



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

Report No.: 50-302/84-33

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

Docket No.: 50-302

License No.: DPR-72

Facility Name: Crystal River 3

Inspection Dates: November 10, 1984 - December 20, 1984

Inspection at Crystal River site near Crystal River, Florida

Inspector: T. F. Stetka
T. F. Stetka, Senior Resident Inspector

1/28/85
Date Signed

Accompanying Personnel: J. E. Tedrow, Resident Inspector

Approved by: V. W. Panciera
V. W. Panciera, Section Chief
Division of Reactor Projects

1/28/85
Date Signed

SUMMARY

Scope: This routine inspection involved 63 inspector-hours on site by one resident inspector in the areas of plant operations, security, radiological controls, Licensee Event Reports and Nonconforming Operations Reports, and licensee action on previous inspection items. Numerous facility tours were conducted and facility operations observed. Some of these tours and observations were conducted on backshifts.

Results: One violation was identified; (Failure to isolate waste gas decay tank while reducing oxygen concentration, paragraph 5.a.(1)).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *C. Bennett, Nuclear Operations Planning Supervisor
- *G. Boldt, Nuclear Plant Operations Manager
- *R. Carbiener, Nuclear Compliance Specialist
- *R. Clarke, Radiation Protection Manager
- *W. Clemons, Nuclear Compliance Specialist
- *M. Culver, Senior Nuclear Reactor Specialist
- *C. Davis, Health Physics Technician
- *D. Fields, Nuclear Reliability Supervisor
- *R. Fuller, Manager Site Nuclear Services
- *D. Green, Nuclear Licensing Specialist
- *E. Howard, Director, Site Nuclear Operations
- *A. Kazemfar, ALARA Specialist
- *J. Kraiker, Nuclear Operations Specialist
- *W. Lager, Contract Health Physics Technician
- D. McCollough, Nuclear Chemistry Supervisor
- P. McKee, Nuclear Plant Manager
- *V. Roppel, Nuclear Plant Engineering and Technical Services Manager
- *W. Rossfeld, Nuclear Compliance Manager
- *P. Skramstad, Nuclear Chemistry and Radiation Protection Superintendent
- *D. Smith, Nuclear Maintenance Superintendent
- *W. Thomas, Chief Nuclear Chemistry Technician
- *R. Tyrie, Assistant Nuclear Operator
- *J. Wright, Nuclear Support Specialist Chem/Rad Protection Services

Other personnel contacted included office, operations, engineering, maintenance, chem/rad and corporate personnel.

*Attended exit interview

2. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on December 20, 1984. During this meeting, the inspector summarized the scope and findings of the inspection as they are detailed in this report with particular emphasis placed on the violation, unresolved item, and inspector followup items. Also during this meeting the following items were discussed:

- a. During a review of completed data for surveillance procedure SP-317 (RC System Water Inventory Balance) performed on November 11, December 10, December 14, and December 17, the inspector identified mathematical errors in the calculation of the leak rate determination. While these

errors were insignificant and did not result in any limit being exceeded, the possibility of larger errors exist. These findings indicate that careful supervisory review of data results are necessary.

- b. During the walkdown of the Emergency Diesel Generator systems, the inspector determined that the drawing of the diesel water jacket cooling system (drawing number 302-283) was missing identification tags.

The licensee representatives acknowledged the inspector's comments and stated that they would review these issues for appropriate corrective actions.

3. Licensee Action on Previous Inspection Items

Not inspected.

4. Unresolved Items

An unresolved item is a matter about which more information is required to determine whether it is acceptable or may involve a violation or deviation. A new unresolved item identified during this inspection is discussed in paragraph 5.a.(2)(a) of this report.

5. Review of Plant Operations

At the beginning of this inspection period the plant was in hot standby (Mode 3) preparing to return to power operation (Mode 1). The plant entered the startup mode (Mode 2) at 10:35 a.m., and returned to power operation at 12:00 noon on November 10. The plant continued in power operation for the remainder of this inspection period.

a. Shift Logs and Facility Records

The inspector reviewed records and discussed various entries with operations personnel to verify compliance with the Technical Specifications (TS) and the licensee's administrative procedures.

