UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

Report No.: 50-302/84-21

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: June 27 - July 30, 1984

Inspection at Crystal River site near Crystal River, Florida

Inspector: John F. Stetka for
T. F. Stetka, Senior Resident Inspector — 8/10/84 Date Signed

Approved by: V. W. Panciera
V. W. Panciera, Chief, Project Section 2B, Division of Reactor Projects — 8/13/84 Date Signed

SUMMARY

Areas Inspected

This routine inspection involved 132 inspector-hours on site by one resident inspector in the areas of plant operations, security, radiological controls, Licensee Event Reports and Nonconforming Operations Reports, IE Bulletin 84-02, 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 back shifts.

Results

One violation was identified (Failure to follow maintenance and surveillance procedures; paragraphs 5.b(8) & (9)).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*G. Boldt, Plant Operations Manager
*M. E. Collins, Nuclear Safety and Reliability Superintendent
*D. A. Fields, Nuclear Reliability Supervisor
*A. E. Freind, Nuclear Staff Engineer
*V. A. Hernandez, Senior Nuclear Quality Assurance Specialist
*E. M. Howard, director, Site Nuclear Operations
*S. D. Mansfield, Nuclear Compliance Supervisor
R. V. Mathews, Nuclear Calibration Laboratory Supervisor
P. F. McKee, Nuclear Plant Manager
E. C. Simpson, Director, Nuclear Operations Engineering and Licensing
J. L. Roberts, Nuclear Chemistry Manager
*V. R. Roppel, Nuclear Plant Engineering and Technical Services Manager
*P. J. Skramstad, Nuclear Chemistry and Radiation Protection Superintendent
*D. H. Smith, Nuclear Maintenance Superintendent
W. S. Wilgus, Vice President, Nuclear Operations
*K. R. Wilson, Supervisor, Site Nuclear Licensing

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 July 30, 1984. During this meeting, the inspector summarized the scope and findings of the inspection as they are detailed in this report. During this meeting the violation, unresolved item and inspector followup items were discussed.

3. Licensee Action on Previous Inspection Items

(Closed) Inspector Followup Item (302/82-11-04): The licensee has completed analysis of all applicable conduit support hangers and has modified those that were found to be less conservative than design. In addition, the licensee issued Revision 1 to Licensee Event Report (LER) 82-44 to document completion of these activities.

(Closed) Inspector Followup Item (302/84-02-06): The licensee revised procedure SP-344 to provide different acceptance criteria for the differential pressure and inches of water depending upon the temperature of the inlet water.

(Closed) Inspector Followup Item (302/84-14-05): The licensee has investigated the problem of document readability and has established controls to ensure reproduced documents are readable. These controls include instructing document control personnel to verify readability after reproduction and ensuring the use of appropriate pens for signatures.

(Closed) Violation (302/84-02-01): The licensee has changed their method of test instrument control on back shifts and weekends by assigning the sign-out control of test instrumentation to their document control personnel (who are available 24 hours a day) when a QC inspector is unavailable. Procedures have been revised and appropriate personnel trained to establish this control. Discussions with personnel and observations of test instrument control activity by the inspector indicate that this new method provides effective instrument control.

(Closed) Inspector Followup Item (302/84-12-04): The licensee has revised procedure SP-443, Master Surveillance Plan, to require a review of the last surveillance completion date when a surveillance procedure is carried over to ensure that the required surveillance interval is not exceeded. In addition, the surveillance programs clerk has been provided additional instruction to assure that all applicable departments are kept abreast of upcoming surveillance requirements.

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. A new unresolved item identified during this inspection is discussed in paragraph 7.

5. Review of Plant Operations

The plant continued in power operation (Mode 1) until 6:00 a.m., July 21, 1984 when a shutdown to hot standby (Mode 3) was made to add oil to a reactor coolant pump motor. The plant restarted on the same day and returned to power operation by 4:00 p.m. Power operation continued 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 to 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 (STI's); and selected Chemistry/Radiation Protection Logs.

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

As a result of these review and discussions, the following items were identified:

(1) During observations of clearance order tagout activities, the inspector noted that trades personnel performed an independent personnel verification of a tagout prior to accepting the clearance order from operations personnel to perform maintenance. This practice is consistent with the requirements of procedure CP-115, Inplant Equipment Clearance and Switching Orders, and the requirements of NUREG-0737 Item I.C.6. However, during discussions with operations personnel, the inspector concluded that this practice was not being conducted at all times when operations personnel issued equipment clearances to themselves.

Plant management personnel were appraised of these observations and discussions at which time they directed issuance of a Short Term Instruction (STI) to operations personnel to remind them of the requirements of CP-115. In addition, procedure CP-115 will be revised to clarify the requirement to independently verify a tagout prior to acceptance of the equipment clearance order.

Inspector Followup Item (302/84-21-01): Review revision to procedure CP-115 to clarify the independent verification of a tagout prior to acceptance of the equipment clearance order.

