



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

Report No.: 50-302/85-27

Licensee: Florida Power Corporation
3201 34th Street, South
St. Petersburg, FL 33733

Docket No.: 50-302

License No.: DPR-72

Facility Name: Crystal River

Inspection Conducted: June 17 - 21, 1985

Inspector: P. A. Langer
for J. L. Mathis

7-17-85

Date Signed

Approved by: P. A. Langer
for F. Jape, Section Chief
Engineering Branch
Division of Reactor Safety

7-17-85

Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 50 inspector-hours on site in the areas of refueling activities, spent fuel pool activities and the followup on IEB 84-03.

Results: One violation was identified - Failure to comply with the Limiting Condition for Operation (LCO) as specified by TS 3.9.2(a) regarding the audible source range count rate in the control room during core alteration (paragraph 5).

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *P. F. McKee, Plant Manager
- *R. T. Wittman, Operations Superintendent
- *W. L. Rossfeld, Site Nuclear Manager
- *D. G. Green, Licensing Specialist
- *J. L. Bufé, Nuclear Compliance Specialist
- *C. M. Callihan, Nuclear Fuel Management Engineer
- *B. Herbert, Nuclear Technical Specification Coordinator
- M. R. Casade, Nuclear Technical Superintendent Analyst
- *M. E. Colling Nuclear Safety and Reliability Superintendent
- *J. H. Lander, Nuclear Outage and Mods Manager
- #G. R. Westafer, Manager, Licensing and Fuel Management

Other licensee employees contacted included two engineers, technicians, three operators, mechanics, security office members, and office personnel.

Other Organization

R. J. Finnin, B&W Resident Engineer

NRC Resident Inspector

*T. Stetka, Senior Resident Inspector

*Attended exit interview

#Per telephone conversation

2. Exit Interview

The inspection scope and findings were summarized on June 21, 1985, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings.

Following the inspection, on June 27, 1985, the Manager of Licensing and Fuel Management was notified by telephone of the violation and unresolved item listed below.

- a. (Violation) 50-302/85-27-01, Failure to comply with the Limiting Conditions for Operation (LCO) specified by Technical Specification 3.9.2(a) regarding the audible source range count rate indication in the control room during core alteration (paragraph 5).
- b. (Unresolved) 50-302/85-27-02, Retention of records regarding surveillance of the audible source range count rate required by TS 4.9.2(c) (paragraph 5).

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. One new unresolved item identified during this inspection is discussed in paragraph 5.

5. Refueling Activities (60710)

During the core reloading for cycle 6, the inspector observed refueling activities from the control room, reactor building and spent fuel pool to verify that activities were being accomplished in accordance with TSs, license conditions, and NRC requirements. The inspector reviewed the following fuel handling procedures:

SP-346	Containment Penetrations Weekly Check During Refueling Operations
SP-530	Demonstration of Auxiliary Building Overhead Crane (FHCR-5) Interlock Operability
SP-670	Reactor Building Fuel Handling Bridges (FHCR-1&2) Load Test
SP-671	Spent Fuel Handling Bridge Load Surveillance
SP-673	Functional Test of the Fuel Transfer System
SP-701	Radiation Monitoring System Surveillance Program
FP-203	Defueling and Refueling Operation
FP-204	Miscellaneous Cranes and Hoists Load Test
FP-601	Fuel Handling Equipment Operation
FP-602	Irradiated Fuel Assembly Inspection
FP-1001	Spent Fuel Handling
MP-125	Fuel Transfer Tube Covers

The inspector interviewed licensee personnel performing fuel assembly handling evolutions to ensure that personnel were properly trained and

following approved procedures. Reloading activities during the backshift as well as day shift were observed to verify the following:

- Direct communication was established between the control room and reactor building
- Source range neutron flux monitors are operable in accordance with TS 3.9.2, both visible and audible
- The licensee maintained good housekeeping in the refueling areas
- Refueling interlocks were properly tested and operable
- Radiological controls in the refueling area, including precautions against foreign objects falling into the reactor vessel, were satisfactory
- Changes to procedures were made in accordance with administrative procedures
- Appropriate procedure steps and Quality Assurance hold points were signed off

On June 19, 1985, at 1105 hours while fuel movement was in progress within the reactor vessel the inspector observed that there was no audible indication in the control room of neutron flux as required by TS 3.9.2(a). The shift foreman and licensed operators were aware that core alterations were in process and of the TS requirement to have an audible correct rate signal. The licensee immediately suspended all fuel movement at approximately 1120 hours when the inspector notified the shift foreman of his observations.