The following records were reviewed:

Shift Supervisor's Log; Reactor Operator's Log; Equipment Out-of-Service Log; Shift Relief Checklist; Auxiliary Building Operator's Log; Active Clearance Log; Daily Operating Surveillance Log; Work Request Log; Short Term Instructions (STIs); and selected Chemistry/Radiation Protection Logs.

In addition to these record reviews, the inspector independently verified clearance order tagouts.

As a result of these reviews, the following items were identified:

- (1) During a review of the plant records, the inspector noted continuing efforts to reduce the oxygen concentration in the waste gas decay tanks (WGDTs) due to high (greater than 4%) hydrogen (H_2) concentrations. TS 3.7.13.5 requires the oxygen (O_2) concentration to be maintained less than or equal to 2% when the H_2 concentration is greater than or equal to 4%. Action statement 3.7.13.5.a of this TS requires that if the H_2 concentration is greater than or equal to 4% and the O_2 concentration is greater than or equal to 2%, then the O_2 concentration must be reduced to within specification without delay. If these limits are exceeded, i.e., the O_2 concentration increases such that the concentration is greater than or equal to 4%, then TS Action Statement 3.7.13.5.b requires that waste gas addition to the affected tank must be suspended and the O_2 concentration must be reduced to within specification without delay.

The sequence of events (as excerpted from various plant logs) was as follows:

<u>Date</u>	<u>Time</u>	<u>Description</u>
12/12	1530	WGDT "B" H_2 - 5.6%, O_2 - 3.9%; enter TS 3.7.13.5.a.
12/13	0330	WGDT "B" H_2 - 6.4%, O_2 - 4.75%; enter TS 3.7.13.5.b.
	1430	WGDT "B" isolated due to 75 psig pressure, placed WGDT "C" in service.
12/14	0030	WGDT "C" H_2 and O_2 out of specification, enter TS 3.7.13.5.a.
	0600	WGDTs "C" and "A" H_2 and O_2 greater than 4%, enter TS 3.7.13.5.b. (WGDT "C" H_2 - 4.4%, O_2 - 4.5%; WGDT "A" H_2 - 5.1%, O_2 - 4.5%).
	0735	Placed WGDT "A" in service (WGDT "C" was secured at this time).
	0825	All WGDTs secured from service.

During the period from 1530 on 12/12 until 1430 on 12/13 for WGDT "B" and from 1430 on 12/13 until 0735 on 12/14 for WGDT "C" the licensee was attempting to reduce the O_2 concentration in these tanks by adding nitrogen (N_2). The N_2 was being added via the waste gas header. As long as the tanks are connected (via open valves) to the waste gas header, both N_2 and waste gas additions were being made to the tanks. The WGDT "B" was secured from the waste gas header when its pressure limit (75 psig) was reached. At 0735 on 12/14 when WGDT "A" was placed in service, the tank was still out of specification. The licensee was hoping to be able to

reduce this tank to within specification via the waste gas header because this tank had the lowest waste gas amount. The licensee failed to take any action to develop an alternate means of adding N_2 to the tanks while they were secured from the waste gas header. After several discussions with the NRC inspector, the licensee developed a method to reduce the O_2 concentration while the tanks were isolated from the waste gas header. This method was implemented at 2255 on 12/14 and both the "A" and "C" tank were released, the residual gas in the tank was brought into specification at 2100 on 12/16.

Failure to secure the addition of waste gas into the WGDs and to provide a timely reduction of the O_2 concentrations is contrary to the requirement of TS 3.7.13.5.b and is considered to be a violation.

Violation (302/84-33-01): Failure to secure waste gas addition and provide a timely reduction of oxygen concentration to the WGDs as required by TS 3.7.13.5.b.

- (2) STI 84-98 directed operators to ensure that boron additions to the reactor coolant system be conducted near the requirements of plant curve 3.20, Boron for Shutdown Margin Versus Cycle Lifetime, (i.e., do not add more boron than is necessary) since fuel depletion was greater than predicted and curve 3.20 was excessively conservative.

