (paragraph 6) and shutdown margin (paragraph 7) are being carried.

DETAILS

1. Persons Contacted

*G. Reed, Manager, Nuclear Power Division
*P. Kurtz, Engineer
J. Zach, Reactor Engineer

2. Moderator Temperature Coefficient

The inspector reviewed the results of the testing performed to determine the moderator temperature coefficient. The results were in approximate agreement with predicted values supplied by the fuel manufacturer (Westinghouse) and indicated that the value was negative. The inspector noted that the XY plot of the moderator temperature coefficient showed some non-linearity. This was discussed with the licensee. The licensee stated that there has been some difficulty with the XY plotter. However, results of several heatup and cooldown yielded a moderator temperature coefficient in fairly good agreement with the Westinghouse estimate. The inspector has no further questions regarding this item.

3. Incore/Excore Calibration

The inspector reviewed the procedure to calibrate the excore instrumentation to insure that the instrumentation is capable of measuring correct axial offset and quadrant power tilt. The inspector determined that this calibration was performed in Cycle 5 and has no further questions regarding the incore and excore calibration procedure.

4. Power Distribution

The inspector reviewed the full core maps taken at hot zero power. The review indicated that all thermal margins were within Technical Specification requirements, all prerequisites were met, input values into the incore computer analysis code were taken from actual plant conditions at the time the maps were taken, and predicted values calculated by the computer code were within allowable acceptance criteria established by the licensee. The inspector further reviewed the results of full core maps taken during full power operation for Cycle 5.

These maps and their summaries indicated that the plant power distribution was being maintained within Technical Specification limitations. The inspector has no further questions regarding the power distribution for Cycle 5.

5. Target Axial Flux

The inspector reviewed the licensee's determination of the target axial flux band for Cycle 5. The target axial flux band indicating instrumentation was inspected in the control room. Axial flux difference

limits were displayed on the control room operating panel. The inspector determined that the plant was being operated within the target band during power changes. The inspector has no further questions regarding this item.

6. Control Rod Worth Measurements

The inspector reviewed the results of measurement performed to determine control rod worth. The procedure called for the worth to be determined by the rod swap technique. Control banks D, C, B, and A, as well as shutdown banks B and A were measured. Control bank A was designated as the reference bank. The results of the test showed that control banks B and D exceeded -20% difference when compared with the predicted values supplied by Westinghouse. However, the overall sum of the control rod worths measured by rod swap showed less than -3% difference when compared to Westinghouse predictions.

The information regarding the test and the test results has been supplied to NRR for review. A meeting is scheduled to be held in the near future between NRR and Westinghouse in order to determine the adequacy of the rod swap technique in calculating control rod worth and shutdown margin. Consequently, this item will be carried as open and will be followed up in a future inspection.

7. Shutdown Margin

The inspector reviewed the licensee's calculation of shutdown margin beginning of life and end of life. Technical Specifications require that 1,000 pcm shutdown margin be available beginning of life and 2,770 pcm shutdown margin be required end of life. Discussion with the licensee determined that the shutdown margin determination was made after going above 5% power. There is no formal requirement to determine when this shutdown margin calculation should be made. This item is being carried as open pending NRR's determination of the adequacy of the control rod worth measurements and shutdown margin calculation. This item will be followed up in a subsequent inspection.

8. Acceptance Criteria for Physics Test

The inspector determined that the licensee's Quality Assurance Plan, Appendix H, requires that acceptance criteria be provided for physics tests performed during startup testing prior to full power operation. Review of the licensee's procedure indicated that acceptance criteria were not included. Discussion with the licensee determined that acceptance criteria for physics tests are contained in a separate document entitled "Reactor Engineering Instruction 15.0". This document was not available during the inspection. Consequently, this item will be followed up during a subsequent inspection when the document can be reviewed. The inspector has no further questions regarding this item.

9. Management Exit

The inspectors met with the licensee at the conclusion of the inspection and summarized the results. The inspector stated that no items of noncompliance or deviations were identified.