

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No: 50-302
License No: DPR-72

Report No: 50-302/99-03

Licensee: Florida Power Corporation

Facility: Crystal River 3 Nuclear Station

Location: 15760 West Power Line Street
Crystal River, FL 34428-6708

Dates: April 11 through May 22, 1999

Inspectors: J. Bartley, Acting Senior Resident Inspector
S. Sanchez, Resident Inspector

Approved by: L. Wert, Chief, Projects Branch 3
Division of Reactor Projects

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Enclosure

EXECUTIVE SUMMARY

Crystal River 3 Nuclear Station NRC Inspection Report 50-302/99-03

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a six-week period of resident inspection.

Operations

- Operations response to emergent equipment problems was conservative and well planned. (Section O1.2)
- A Non-Cited Violation was identified which addressed a failure to meet Technical Specification requirements. Regulating rod groups were not verified to be within the insertion limits every four hours when the regulating rod insertion limit alarm was inoperable. The licensee identified and reported this condition in Licensee Event Report 50-302/99-001. (Section O8.1)

Maintenance

- Maintenance and surveillance testing activities were conducted in a thorough and competent manner by qualified individuals in accordance with plant procedures and work instructions. Close coordination was maintained with the main control room during surveillance testing activities. (Section M1.1)

Engineering

- Engineering evaluations to address emergent issues were thorough and of good quality. Engineers were knowledgeable of their assigned system. (Section E1.1)

Plant Support

- A licensee emergency preparedness drill, which included simulated Year 2000 complications, provided effective training and demonstrated adequate emergency plan implementation. (Section P1.1)
- Workers demonstrated appropriate knowledge and application of radiological control practices. Health physics technicians provided positive control and support of work activities in the Radiological Control Area. (Section R1.1)

Report Details

Summary of Plant Status

The plant began the inspection period at full rated thermal power and remained at that level until the evening of April 15, 1999, when power was lowered to 47% to repair a small feedwater leak. The plant was restored to 100% power on April 16. On May 5, power was lowered to 85% to perform repairs on the circulating water system. The plant was returned to 100% power on May 7.

I. Operations

O1 Conduct of Operations

O1.1 Routine Conduct of Operations Reviews (71707)

Using Inspection Procedure 71707, the inspectors performed routine reviews of plant operations which included plant tours, shift turnovers, log reviews, response to emergent problems, implementation and interpretation of Technical Specifications (TS), daily meetings, and control room observations. The inspectors noted operator attentiveness to annunciator alarms and equipment status was prompt. The operating crew consistently demonstrated a high level of awareness of existing plant conditions and ongoing plant activities.

O1.2 Response to Emergent Equipment Problems

a. Inspection Scope (71707, 37551)

The inspectors observed the licensee's response to several emergent equipment problems. The most noteworthy were a feedwater leak and increased Reactor Coolant System (RCS) leakage from a Decay Heat system valve. The inspectors observed licensee planning meetings and reviewed the licensee's evaluations, TS compliance, operability determinations, and corrective action plans.

b. Observations and Findings

On April 14, a feedwater leak developed on Feedwater Valve-76, a vent valve on the suction line of the 2B feedwater pump. The leak was caused by a crack in a socket weld. Operations responded to the event by promptly securing the area and evaluating the potential for the loss of the 2B feedwater pump. The inspectors observed the licensee's followup and resolution of the degraded condition and concluded that the licensee's actions were conservative. On April 15, due to the crack increasing in size, the licensee reduced power to 47% to repair the leak. The inspectors observed the power decrease which was performed at 25% per hour. The crew maintained good control of the plant. The Nuclear Shift Supervisor and Nuclear Shift Manager demonstrated good command and control during the power reduction and subsequent ascension. The crew consistently used three way communications during the evolutions. A failure analysis of the socket weld was in progress at the end of the report period.

In late April, the licensee identified a slight increasing trend of RCS leakage while performing the periodic RCS leakage calculations. The RCS leakage rate, the total of identified and unidentified RCS leakage, was initially approximately 0.4 gallons per minute (gpm). By May 7, RCS leakage had increased to 0.7 gpm with approximately 0.6 gpm being unidentified leakage. The licensee aggressively pursued identification of the leakage source by performing multiple reactor building entries. On May 8, the licensee identified that DHV-3, the decay heat system drop leg isolation from the hot leg, was the source of the increased leakage. The licensee concluded the leakage was not RCS pressure boundary leakage. The inspectors closely monitored the licensee's efforts to identify, evaluate, and plan contingency actions and independently assessed the licensee's evaluations.

