U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-333/85-03

Docket No. 50-333

License No. DPR-59 Priority - Category C

Licensee: Power Authority of the State of New York
10 Columbus Circle
New York, New York 10019

Facility Name: James A. FitzPatrick Nuclear Power Plant

Inspection At: Scriba, New York

Inspection Conducted: January 14 - 18, 1985

Inspectors: D. Florek for 2/14/85
C. Petrone, Lead Reactor Engineer date

date

Approved by: D. Florek for 2/14/85
L. H. Bettenhausen, Chief, Test Program Section date

Inspection Summary:

Areas Inspected: Routine, unannounced, inspection of the cycle 6 startup physics testing program and QA surveillance during startup testing. The inspection involved 22 hours onsite by one region based inspector.

Results: No violations were identified.

DETAILS

1. Persons Contacted

PASNY

H. Glovier, Resident Manager

*R. Converse, Superintendent of Power

*W. Fernandez, Operations Superintendent

*R. Patch, Quality Assurance Superintendent

*D. Burch, Reactor Analyst Supervisor

NRC

*L. Doerflein, Senior Resident Inspector

The inspector also interviewed other licensee personnel during the inspection.

*Denotes those present at the exit meeting on January 18, 1985.

2.0 Core Verification

The inspector reviewed the completed core verification maps prepared by the licensee and noted that the final verified position and orientation of the fuel bundles were in accordance with the FitzPatrick Cycle 6 Management Report dated May, 1983, and Supplement 1 to that report, dated December, 1983. The inspector noted that the verification had been performed by the Reactor Analyst, a Reactor Engineer, and a QC inspector. A separate review of the videotapes was performed by another QC inspector. During the licensee's review, one bundle was identified which was not fully seated. The licensee reseated this bundle and reperformed the entire core verification to ensure no other bundles were improperly seated.

The (NRC) inspector also viewed the core verfication videotapes and verified, for a sample of one half the core, that the fuel bundle position and orientation were in accordance with the core map. The videotapes were generally clear and the serial numbers or the fuel assemblies were adequately visible.

At the exit meeting, the inspector discussed the potential difficulty detecting an unseated fuel assembly. During the pass to videotape the bundle serial numbers, the camera is pointed vertically downward and focused on the fuel bundle lifting bail. Because of this, it is difficult to determine if the bundle is fully seated. To compensate, other licensees make an additional pass over the top of the core using a right angle camera lens which provides a horizontal view across the top of the core. An unseated fuel bundle is easily detected. The licensees' representative stated they would evaluate using this method during the next refueling.

The inspector had no further concerns.

3.0 Core Power Distribution Limits

The inspector reviewed the process computer programs and the on-demand program outputs to verify that:

- The plant was being operated within licensed power distribution limits;
- The operational parameters and thermal limits were periodically monitored, employing the process computer programs;
- The information stored in the process computer was periodically updated in order to monitor the latest operational parameters as required by Technical Specifications;
- An adequate back-up method was available when the process computer was unavailable; and,
- The computer recovery procedure was properly implemented each time the process computer recovered from an outage.

The inspector reviewed the periodic programs and the on-demand print-outs of the GE PAC 4000 process computer with GEXL-plus-15 correlations for the process monitoring. The periodic program P-1, performed January 17, 1985, showed LHGR, MCPR, and APLHGR were within their respective limiting values.

BUCLE

A backup core limit program, BUCLE, was executed on January 8, 1985 with the reactor at 100% Core Thermal Power (CTP). The results were compared with the P-1 printout for January 8, 1985. The BUCLE information included: SECLOG (tape input from the Security Log); and exposure update, control rod position, and OD-6 (12 highest bundle thermal data). The inspector determined that the BUCLE output was comparable to the periodic program monitoring information when the process computer was not available.

No discrepancies were identified.

