

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-333/85-21

Docket No. 50-333

License No. DPR-59 Priority        Category C

Licensee: Power Authority of the State of New York

P. O. Box 41

Lycoming, New York 13093

Facility Name: FitzPatrick Nuclear Power Plant

Inspection At: Scriba, New York

Inspection Conducted: June 24-28, 1985

Inspector: Larry E. Briggs  
for P. C. Men, Reactor Engineer

8-2-85  
date

Approved by: P. W. Eselgroth  
P. W. Eselgroth, Chief, Test Program  
Section, OB, DRS

8-2-85  
date

Inspection Summary: Inspection on June 24-28, 1985 (Inspection Report No. 50-333/85-21).

Areas Inspected: Routine, unannounced inspection of startup testing following refueling of Cycle 6/7. The inspection included the test program and power ascension tests. The inspection involved 32 hours onsite by one region-based inspector.

Results: No items of noncompliance were identified.

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## DETAILS

### 1. Persons Contacted

\*R. Converse, Superintendent of Power  
\*H. Glovier, Resident Manager  
\*L. Johnson, QA Supervisor  
\*D. Lindsey, Assistant Operations Superintendent  
\*J. Tolbert, Reactor Engineer

#### NRC

\*L. Doerflein, Senior Resident Inspector  
\*A. Luptak, Resident Inspector

\*Denotes those present at the exit meeting on June 28, 1985.

### 2. Cycle 7 Startup Test Program

The startup test program was conducted according to test procedure RAP-7.1.17, "Refuel Startup Program". The test program outlined the steps in the testing sequence, specified calibration or surveillance procedures at appropriate points, and referenced detailed test procedures and data collections in attachments. Initial criticality of Cycle 7 was achieved on May 25, 1985. The startup tests were completed about June 21, 1985.

The inspector reviewed test results and documents described in this inspection report to ascertain that the startup testing was conducted in accordance with technically adequate procedures and as required by Technical Specifications (TS). The details and findings of the review are described in Section 3.

### 3. Cycle 7 Startup Testing

The inspector reviewed selected test programs and their results to verify the following:

- Procedures were provided with the detailed stepwise instructions, including Precautions, Limitations, and Acceptance Criteria;
- Technical content of the procedures was sufficient to result in satisfactory calibration and test;
- Test programs were implemented in accordance with test sequencing procedures;
- Provisions for recovering from anomalous conditions were provided;
- Methods and calculations were clearly specified and tests were conducted accordingly;

- Review, approval, and documentation of the results were in accordance with the requirements of the TS and the licensee's administrative controls.

The following tests were reviewed:

### 3.1 Thermal Hydraulic Limits and Power Distribution

The inspector reviewed the test procedure 7.3.23, "Core Performance Daily Surveillance", Rev. 11 and results of June 16 through 22, 1985. The inspector verified by review of the program OD-6 and P-1 results that the thermal limits, LHGR, MAPLHGR, and MCPR were all within the TS limits during this period.

The inspector noticed that core performance data taken at cycle burnup 200 MWD/ST (about June 22, 1985) were consistent with analytically predicted values (GE Nuclear Fuel Management Report, Doc. No. 23A 1807, Rev. 0). These included target control rod pattern, axial power distribution and reactivity anomaly comparison. The concern identified during Shutdown Margin Demonstration (NRC inspection report 50-333/85-14) was therefore resolved based on this information.

The inspector had no further questions.

### 3.2 Core Thermal Power and APRM Calibration

The licensee's procedure RAP-7.3.1, "APRM Calibration", Rev. 6 was reviewed for technical adequacy. The inspector reviewed the calibration results of June 16 through 24, 1985, and verified that the Core Thermal Power was determined by the on-demand program OD-3. The final APRM readings were all adjusted within (+5 -0%) of the desired reading as determined from the Core Thermal Power Calculation.

The inspector also reviewed procedure RAP-7.3.3, "Core Thermal Power Evaluation", Rev. 2. This procedure provides an alternative method to calculate core thermal power, when the process computer is not available. During the startup testing period at approximately 75% and 100% power plateaus, the licensee performed a heat balance comparison between the process computer OD-3 and the alternative hand calculation method. The comparisons were in good agreement as shown in the following:

<u>Test Date</u>	<u>OD-3 result (% of rated full power)</u>	<u>Hand Calc. Method (% of rated full power)</u>
6/14/85	76.36	76.2
6/17/85	97.42	96.4

No discrepancies were identified.

### 3.3 Local Power Range Monitor (LPRM) System Calibration

The inspector verified that LPRM calibration and gain adjustment were performed according to plant procedure RAP-7.3.4, "LPRM Calibration", Rev. 5. Calibration data from the test performed on June 14 and 18, 1985 were reviewed. The inspector noted that in both cases, a second full core flux map and subsequent P-1 calculation were performed. The results verified that the Gain Adjustment Factor (GAF) array was within the established limits.

The inspector observed flux mapping (OD-1) activities in the control room on June 27, 1985 and noted that these activities were being performed in accordance with an approved written procedure (RAP-7.3.14 section 7.7) by knowledgeable personnel.

No unacceptable conditions were identified.

### 3.4 Core Power Symmetry Check and Independent Verification

Core power symmetry check was performed at 50%, 75%, and 100% power plateaus in accordance with procedure RAP-7.3.5, "Core Power Symmetry Analysis", Rev. 3. The symmetry was checked about a line from Coordinate 45-46 to 07-08 which divides the core into two symmetric halves. In all cases, the bundle power difference for symmetric pairs was less than 10%. The inspector informed the licensee that for an octant symmetric code, the symmetry is also reflected in the mirror image sense. A licensee representative agreed that in the next cycle startup testing, the bundle power octant symmetry analysis will be checked both rotational and mirror symmetries. The inspector independently verified the 100% power run and noted that both rotational and mirror symmetries were satisfactory.

The inspector had no further questions.

### 3.5 Core Flow Evaluation

Core flow evaluation and indication calibration was performed at 75% and 100% power plateaus in accordance with procedure RAP 7.3.7 on June 14 and 18, 1985. The following results were noted:

<u>Power Level</u>	<u>Computer Core Flow (Computer Pt. B044) (MLB/HR)</u>	<u>Recorder Core Flow (Panel 09-05) (MLB/HR)</u>
75.8%	55.9	56.5
97.4%	76.9	78.0

Computer Calculated Substitute Core Flow (OD-3) (MLB/HR)	Measured Core Flow Based on Double Tapped Jet Pumps (MLB/HR)	Measure Core Flow Based on all Jet Pumps (MLB/HR)
55.6	55.6	55.5
77.3	75.2	74.3

No unacceptable conditions were identified.

4. Quality Assurance Involvement in Startup Testing

The inspector reviewed the licensee's QA involvement during the post refueling startup testing and noted audits had been performed for core verification and control rod scram time testing. The inspector also learned that QA is in the process of auditing core power symmetry analysis (RAP 7.3.5) and TIP system (RAP 7.3.14).

Based on the document review (Surveillance Report No. 1031-draft version) and discussion with a QA supervisor, the inspector determined that QA/QC was actively involved in the Cycle 7 startup testing activities.

No unacceptable conditions were identified.

5. Exit Interview

Licensee management was informed of the purpose and scope of the inspection at the entrance interview. The findings of the inspection were periodically discussed with licensee personnel and were summarized at the conclusion of the inspection on June 28, 1985. Attendees at the exit interview are denoted in paragraph 1.

No written material was provided to the licensee by the inspector at any time during this inspection.