Review of this issue identified the following items:

- (a) The reactivity worth vs. effective full power days (EFPD) curve has the actual fuel depletion rate deviating from the predicted fuel depletion rate by an amount greater than expected. This curve is utilized to determine the overall core reactivity balance.

TS 4.1.1.1.2 requires the overall core reactivity balance be determined every 31 EFPD by comparing actual values to predicted values and allows the values to be adjusted (normalized) to actual core conditions prior to exceeding 60 EFPD.

Discussions with the licensee indicate that no such adjustments were made prior to 60 EFPD, but that some adjustments may have been made subsequent to 60 EFPD. Adjustments subsequent to 60 EFPD are not permitted by the TS. The licensee will review records to determine if any overall reactivity balance adjustments were made for this cycle or any previous cycles subsequent to 60 EFPD for the operating cycle.

Unresolved Item (302/84-33-02): Review overall reactivity balance adjustments to determine if any adjustments were made subsequent to 60 EFPD for this cycle or any previous cycle.

- (b) The licensee's nuclear engineering department is re-analyzing the boron concentrations based on current fuel worths in an effort to revise curve 3.20 and remove the approximate 140 ppm error presently in the curve. This re-analysis may or may not be completed prior to the end of cycle which is presently scheduled for March 9.

Inspector Followup Item (302/84-33-03): Review the results of the boron concentration re-analysis being performed to revise curve 3.20.

b. Facility Tours and Observations

Throughout the inspection period, facility tours were conducted to observe operations and maintenance activities in progress. Some operations and maintenance activity observations were conducted during backshifts. Also, during this inspection period, licensee meetings were attended by the inspector to observe planning and management activities.

The facility tours and observations encompassed the following areas: Security Perimeter Fence; Control Room; Emergency Diesel Generator Room; Auxiliary Building; Intermediate Building; Battery Rooms; and, Electrical Switchgear Rooms.

During these tours, the following observations were made:

- (1) Monitoring Instrumentation - The following instrumentation was observed to verify that indicated parameters were in accordance with the TS for the current operational mode:

Equipment operating status; Area, atmospheric and liquid radiation monitors; Electrical system lineup; Reactor operating parameters; and Auxiliary equipment operating parameters.

No violations or deviations were identified.

- (2) Safety Systems Walkdown - The inspector conducted a walkdown of the "A" and "B" Emergency Diesel Generator Systems to verify that the lineup was in accordance with license requirements for system operability and that the system drawing and procedure correctly reflect "as-built" plant conditions.

No violations or deviations were identified.

- (3) Shift Staffing - The inspector verified that operating shift staffing was in accordance with IS requirements and that control room operations were being conducted in an orderly and professional manner. In addition, the inspector observed shift turnovers on various occasions to verify the continuity of plant status, operational problems, and other pertinent plant information during these turnovers.

No violations or deviations were identified.

- (4) Plant Housekeeping Conditions - Storage of material and components and cleanliness conditions of various areas throughout the facility were observed to determine whether safety and/or fire hazards existed.

No violations or deviations were identified.

- (5) Radiation Areas - Radiation Control Areas (RCAs) were observed to verify proper identification and implementation. These observations included selected licensee conducted surveys, review of step-off pad conditions, disposal of contaminated clothing, and area posting. Area postings were independently verified for accuracy through the use of the inspector's own radiation monitoring instrument. The inspector also reviewed selected radiation work permits and observed personnel use of protective clothing, respirators, and personnel monitoring devices to assure that the licensee's radiation monitoring policies were being followed.

No violations or deviations were identified.

- (6) Security Control - Security controls were observed to verify that security barriers are intact, guard forces are on duty, and access to the Protected Area (PA) is controlled in accordance with the facility security plan. Personnel within the PA were observed to verify proper display of badges and that personnel requiring escort were properly escorted. Personnel within vital areas were observed to ensure proper authorization for the area.

No violations or deviations were identified.

- (7) Fire Protection - Fire protection activities, staffing and equipment were observed to verify that fire brigade staffing was appropriate and that fire alarms, extinguishing equipment, actuating controls, fire fighting equipment, emergency equipment, and fire barriers were operable.

No violations or deviations were identified.

