

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-255/86013(DRS)

Docket No. 50-255

License No. DPR-20

Licensee: Consumers Power Company
212 West Michigan Avenue
Jackson, MI 49201

Facility Name: Palisades Nuclear Generating Plant

Inspection At: Covert, MI

Inspection Conducted: April 14-25, 1986

Inspector: *M. L. McCormick-Barger*
M. L. McCormick-Barger

5/6/86
Date

Approved By: *Mark A. Ring*
Mark A. Ring, Chief
Test Programs Section

5/6/86
Date

Inspection Summary

Inspection on April 14-25, 1986, (Report No. 50-255/86013(DRS))

Areas Inspected: Routine, announced inspection to review licensee actions on previous inspection findings (72701), Cycle 7 startup physics testing (61702, 61708, 61710), core thermal power (61706), and shutdown margin/estimated critical condition calculation (61707).

Results: No violations or deviations were identified.

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DETAILS

1. Persons Contacted

- *J. Lewis, Technical Director
- *R. Rice, Operations Manager
- *R. Orosz, Engineering/Maintenance Manager
- *K. Haas, Reactor Engineering Superintendent
- *D. VanDenBerg, Reactor Engineer
- G. Goralski, Reactor Engineering
- T. Palmisano, Plant Projects Superintendent
- D. Bixell, Auxiliary Feedwater System Engineer
- *R. Fenech, Technical Engineer
- *D. Malone, Senior Engineer-Licensing
- *R. Doan, Plant Safety Engineering
- *G. Yeisley, Senior Engineer, Quality Assurance
- *V. Beilfuss, Senior Engineer

Additional station technical and administrative personnel were contacted by the inspector during the course of the inspection.

*Denotes those personnel present at the exit interview.

2. Licensee Actions on Previous Inspection Findings

(Closed) Violation (255/86006-01): Testing was not sufficient to demonstrate that auxiliary feedwater pump P8C would perform satisfactorily in service. Two tests were performed: (a) a 48-hour endurance run with a 1-hour restart after cooldown, and (b) a flow test of the alternate suction supply. The inspector reviewed the results of these two tests and had no concerns as a result of this review. Based on the completion of the two tests, this item is considered closed.

3. Cycle 7 Startup Physics Testing

a. Control Rod Worth Measurements

The inspector reviewed licensee procedures and results to determine that prerequisites, precautions and plant conditions were met, that values obtained were within acceptance criteria, and that any discrepancies were properly evaluated. The inspector utilized the following documentation during the review:

- Procedure T-191, Revision 0, "Cycle 7 Startup Physics Test Program," dated February 8, 1986, and performed for Cycle 7 beginning on February 27, 1986. Section 5.3 "Control Rod Group Worth Measurements - Rod Swapping Method".
- 10 CFR 50.59 Safety Evaluation Form for Special Test Procedure T-191, "Cycle 7 Startup Physics Test Program," prepared January 21, 1986, and approved January 28, 1986.

- Report XN-NF-86-16, Revision 1, "Palisades Cycle 7 Startup and Operations Report," Exxon Nuclear Company, Inc., February 1986.
- Letter from Jim Hulsman, Exxon Nuclear Company to Tom Hollowell, Palisades Nuclear Plant, Subject: Exxon Nuclear Company report entitled, "Control Rod Bank Swap," dated January 17, 1986.
- Letter from D. R. Porten, Exxon Nuclear Company to T. E. Hollowell, Consumers Power Company/Palisades Nuclear Plant, "Additional Palisades Cycle 7 Rod Swap Information," dated February 14, 1986.

With regard to Procedure T-191, the inspector had the following concern:

During the measurement of the reactivity worth of Control Rod Bank A, a reactivity computer scale change was made so that a small portion of the Bank A data was taken on one scale (-10¢ to +10¢) whereas the rest of the data was taken on a different scale (-5¢ to +5¢). Although the scale change was clearly marked on the strip chart recorder paper, both individuals who calculated the worth of Bank A failed to account for the changed scale which resulted in a 3.5¢ error which was approximately 1.8% of the calculated total reactivity worth of Bank A. The recalculated values were still within the acceptance criteria. An individual in the licensee's reactor engineering group was aware of the error prior to the time of this inspection and had informally documented this error on a sheet which was included in the file folder containing the rod worth measurement results.

The item discussed above was judged by the inspector to have minimal safety significance related to the Bank A reactivity worth measurement for Cycle 7, but was indicative of an area in which the licensee's performance could be improved. The reactor Engineer agreed to review this area for program improvement.

b. Isothermal Temperature Coefficient Measurement

The inspector reviewed licensee procedures and results to determine that prerequisites, precautions, and conditions were met, that values obtained were within acceptance criteria and Technical Specification limits, and that any discrepancies were properly evaluated. The inspector utilized the following documentation during the review:

- Procedure T-191, Revision 0, "Cycle 7 Startup Physics Test Program," dated February 8, 1986, and performed for Cycle 7 beginning on February 27, 1986. Section 5.2, "Zero Power Isothermal Temperature Coefficient Measurement".
- Report XN-NF-86-16, Revision 1, "Palisades Cycle 7 Startup and Operations Report," Exxon Nuclear Company, Inc., February 1986.

