Entergy

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RBG-47144

May 11, 2011

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Cycle 17 Startup Report
River Bend Station, Unit 1
Docket No. 50-458
License No. NPF-47

Dear Sir or Madam:

In accordance with River Bend Station (RBS) Technical Requirements Manual TR 5.6.8, enclosed is a Startup Report that provides a summary of the startup physics testing conducted on the Cycle 17 core reload.

If you have any questions or require additional information, please contact David Lorfing, Manager, Licensing at (225) 381-4157.

Sincerely,

Manager, Licensing
River Bend Station Unit 1

DNL/bmb

Attachment

IE26
NRR

cc: Regional Administrator
U. S. Nuclear Regulatory Commission
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NRC Senior Resident Inspector
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U. S. Nuclear Regulatory Commission
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RBG-47144
RBF1-11-0077
File codes; G9.5, G9.25.1.4

ATTACHMENT TO

RBG-47144

Cycle 17

Startup Physics Test Summary

ENTERGY OPERATIONS, INC.
RIVER BEND STATION

Cycle 17

Startup Physics Test Summary

OVERVIEW

River Bend Station (RBS) resumed commercial operation in Cycle 17 on February 12, 2011 following a Refueling/Maintenance Outage. The Cycle 17 reload consisted of replacing 240 Atrium 10 AREVA fuel assemblies with 240 Global Nuclear Fuel (GNF) GNF2 fuel assemblies. No other revision to the design or operation of the station were conducted which would affect the scope of this report.

The following startup tests were performed during Refueling Outage RF16 or while attaining full power after RF16, and are summarized in this report:

1) Core Loading Verification

2) Control Rod Scram Time Testing

3) Shutdown Margin Determination

4) TIP Symmetry

In addition to the above startup physics tests, the startup test program included: Core Monitoring System Verification, and other surveillance testing required by RBS Technical Specifications. The additional test results are available at the site on request.

CORE LOADING VERIFICATION

Purpose

Ensure each reactor fuel assembly is:

- In its correct core location
- Oriented properly
- Seated properly in its support piece

Criteria

The reactor core is visually checked to verify conformance to the vendor supplied core loading pattern. Fuel assembly serial numbers, orientations, and core locations are recorded. A height check is performed to verify all assemblies are properly seated.

Results

The as-loaded core was verified for proper fuel assembly serial numbers, locations, orientation and seating in accordance with the RBS Cycle 17 core loading pattern. There were no location or orientation deviations from the Cycle 17 core loading pattern.

The core verification procedure was successfully completed on February 5, 2011.

CONTROL ROD FUNCTIONAL TESTING

Purpose

Verify functionality of each control rod by:

- Performing normal withdrawals and insertions
- Ensuring it is latched to its control rod drive

Criteria

Testing of each control rod is performed in accordance with technical specification to ensure proper operability. This testing includes coupling verification, and scram time testing.

Results

All control rods were scram timed tested and coupling verified as discussed below.

Fifteen (15) Control Rod Drive Mechanisms and eleven (11) Control Rod Blades were replaced during the outage. Seven (7) hydraulic control units had maintenance completed. All maintenance related rods with the exception of 20-45 and 16-53 were scram time tested prior to startup during the vessel pressure test in accordance with Technical_Specification Surveillance Requirements 3.1.4.3 and 3.1.4.4 with satisfactory results. Control rod 20-45 remained inoperable (@ position 00) and reactor power below 40% CTP until tested. Control rod 16-53 was tested at zero pressure to restore operability for the approach to critical.

The remaining control rods were scram time tested during the vessel pressure test in accordance with RBS Technical Specification Surveillance Requirement 3.1.4.4 (fuel movement) with the exception of 12-45 and 04-37.

Control rods 20-45, 16-53, 12-45 and 04-37 were tested and satisfactorily met the acceptance criteria prior to exceeding 40 percent rated core thermal power.

A control rod coupling check was performed in accordance with RBS Technical Specification Surveillance Requirement 3.1.3.5 each time a control rod was fully withdrawn.

SHUTDOWN MARGIN DETERMINATION / REACTIVITY ANOMALY CHECK

Purpose

To ensure that:

- The reactor can be made sub-critical from all operating conditions
- The reactivity transients associated with postulated accident conditions are controllable within acceptable limits
- The reactor will be maintained sufficiently sub-critical to preclude inadvertent critically in the shutdown condition

Criteria

The in-sequence rod withdrawal shutdown margin calculation begins by withdrawing control rods in their standard sequence until criticality is achieved. The shutdown margin of the core is determined from calculations based on the critical rod pattern, the reactor period and the moderator temperature to satisfy SR 3.1.1.1.a.

Reactivity Anomaly verification is performed in accordance with Technical Specification Surveillance Requirement 3.1.2.1 after reaching equilibrium xenon concentrations at 100% reactor power.

Results

The in-sequence critical shutdown margin surveillance procedure was completed on February 11, 2011. The shutdown margin (SDM) at the beginning-of-cycle (BOC) was calculated to be 0.778 % delta k/k which is bounded by RBS Technical Specification 3.1.1 requirement of 0.38% delta k/k. Final steady state full power operation was achieved on February 23, 2011.

It was verified on February 23, 2011, that no reactivity anomaly was present by performance of Technical Specification Surveillance Requirement 3.1.2.1.

TIP SYMMETRY CHECK

Purpose

To determine the reproducibility of the Traversing Incore Probe (TIP) system readings

Criteria

This procedure applies to BWR plants operating with Global Nuclear Fuel (GNF) reduced uncertainties safety limit Minimum Critical Power Ratio (MCPR) methodology and using 3D MONICORE version 6.58 and higher. This MCPR methodology requires that a TIP symmetry check be conducted each cycle to confirm its assumptions.

Results

The TIP symmetry calculation was performed on April 4, 2011, using 3D Monicore at 100% core thermal power.

The determined TIP uncertainty is 5.59% which is bounded by the acceptance criteria of 6%.