UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report No. 50-302/79-48

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

Facility Name: Crystal River Unit 3

Docket No. 50-302

License No. DPR-72

Inspected at Crystal River Facility at Crystal River, Florida

Inspected by: R D Martin for 12/18/79
T. J. Donat Date Signed

Approved by: R D Martin 12/18/79
R. D. Martin, Section Chief, RONS Branch Date Signed

SUMMARY

Inspected on November 13-16, 1979

Areas Inspected

This routine, unannounced inspection involved 32 inspector-hours onsite in the areas of followup on previous inspection findings, review of plant operations, review of electrical power distribution system for the ICS and NNI systems, and surveillance monitoring. An additional twenty hours were spent in the regional office reviewing the plant's integrated control system and nonnuclear instrumentation system and their response to a loss of AC power.

Results

Of the areas inspected, no items of noncompliance or deviations were identified.

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DETAILS

1. Persons Contacted

Licensee Employees

*D. C. Poole, Nuclear Plant Manager
*P. F. McKee, Operations Superintendent
*G. R. Westafer, Maintenance Superintendent
*G. L. Beldt, Technical Support Engineer
*W. E. Kemper, Technical Specification Coordinator
*R. W. Kennedy, Nuclear Compliance Supervisor
*K. F. Lancaster, Nuclear Compliance Auditor
*J. C. Smith, Nuclear Compliance Auditor

Other licensee employees contacted included technicians, operators, mechanic, and office personnel.

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on November 16, 1979 with those persons indicated in Paragraph 1 above. The inspector summarized the areas of the inspection and that his findings were clear in these areas.

3. Licensee Action on Previous Inspection Findings

Closed - Unresolved Item 78-26-02 concerning the lack of documentation of prompt review of chemistry surveillance results (SP-713). The inspector examined chemistry surveillance data and review sheets for the period from October 1, 1979 to November 7, 1979. All data sets had been signed as having been reviewed within one day of their performance except in the cases of weekends where the review had been dated on the following Monday. Also noted were several instances of out of specification data. In each instance a "followup report" (FUR) was referenced, a check of the associated FUR's showed the out of specification results had been corrected. This item is closed.

Closed - Unresolved Item 79-04-10 concerning the need to revise compliance procedures CP-113 and CP-114 so as to give appropriate instructions for making safety-related determinations. The inspector reviewed CP-113 (revision 19, dated 9/20/79) and CP-114 (revision 22, dated 11/8/79). CP-114 requires the individual filling out a modification approval record (MAR), a jumper record, or a deviation to use the information in CP-113 step 4.2.1 to determine whether the work is safety-related or nonsafety-related. CP-113 in step 4.2.1 refers the originator to various documents such as "Instrument List, B&W Essentiality Level List, Equipment List, Preliminary Engineering Safety List, for making the determination. This item is closed.

Closed - Unresolved item 79-24-05 concerning the need for an updated Boration Flow Path procedure. The inspector reviewed valve checklists 1A and 1B of SP-347, revision 15 dated 10/18/79, against flow diagrams 302-611, 302-601, 302-631, and 302-641 and considers the item as closed.

Open - Unresolved Item 77-18-01 concerning the correlation between nuclear instrument calibration and the nuclear heat balance, SP-113. The inspector reviewed revision 9 dated 9/20/79 to SP-113 which required the nuclear instruments to be recalibrated if the power mismatch (power as indicated by the calorimetric less power as indicated by the nuclear instruments) was greater than 0.8% (RTP). In IE inspection Report 78-31 paragraph I.2.C the licensee committed to revise SP-113 as follows: the "as found" allowable error will remain at plus at minus two percent for reportability requirements and the "as left" allowable error will be changed to be negative [i.e., Power (NI) > Power (calorimetric)]. This is acceptable provided the reactor trip occurs before 105.5% reactor thermal (calorimetric) power. It is further noted that the license limit on core power is identical with the calorimetric full power value. Therefore, in order to insure not exceeding the license limit nuclear instrument power should be biased so as to read the same as calorimetric power or higher. The licensee agreed to further review the question.

Open - Unresolved item 78-26-03 concerning the lack of specific acceptance criteria in SP-110, "Reactor Protection System Functional Testing". The inspector reviewed revision 22 dated 10/18/79 to SP-110, and determined that the acceptance criteria now refer to successfully completing the data sheets. A review of the procedure and data sheets identified two problems still outstanding.

a. In step 6.3.7 the reactor coolant system high temperature bistable trip is checked at 618.3°F. The data sheet does not have provisions to signoff this step, and does not provide a tolerance on the temperature bistable setpoint.

b. The high flux trip of 104.5% has a tolerance of ±2.5%. This means the trip could be set at 106% which is in excess of the maximum allowable trip setting of 105.5% per technical specification 2.2.1, Table 2.2-1.

The licensee acknowledged these two items and agreed to have them corrected. The item remains open until these two items have been corrected and the revised procedure reinspected.