The inspector had the following concerns:

- (1) The isothermal temperature coefficient procedure lacked guidance concerning the potential need to correct the predicted isothermal temperature coefficient value based on differences between the predicted and actual boron concentrations. The inspector spoke to one of the two individuals that performed the calculations for the isothermal temperature coefficient and found that he was not aware that such a correction might be needed. He also did not remember receiving training related to this correction although the individual responsible for training in this area stated that the need for such a correction was covered during training sessions. This issue had little safety significance for Cycle 7 since the difference between predicted and actual boron concentrations was small.
- (2) The isothermal temperature coefficient procedure did not contain a step identifying the need to correct the isothermal temperature coefficient data for control rod movement. Although it is not uncommon for rod movement to be necessary during isothermal temperature coefficient measurements, no rod movement was needed for Cycle 7 and therefore, it was difficult to determine if the expertise and training of the individuals involved was sufficient enough that such a precaution in the procedure was not necessary. The inspector reviewed training records and noted that they included a reactivity temperature coefficient quiz which required a correction for control rod movement.

The Reactor Engineer agreed to evaluate the need for program improvements related to the two items discussed above.

c. Core Power Distribution Limits

The inspector reviewed licensee procedures and results to verify that core power distribution values were within acceptance criteria and Technical Specification limits, and that any discrepancies were properly evaluated. In addition to the Cycle 7 initial startup testing, the inspector also reviewed results of surveillance procedures related to core power distribution limits as indicated below. The inspector utilized the following documents during the review:

- Procedures T-191, Revision 0, "Cycle 7 Startup Physics Test Program," dated February 8, 1986, and performed for Cycle 7 beginning on February 27, 1986.
 - (1) Section 5.8, "Flux Symmetry Measurement at <30% Reactor Power."
 - (2) Section 5.10, "Intermediate Power Level Power Distribution Measurement."
 - (3) Section 5.12, "Power Distribution Measurement at 90 to 100% Reactor Power."

(4) Section 5.13, "Critical Boron Concentration at 90 to 100% Reactor Power."

- Technical Specification Surveillance Procedure DWT-12A, Revision D, "Monitoring Reactor Parameters," dated June 10, 1985, and performed on: March 5, 1986, March 31, 1986, April 4, 1986, April 11, 1986, and April 17, 1986.
- Technical Specification Surveillance Procedure DWT-12B, Revision 0, "Monitoring Reactor Parameters (Incore Alarm Updating)," dated June 10, 1985, and performed on: March 5, 1986, March 31, 1986, April 4, 1986, April 11, 1986, and April 17, 1986.

The inspector had no concerns based on the review.

No violations or deviations were identified.

4. Core Thermal Power

The inspector reviewed licensee procedures and results to determine that the calculation of core thermal power was technically correct and that results indicated that reactor power was within prescribed limits. The inspector utilized the following documents during the review:

- General Operating Procedure GOP-12, Revision 2, "Heat Balance Calculation," dated September 16, 1985, and the completed data sheets titled "GCL-12, Power Instrumentation Calibration Form," for November 1-30, 1985.

The inspector had no concerns based on the review.

No violations or deviations were identified.

5. Shutdown Margin/Estimated Critical Condition Calculation

The inspector reviewed licensee actions related to shutdown margin to the extent of reviewing the licensee's procedures and results for demonstrating agreement between the overall core reactivity balance and the predicted values, and for calculating an estimated critical condition. The inspector utilized the following documents during the review:

- Technical Specification Surveillance Procedure DWT-6, "Core Reactivity Balance":

<u>Procedure Revision</u>	<u>Procedure Results</u>
Revision 4, June 4, 1984	March 5-7, 1986
Revision 5, March 21, 1986	March 30 through April 2, 1986
Revision 5, March 21, 1986	April 3-4, 1986
Revision 5, March 21, 1986	April 8-11, 1986
Revision 5, March 21, 1986	April 16-18, 1986

- Critical Approach Form for Approach No. 231, for a reactor startup in which the reactor went critical at 4:00 a.m., April 12, 1986.

The inspector had no concerns based on the review.

No violations or deviations were identified.

6. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) on April 25, 1986, to discuss the scope and findings of the inspection and the likely informational content of the forthcoming inspection report. The licensee acknowledged the statements made by the inspector and stated that the Exxon Nuclear Company calculations performed for Palisades Cycle 7, and referenced in paragraph 3 of this report, were considered proprietary, but references to these documents would not be considered proprietary. The licensee did not identify any other such documents/processes as proprietary.