- (8) Surveillance - Surveillance tests were observed to verify that approved procedures were being used; qualified personnel were conducting the tests; tests were adequate to verify equipment operability; calibrated equipment, as required, were utilized; and TS requirements were followed.

The following tests were observed and/or data reviewed:

- SP-140, Incore Neutron Detector System Calibration;
- SO-312, Heat Balance Calculations;
- SP-317, RC System Water Inventory Balance;
- SP-335, Radiation Monitoring Instrumentation Functional Test;
- SP-433, In-core Neutron Detectors Channel Check; and
- SP-701, Radiation Monitoring System Surveillance Program (for calibration of RM-A11 in accordance with procedure CH-232 Atmospheric Radiation Monitoring System Calibration).

As a result of these reviews the following item was identified:

Procedure SP-312 requires a quarterly heat balance cross check with a backup computer (IBM 5100) to ensure that the plant computer is providing adequate data. Recent problems with the IBM 5100 prevented the performance of this cross check on two occasions. The licensee is developing a hand calculation method to enable the cross check to be performed if the IBM 5100 is out of service. This method will be incorporated into a revised SP-312 procedure.

Inspector Followup Item (302/84-33-04): Review revision to procedure SP-312 to add hand calculation method for computer cross check.

- (9) Maintenance Activities - The inspector observed maintenance activities to verify that correct equipment clearances were in effect; Work Requests and Fire Prevention Work Permits, as required, were issued and being followed; Quality Control personnel were available for inspection activities as required; and TS requirements were being followed.

Maintenance was observed and work packages were reviewed for the following maintenance activities:

- Repair of Waste Disposal Flow Recorder WD-19-FR;
- Repair of Fuel Storage Pool Area Criticality Monitor, RM6-14;
- Maintenance performed on NI-11-NR, Incore Detector No. 2 Recorder; and
- Troubleshooting Security System Vital Door Failure.

No violations or deviations were identified.

- (10) Radioactive Waste Controls - Solid waste compacting and selected liquid and gaseous waste releases were observed to verify that approved procedures were utilized, that appropriate release approvals were obtained, and that required surveys were taken.

No violations or deviations were identified.

- (11) Pipe Hangers and Seismic Restraints - Several pipe hangers and seismic restraints (snubbers) on safety-related systems were observed to ensure that fluid levels were adequate and no leakage was evident, that restraint settings were appropriate, and that anchoring points were not binding.

No violations or deviations were identified.

6. Review of Licensee Event Reports and Nonconforming Operations Reports

- a. Licensee Event Reports (LERs) were reviewed for potential generic impact, to detect trends, and to determine whether corrected actions appeared appropriate. Events, which were reported immediately, were reviewed as they occurred to determine if the TS were satisfied.

LERs 84-19, 84-20 and 84-21 were reviewed in accordance with current NRC enforcement policy.

No violations or deviations were identified.

- b. The inspector reviewed Nonconforming Operations Reports (NCORs) to verify the following: compliance with the TS, corrective actions as identified in the reports or during subsequent reviews have been accomplished or are being pursued for completion, generic items are identified and reported as required by 10 CFR Part 21, and items are reported as required by TS.

All NCORs were reviewed in accordance with the current NRC enforcement policy.

No violations or deviations were identified.

7. Review of Surveillance Program

During a review of the plant surveillance program, the inspector noted the licensee's practice of performing preventive maintenance (PM) on equipment at the time the equipment is due for its routine surveillance test. This practice has been adopted by the licensee to minimize both out of service times and testing frequency (due to the requirement to verify operability of the equipment after a PM has been performed) for plant equipment.

While there is merit to this method, since it reduces equipment downtime and minimizes equipment test cycling, the inspector noted that this methodology could mask the "as found" condition of equipment (e.g., the performance of a PM could repair a deficient condition that may have prevented the equipment from operating).

The inspector's observations were discussed with licensee personnel. The licensee will review this practice and make changes as necessary to ensure that surveillance test results are not altered by the PM program.

Inspector Followup Item (302/84-33-05): Review the licensee's progress to ensure that surveillance test results are not altered by the PM program.