(2) During a review of the operations logs for the reactor startup on July 21 the inspector noted problems with the calculation of the estimated critical position (ECP) of the control rods. The ECP had to be recalculated several times and each calculation resulted in a control rod position that did not make the reactor critical within the TS limits. Investigation by the reactor engineer resulted in the determination that an outdated control rod integral reactivity worth curve was being utilized to compute the ECP. When the updated curve was used, the appropriate ECP was obtained and the reactor was made critical.

Review of this event indicates that the reactor engineer had issued a revision to procedure OP-103, Plant Curve Book, to update this particular curve. However, the revision was not issued in a timely manner resulting in the use of the outdated curve. The licensee will review and modify their procedure review and approval cycle to ensure that procedure changes that directly affect plant operation are issued in an expedient manner.

Inspector Followup Item (302/84-21-02): Review the licensee's corrective actions to expedite procedure changes that directly affect plant operation.

(3) The reactor startup of July 21 was conducted in accordance with procedure OP-210, Reactor Startup. During review of the completed procedure, the inspector noted that conflicting portions of the procedure were initialled as completed. Subsequent discussions with licensee personnel revealed that the procedure was confusing to follow during this startup due to the multiple estimated critical positions (ECPs) that had to be calculated. These ECPs required the operator to flip to different sections of the procedure.

The licensee is revising OP-210 to provide an orderly method of following the procedure when a situation requiring multiple ECPs arises.

Inspector Followup Item (302/84-21-03): Review the revision to OP-210 to provide an orderly method during reactor startups when multiple ECP's are required.

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 Nuclear Services Closed Cycle Cooling System 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 TS 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 exist.

No violations or deviations were identified.

(5) Radiation Areas - Radiation Control Areas (RCA's) 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 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 Protected Area (PA) is controlled in accordance with the facility security plan. Personnel within the PA were observed to ensure proper display of badges and that personnel requiring escort were properly escorted. Personnel within vital areas were observed to insure proper authorization for the area.

No violations or deviations were identified.

(7) Fire Protection - Fire protection activities, staffing and equipment was 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 are operable.

No violations or deviations were identified.

(8) Surveillance testing was observed to verify that approved procedures were being used; qualified personnel were conducting the tests; testing was 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-104, Hot Channel Factors Calculations;
-SP-113, Power Range Nuclear Instrumentation Calibration;
-SP-122, T-Sat Meter Calibration;
-SP-312, Heat Balance Calculations;
-SP-317, RC System Water Inventory Balance;
-SP-326B, Toxic Gas Detection System (Semi-Annual);
-SP-340, ECCS Pump Operability;
-SP-344, Nuclear Services Cooling System Operability;
-SP-390, Startup Surveillance Log;
-SP-433, In-Core Neutron Detectors Channel Check; and,
-SP-442, Special Conditions Surveillance Plan.

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

(a) Procedure SP-104 requires a calculation in step 6.2.2 to determine the nuclear enthalpy rise hot channel factor ($F^N_{\Delta H}$).

This calculation uses a multiplier which is the product of the radial uncertainty factor and the radial local peaking factor. The radial local peaking factor has two values, one for 0-250 Equivalent Full Power Days (EFPD) and one for after 250 EFPD.

The inspector's review of the data recorded on July 11, revealed that the radial local peaking factor used was for 0-250 EFPD, though the reactor had exceeded 250 EFPD on June 7. Furthermore, a review of the previous SP-104 data recorded on June 14 also indicated that the incorrect radial local peaking factor had been utilized.

(b) Procedure SP-113, step 1.4 requires verification of the average flux/flow/delta flux trip setpoint. To accomplish this verification, section 6.6 requires flow optimization measurements to be made. These measurements are required to be performed when the reactor is at 100% full power (FP) ±1% FP. If the reactor is not at this power level during the routine quarterly calibration, step 1.4 requires this to be performed at a later date immediately after achieving the required power level.

The last quarterly calibration was performed on April 13, 1984, and procedure section 6.6 was not performed because the reactor was not operating at the prescribed limit. During the period of June 11-18, 1984, the reactor attained and maintained the 100% FP ±1% FP power level, however, the required flow optimization measurements were not made.

In each of these cases, the inspector verified that TS limits had not been exceeded. Failure to use the correct multiplier in procedure SP-104 and failure to perform the required flow optimization measurements of procedure SP-113 is contrary to the procedure adherence requirements of TS 6.8.1 is considered to be a violation.

(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:

- Motor bearing replacement on nuclear services closed cycle cooling pump (SWP) 1B in accordance with maintenance procedure MP-123;

- Replacement of nuclear services seawater system check valves RWV-35 and RWV-38 in accordance with maintenance procedures MP-122 and MP-132; and,

- Replacement of exhaust header gaskets on emergency diesel generator (EDG) -B.