4.0 Core Thermal Power

RAP 7.3.3 Core Thermal Power Evaluation, describes the methods used to calculate the core thermal power by performing an energy balance on the reactor vessel based on measured thermodynamic data. The procedure describes four methods: the process computer; the long form heat balance; the short form heat balance; and nomograms. The method used depends on the purpose for which the calculation is being made, the availability of the process computer system and the degree of accuracy required. Routinely, the process computer method is used to determine the core thermal power. The short form and nomograms can be used by operating personnel for quick power checks if the computer is not available. The long form heat balance is used by the Reactor Analyst when the process computer is not available.

During startup, the long form heat balance was performed at various power levels and compared to the value calculated by the process computer.

Nominal Power Level	DATE	Core Thermal Power, MWth (feed flow, Mlb/hr)	
		Long Form Heat Balance	Process computer, OD-3
27%	9/5/83	662 (2.45)	700.55 (2.59)
50%	9/9/83	1189 (4.6)	1236.16 (4.85)
74%	9/10/83	1800 (7.4)	1819.16 (7.48)
100%	9/20/83	2421.3 (10.3)	2429.31 (10.35)

The inspector reviewed these results and noted that the disagreement between the manual and computer calculated values at low power levels was due primarily to the differing values of feedwater flow used in the calculations.

On January 17, 1985, the inspector observed the reactor analyst perform a manual long form heat balance and compare the results to the OD-3 printout from the process computer. The inspector independently calculated the core thermal power and verified that the reactor analyst's results (2434 MWth) was correct and in agreement with the result obtained using the process computer (2435 MWth). The inspector also verified that the instrumentation used to obtain the necessary input data was in calibration.

The inspector also reviewed the reactor analyst's records of the daily average core thermal power level for the past twelve months and verified that the power level did not exceed the licensed limit of 2436 MWth.

No discrepancies were identified.

5.0 Core Power Symmetry Analysis

RAP 7.3.5 Core Power Symmetry Analysis, was performed at 34%, 75%, and 100% core thermal power to insure that power was being generated symmetrically in the reactor. The symmetry was checked about a line from coordinate 45-46 to coordinate 07-08 which divides the core into two symmetric halves. The procedure requires the reactor analyst to compare the power produced by symmetric pairs of fuel bundles and to evaluate any values that differ by more than 10%. The inspector reviewed the data for the 100% power run and verified that the bundle power difference for symmetric pairs was less than 10%.

No discrepancies were identified.

6.0 Core Flow Evaluation and Indication Calibration

Reactor Analyst Procedure RAP 7.3.7, Core Flow Evaluation and Indication Calibration was performed successfully at 100% Power on September 22, 1983. This procedure provides a method for calibrating core flow indication using the pressure taps on the jet pumps. The licensee used computer program JETP 'P83, Jet Pump Calibration Program, to calculate the core total flow usi g data (e.g., Core Thermal Power, Recirculation Flow Core differential Pressure, Recirculation Loop Temperature, etc.) entered manually into the computer. The acceptance criteria states that the measured flow in each loop and the total measured flow, must equal the calculated flow in each loop and the total calculated flow within ±3%.

The results were:

	Measured Flow Mlb/hr	Calculated Flow Mlb/hr	% Difference (%)
Total Core	77.1585	78.0573	1.16%
Loop A	37.8206	37.9475	0.34%
Loop A	39.3379	40.1098	1.96%

No discrepancies were identified.

7.0 Quality Assurance Involvement in Startup Physics Testing

The inspector reviewed the licensee's QA department involvement during the post refueling startup physics testing and noted audits had been performed during core verification on July 12, 1983 and core flow evaluation and indication calibration on October 26, 1983. An auditor also performed a review of the completed startup program test report on November 15, 1983 and verified that all required tests were complete and signed off satisfactorily. The RAP 7.3.23 Core Performance Daily Surveillance was audited on August 7, 1984 and the RAP 7.3.9 Shutdown Margin Check was audited on October 22, 1984. The inspector reviewed the findings of these audits and noted that corrective action had been completed for the discrepancies noted. However, no witnessing of the startup test activities had been performed.

At the exit meeting the inspector discussed the desirability of having QA or QC witness some of the startup physics test activities. The licensee's representative acknowledged the inspector's comments.

8.0 Exit Meeting

The inspector discussed the inspection findings at an exit meeting on January 18, 1985.

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