Closed - Infraction 79-04-08, Failure to follow compliance procedure CP-114 section 1.1, 1.2, and 4.14 on modification approval record forms (MAR) 78-1-1 and 77-8-10. The inspector reviewed fifteen MAR's issued since August 1, 1979 and retest requirements have been properly delineated in each case. This item is closed.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Followup on Previously Idenfitied Findings

Closed - Open Items 79-04-11, 79-04-13, and 79-27-05 concerning the implementation of revision 19 to compliance procedure CP-114 which incorporated safety-related/nonsafety-related determinations into the MAR, jumper, and deficiency review process. The present revision level of CP-114 is revision 22 dated 11/8/79, and it contains, in steps 4.1.2 for MAR's, step 5.2.2.1 for jumpers, and step 6.1 for deficiencies, instructions to perform a review for safety implications per procedure CP-113. Signature provisions exist on the MAR form and the jumper record to signify completion of this determination. The inspector reviewed fifteen MAR packages and thirty two jumper forms issued since August 1, 1979 and no problems were noted in designating the safety-related component or designation of retest requirements. These three open items are closed.

6. Surveillance Operations

The inspector reviewed the following completed surveillance procedures performed on November 15, 1979:

SP-320, Operability of Boron Injection Sources and Pumps
SP-347, ECCS and Boration System Flow Path
SP-365, Fire Pump Operability and Recirculation
SP-310, Loose Parts Monitoring Subsystem
SP-430, Containment Entry
SP-157, Meterological System

The review consisted of verifying that:

- the test prerequisites and plant conditions were specified and had been performed;
- the contents of the procedures were correct and the tests were performed on schedule;
- that test instruments were listed in the procedures and instruments used were specified in the results;
- that test results were recorded and compared with acceptance criteria.

The inspector had no comments on the completed surveillance procedures.

The inspector also observed the performance of surveillance instruction SP-354 on diesel generator 3A performed on November 13, 1979. The inspector followed the establishing of plant conditions, verifying prerequisites, starting the diesel, flashing the generator, loading the generator, recording

of diesel and generator parameters at 15 minutes intervals, and securing the diesel following the load run. The inspector has no comments on the conduct of the test.

7. Plant Operation

The inspector observed various operations activities throughout the week including shift turnovers, entering and reviewing of shift supervisor's logs and the operators logs.

8. Review of the Electrical Power Distribution to the Integrated Control System (ICS) and the Non-Nuclear Instrumentation (NNI)

Based on the event at Oconee Unit 3 on November 10, 1979 an investigation of the electrical power distribution to the integrated control system (ICS) and to the non-nuclear instrumentation (NNI) which together constitute a majority of the displays and control funtions on the main control board was conducted. This investigation established that each system is supplied electrical power from two independent buses. In the case of the non-nuclear instrumentation these are the 3C and 3D vital instrument buses supplied via dual input inverters from ESF buses 3A-1 and 3B-2. In the case of the integrated control system the supply buses are the 3B regulated instrument bus and the 3B vital instrument bus. The ultimate AC source for these buses are the Reactor Aux Bus 3B and the ESF Bus 3A-1 via a dual input inverter.

In the event of the loss of a single inverter to the NNI system about half of the indications on the main control board are lost and, if selected, all of the NNI inputs to the ICS could also be lost. In the event the 3C vital instrument bus is lost the following primary plant control functions are also lost:

a. Reactor Coolant Makeup Control
b. Pressurizer Power Operated Relief Valve
c. Pressurizer Spray Valve
d. Pressurizer Heater Control, and
e. Reactor Coolant Pump Seal Flow.

In the event the 3D vital instrument bus is lost, no primary plant control function are lost.

In the event of a loss of the 3B vital bus input to the ICS, no control functions are lost because this bus supplies only a set of internal DC power supplies whose outputs are auctioneered with those from similar DC supplies power from the 3B regulated instrumet bus. In the event of the

loss of the 3B regulated instrument bus, the control capability of the ICS is not lost (because of the auctioneered DC power supplies) but numerous information signals are lost, such as:

a. reactor trip (loss=trip);

b. condenser vacuum and condenser cir-water pumps (loss=vacumn and pumps operating);

c. reactor coolant pump running (loss=loss of RC pump);

d. rod control withdrawal/insert signal (loss=pump not running valve not fully open);

e. feedwater pump and valve status (loss=pump not running valve not fully open);

as well as valve operation enhancement for the atmospheric exhaust valves, the condenser dump valves and the feedwater Low Load and Startup valves.

The licensee, based on an on-site review of the power distribution system for the ICS and NNI systems, has submitted an "Request for Engineering Information" to corporate offices. The licensee's submittal envisioned transfering the second source for the ICS to a vital instrument bus and installing automatic bus transfer switches. The inspector noted that any changes would constitute an unreviewed safety question and as such must be submitted for review by the commission. The licensee acknowledged this comment. The inspector stated that resolution of the ICS/NNI electrical distribution question would be considered inspector followup item 79-48-01.