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

Procedure MP-123, step 9.3, requires that bearing vibration and temperature data be measured and recorded every 15 minutes for at least one hour. In addition, this step requires the measurements to be made in the three planes (i.e., horizontal, vertical, axial). The purpose of this data is to determine the acceptability of the new bearings. While observing these measurement activities on June 28 the inspector noted that the readings were being taken at intervals in excess of 15 minutes and that the temperature readings were only being taken in one plane.

Failure to adhere to the requirements of MP-123 is contrary to the procedure adherence requirements of TS 6.8.1 and is considered to be another example of the violation discussed in paragraph (8) preceding.

Violation (302/84-21-04): Failure to adhere to the requirements of surveillance and maintenance procedures.

(10) Radioactive Waste Controls - Selected liquid and gaseous waste releases and solid waste compacting activities 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 insure 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 (LER) were reviewed for potential generic impact, to detect trends, and to determine whether corrected actions appeared apprcpriate. Events, which were reported immediately, were reviewed as they occurred to determine if the TS were satisfied.

LER's 84-07, 84-12 and 84-13 reviewed in accordance with current NRC enforcement policy. LER's 84-07 and 84-12 are closed. LER 84-13 remains open for the following reason:

LER 84-13 reported inadequate engineered safeguards (ES) testing procedures resulting in some portions of the system being untested. The untested portions were subsequently tested and found to be operational. The licensee is revising ES surveillance test procedures to ensure adequate testing. This LER remains open pending revision and implementation of the applicable procedures.

b. The inspector reviewed Non-Conforming Operations Reports (NCOR) 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 NCOR's were reviewed in accordance with the current NRC enforcement policy.

NCOR 84-171 reported the securing of the waste gas decay tank (WGDT) hydrogen (H_2) and oxygen (O_2) continuous monitoring system. The monitoring system is required by TS to be operable and was initially secured for sampling but due to interdepartmental communication problems and/or shift turnover inadequacies the tank was left isolated for an excessive time period (approximately 7 hours). The licensee is investigating the cause of this event and will implement corrective action to prevent recurrence.

Inspector Followup Item (302/84-21-05): Review the licensee's investigation and corrective action to prevent inadvertent isolation of the WGDT H_2 and O_2 monitoring system.

7. Review of Plant Review Committee (PRC) Activities

The inspector attended the plant's onsite safety committee (PRC) meetings to observe committee activities and verify adherence to Technical Specification (TS) requirements. During these meetings, the inspector noted the licensee's practice of making alternate members a full PRC member if the PRC member was unavailable to attend a meeting. This assignment of the alternate member was made in writing by the full member and was attached as part of the minutes for the PRC meeting.

TS 6.5.1.3 allows the use of up to two alternates to meet the PRC quorum requirement of five members. The TS also states that an alternate is appointed on a temporary basis. The intent of this TS is to provide a fill-in member to act in behalf of the regular member who cannot attend a meeting.

This use of alternates was discussed with licensee personnel. The inspector stated that the licensee's practice of alternate use did not satisfy the intent of the TS. The licensee acknowledged the inspector's comments and will revise procedure AI-300, Plant Review Committee Charter, to correct use of the alternate members and change the PRC meeting activities accordingly.

Unresolved Item (302/84-21-06): Change the PRC charter to correct the use of alternate members and change PRC Meeting activities.

8. Review of Emergency Diesel Generator (EDG) Operation Practices

The inspector reviewed the licensee's EDG operation practices to determine whether EDG operation, including loading and synchronizing to the grid, was accomplished during maintenance on the other (redundant) EDG. Additionally, the inspector reviewed this operating practice during periods of inclement weather. This review is consistent with present NRC staff concerns of EDG reliability (NRC Generic Letter 84-15) and recent NRC concerns about reduced EDG reliability during a station blackout event when the diesel is synchronized to the grid and grid upset occurs.

The licensee does start, synchronize, and load an EDG to the grid when maintenance activities on the redundant EDG are in progress. This method of operation is utilized to minimize the cold fast start requirement of the TS when the redundant EDG is inoperable. Due to a recent event in which the operating EDG was tripped during a grid upset while the EDG was undergoing its routine monthly surveillance test, the licensee has revised their diesel operating procedure (SP-354) to specify not running the diesels during conditions that could enhance a grid upset (e.g., inclement weather).

The inspector's review of abnormal procedure, AP-1076, Violent Weather, indicates that this procedure directs the starting and loading of the EDG's during a hurricane watch and warning. This discrepancy was discussed with licensee personnel and the inspector was informed that procedure AP-1076 would be revised to be consistent with procedure SP-354 and current NRC guidelines.

Inspector Followup Item (302/84-21-07): Review the revision to AP-1076 such that EDG operation is not required during periods of violent weather operations.

9. Review of IE Bulletins (IEB)

The licensee issued a revised response on July 18, 1984, to IEB 84-02, Failure of GE Type HFA Relays In Use In Class IE Safety Systems. The revised response includes findings from a recent relay inspection and provides timely information on current relay rebuilding status. As stated in the response, the licensee will complete an investigation into other relay failures by February 28, 1985. This Bulletin will remain open pending review of the results of this investigation.