On May 10, Operations personnel determined they had enough information to characterize some of the unidentified leakage as identified leakage. The methodology Operations used to re-characterize the leakage was reviewed by Engineering. The inspectors reviewed the licensee's evaluation and identified that it did not address some other potential sources of water that could impact the measured leakage. Subsequently, the licensee evaluated the other sources of water and determined them to have a negligible impact on the evaluation. The revised evaluation fully addressed all potential sources of water. The licensee initiated Precursor Card 99-1620 to evaluate potential corrective actions for the deficiency with the initial evaluation. The inspectors determined that the licensee's leakage characterization complied with the RCS leakage TS.

Conclusions

Operations response to emergent equipment problems was conservative and well planned.

07 Quality Assurance in Operations

07.1 Nuclear General Review Committee (71707, 40500)

On May 4, 1999, the Nuclear General Review Committee (NGRC) subcommittees met with a full committee meeting on May 5, 1999. The inspector attended the Operations Subcommittee and the full committee meetings and determined that the NGRC was meeting the commitments as described in Final Safety Analysis Report Section 12.8.2, Nuclear General Review Committee. The inspector observed that each member of the Operations Subcommittee, as well as the members at the full committee meeting, consistently contributed to discussions on the subject matter presented. No concerns or problems were noted.

08 Miscellaneous Operations Issues (92901)

08.1 (Closed) Licensee Event Report (LER) 50-302/99-01-00: Personnel Failed to Perform a Surveillance Requirement Within the Time Specified in the Improved Technical Specifications with a Computer Alarm Inoperable.

The inspectors reviewed the licensee's corrective actions and extent of condition reviews and determined that they

were adequate. No other instances similar to this event were identified by the extent of condition review. The licensee identified that the regulating rod insertion limit alarm on the plant computer had been bypassed for power levels less than 15% rated thermal power. Technical Specification Surveillance Requirement (SR) 3.2.1.2 required the licensee to verify regulating rod groups meet the insertion limits as specified in the Core Operating Limits Report every four hours when the regulating rod insertion limit alarm is inoperable. Since operators were not aware of the bypassed alarm below 15%, the verification was not performed every four hours. Since December 1981, the licensee failed to perform SR 3.2.1.2 at the required interval whenever the plant was in Mode 1 at less than 15% power. This condition was of small safety significance since regulating rod positions were specifically verified every 12 hours and are closely monitored during startups and shutdowns. This licensee identified Severity Level IV violation is being treated as a Non-Cited Violation (NCV), consistent with Appendix C of the NRC Enforcement Policy, and will be referenced as NCV 50-302/ 99-03-01, Failure to Verify Regulating Rod Groups within Limits at less than 15% Power. This violation is in the licensee's corrective action program as Precursor Card 99-0178. The LER is closed.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Maintenance and Surveillance Testing Activities (61726 and 62707)

The inspectors observed and reviewed portions of ~~selected~~ licensee corrective and preventive maintenance activities, and routine surveillance testing:

- Surveillance Procedure (SP)-130, Engineered Safeguards Monthly Functional Test, Revision 52
- Fuel Handling Procedure (FP)-434, Spent Fuel Pool Missile Shields, Revision 6
- SP-522, Station Batteries Inspection and Battery Charger Load Test, Revision 21
- Work Request (WR) 347722, Troubleshoot Spent Fuel Pool Liner Leak
- WR 360480, Repair Feedwater Valve-76 Leak
- SP-365B, Diesel Fire Service Pump, FSP-2A Operability, Revision 12
- SP-146A, Emergency Feedwater Initiation and Control Monthly Functional Test, Revision 27
- SP-349B, Emergency Feedwater Pump 2 and Valve Surveillance, Revision 40
- WR 0352914, Inspect and Clean RWV-35

All observed maintenance work activities and surveillance testing were performed in accordance with work instructions, procedures, and applicable clearance controls. Safety-related maintenance and surveillance testing evolutions were properly planned and executed. Licensee personnel demonstrated familiarity with administrative and radiological controls. Surveillance tests of safety-related equipment were consistently performed in a deliberate manner in close communication with the main control room. Overall, operators, technicians, and craftsman were observed to be knowledgeable, experienced, and trained for the tasks performed.

III. Engineering

E1 Conduct of Engineering

E1.1 Engineering Response to Emergent Issues (37551)

The inspectors observed Engineering's response to several emergent issues, including the feedwater leak on the suction piping of the 2B feedwater pump and the increased Reactor Coolant System leakage discussed in Section O1.2. The inspectors discussed the issues with the Engineering staff and independently verified selected evaluations and conclusions. Overall, the evaluations and assessments were thorough and of good quality. Engineers were knowledgeable of the systems under their responsibility. The inspectors identified a minor deficiency with the DHV-3 leakage quantification evaluation, as discussed in Section O1.2.