Operations personnel investigated the problem. Results showed that the volume control knob was turned down to the minimum level. However, the audible indication of neutron flux was operable and could be heard by the operators on the main fuel bridge within the reactor building. TS 3.9.2(a) LCO requires that two source range neutron flux monitors, each with visual indication in the control room and one with audible indication in the control room be operable. Failure to maintain the control room count rate signal audible is a violation (302/85-27-01).

TS surveillance requirement 4.9.2.(c) requires that each source range neutron flux monitor be demonstrated operable by the performance of a channel check at least once per 12 hours during core alterations. The inspector reviewed procedure SP-406, Refueling Operation Daily Data Requirements, which provided an 8 hour shift channel check for audible indication of source range count rate in the containment only. There were no records or provision provided by SP-406 for the licensee to perform a channel check of audible indication in the control room of source range neutron flux. A review of the channel check records for audible indication of source range count rate in the control room will be performed during a future inspection. This item will be tracked as unresolved item 50-302/85-27-02, Retention of records regarding TS 4.9.2(c) surveillance of audible source range count rate in control room.

6. Spent Fuel Pool Activities (86700)

The inspector observed fuel handling operations during fuel movement in the spent fuel pool area and reviewed procedures related to fuel handling to verify that the procedures included the following:

- a. A limitation on the number of fuel assemblies that can be out of safe geometry locations at the same time.
- b. Provisions for verifying prior to fuel handling that the spent fuel pit area crane interlocks or physical stops will prevent the crane from passing over fuel storage locations.
- c. Provisions for verifying prior to fuel handling that the spent fuel pool area ventilation system is operable.
- d. Provisions for verifying prior to fuel handling that the loaded shipping cask is within the weight limit of the spent fuel pool area crane.
- e. Provisions for verifying that the spent fuel storage area isolation occurs on a high radiation signal.
- f. Provisions for verifying that minimum water level requirements are monitored during fuel handling operations.
- g. Provisions for verifying that the spent fuel pool storage area radiation and airborne radioactivity monitors are operable.
- h. Provisions for verifying that the spent fuel pool cooling and clean-up system is operable.

No violations or deviations were identified in the areas inspected.

7. Followup on IE Bulletin 84-03, Refueling Cavity Water Seal, (92703), Unit 3

The licensee's November 20, 1984, response to IE Bulletin 84-03 provided a summary of the licensee evaluation of the potential and consequences of a refueling cavity water seal failure for the Crystal River Nuclear Station. The licensee considered the differences in the seal plate used at Crystal River to those used at Haddam Neck and concluded that a gross seal failure of the magnitude experienced at Haddam Neck is not a credible event at Crystal River.

The passive seal system at Crystal River consist of a circular, steel, annular plate which is gasketed and attached to machined ledges on the reactor vessel (RV) flange and shield plate.

The rubber seal rings are compressed between the surfaces with stainless bolts. The inspector verified that the procedure FP-411, Canal Seal Plate Installation, specified sequencing and torque values for the 72 bolts used to provide for leak tight integrity. In response to concerns in report number 85-19, the licensee provided additional information by letter dated June 5, 1985.

The maximum credible leakage is estimated to be approximately 3900 gallons per minute (gpm) based on a gross failure of 50% of the inner rubber seal ring. The inspector verified that the refueling cavity water level is monitored and alarms locally in the control room. In the event of seal failure, an operator would have sufficient time, upon receipt of the low water level alarm, to safely place fuel suspended in the fuel handling bridge into the deep end of the transfer canal.

In addition, the inspector reviewed the procedure, AP-1080, Refueling Canal Water Level Decrease, to assure that guidance is provided to operations on how to respond to an uncontrolled decrease in refueling cavity water level.

Approximately 13,500 gallons of water are available for makeup in the Borated Water Storage Tank. Additionally, water leaking from the refueling cavity will collect in the Reactor Building Sump. Water can be pumped from both of these sources to the reactor vessel cavity at the rate of 3000 gpm using one Decay Heat Removal Pump.

Based on the above considerations and followup of the licensee's response to IEB 84-03, assurance that gross seal failure such as experienced at Haddam Neck would not occur at Crystal River Nuclear Plant.

IEB 84-03 at Crystal River Nuclear Plant is closed.