E8 Miscellaneous Engineering Issues (92903)

- E8.1 (Closed) Unresolved Item (URI) 50-302/97-14-08: NRC Evaluation of Acceptability of Thermal Expansion Chambers for Containment Penetration Line Modifications for Generic Letter 96-06. The inspectors had questioned if the licensee's interpretations of the licensing basis of the plant were correct with regard to this issue, and if the licensee's installation of the letdown line thermal expansion chamber was acceptable. A Task Interface Agreement, dated November 5, 1997, was sent to the Office of Nuclear Reactor Regulation (NRR) from the Region II Office requesting assistance in determining resolution of this issue. NRR determined that the rupture disks represented an isolation barrier similar to the existing isolation valves. Because the tubing size was less than one inch in diameter, it met the break exclusion criteria of the Standard Review Plan and a line rupture need not be postulated. Since the expansion chamber is a closed ended system and represents the outer isolation barrier, the isolation arrangement is acceptable as designed. NRR concluded that the licensee had adequate basis for length of piping runs for the applications and as a result, the installation was considered acceptable. Based on NRR's review, the licensee's design and 10 CFR 50.59 evaluation are acceptable. This URI is closed.

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 Conduct of Radiological Protection Controls (71750)

The inspectors made frequent tours of Radiological Control Areas (RCAs), observed work activities in progress, and discussed procedural requirements. Plant personnel observed demonstrated appropriate knowledge and application of radiological control practices. Health physics technicians provided positive control and support of work activities in the RCA. This included work associated with multiple reactor building entries to determine the location of an unidentified leak (Section 01.2 contains additional details.) The inspectors identified only a few minor deficiencies which were provided to the licensee for correction.

P1 Conduct of EP Activities

P1.1 Quarterly Emergency Plan (EP) Drill (71750)

The inspectors participated in the licensee's quarterly EP drill conducted on May 6, 1999, in the Technical Support Center (TSC). The inspectors observed that the drill scenario included Year 2000 caused communication system problems as a complicating event. No significant problems were observed in the TSC. Problems identified by the licensee were being appropriately addressed via their corrective action system. The inspectors concluded the licensee's quarterly emergency plan drill provided effective training and demonstrated adequate emergency plan implementation.

S1 Conduct of Security and Safeguards Activities

S1.1 Routine Observations of Plant Security Measures (71750)

The inspectors verified that portions of the site security program were being properly implemented. Security personnel activities observed during the inspection period were performed well. Site security systems were adequate to ensure physical protection of the plant.

V. Management Meetings

X1 Exit Meeting Summary

The inspection scope and findings were summarized on May 24, 1999. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

PARTIAL LIST OF PERSONS CONTACTED

Licensees

S. Bernhoft, Director, Nuclear Regulatory Affairs
J. Cowan, Vice President, Nuclear Operations
R. Davis, Assistant Plant Director, Operations
R. Grazio, Director, Nuclear Site and Business Support
G. Hainon, Director, Nuclear Quality Programs
J. Holden, Vice President and Director, Site Nuclear Operations
C. Pardee, Director, Nuclear Plant Operations
D. Roderick, Director, Nuclear Engineering & Projects
M. Schiavoni, Assistant Plant Director, Maintenance
T. Taylor, Director, Nuclear Operations Training

INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering
IP 40500: Effectiveness of Licensee Controls in Identifying, Resolving and Preventing Problems
IP 61726: Surveillance Observations
IP 62707: Conduct of Maintenance
IP 71707: Plant Operations
IP 71750: Plant Support Activities
IP 92901: Followup - Operations
IP 92903: Followup - Engineering

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-302/99-03-01 NCV Failure to Verify Regulating Rod Groups Within Limits at less than 15% Power. (Section O8.1)

Closed

50-302/99-03-01 NCV Failure to Verify Regulating Rod Groups Within Limits at less than 15% Power. (Section O8.1)

50-302/99-01-00 LER Personnel Failed to Perform a Surveillance Requirement Within the Time Specified in the Improved Technical Specifications with a Computer Alarm Inoperable. (Section O8.1)

50-302/97-14-08 URI NRC Evaluation of Acceptability of Thermal Expansion Chambers for Containment Penetration Line Modifications for Generic Letter 96-06. (Section E8.1)