



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

Report No: 50-302/90-33

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 Conducted: October 6 - November 9, 1990

Inspector: *R. P. Holmes-Ray*
P. Holmes-Ray, Senior Resident Inspector

12/7/90
Date Signed

Accompanying Personnel: R. Spence, Resident Inspector, In Training

Approved by: *R. C. Crenjak*
R. Crenjak, Section Chief
Division of Reactor Projects

12/7/90
Date Signed

SUMMARY

Scope:

This routine inspection was conducted by one resident inspector in the areas of plant operations, security, radiological controls, Licensee Event Reports, and facility modifications. Numerous facility tours were conducted and facility operations observed. Some of these tours and observations were conducted on backshifts.

Results:

Two violations, one non-cited violation, and one unresolved item* were identified: Both fire pump house ventilation fans in "pull to lock" position (paragraph 2.b.6); Failure to properly restore the RCP oil collection system (paragraph 6); Inadequate documentation of step completion in procedure (paragraph 3); Emergency power for the fire pump room fans not safety-related (paragraph 2.b.6).

*Unresolved items are a matter about which more information is required to determine whether they are acceptable or may involve violations or deviations.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- J. Alberdi, Manager, Nuclear Plant Operations
- *P. Beard, Senior Vice President Nuclear Operations
- *G. Boldt, Vice President Nuclear Production
- P. Breedlove, Nuclear Records Management Supervisor
- *G. Clymer, Manager, Nuclear Waste
- *J. Colby, Manager, Site Nuclear Engineering Services (Acting)
- *J. Dymek, Senior Nuclear Fire Protection Engineer
- *K. Fuller, Senior Nuclear Licensing Engineer
- *P. Genoa, Nuclear Support Specialist Chemistry and Radiation Protection Services
- *B. Hickie, Director Quality Programs
- *M. Jacobs, Area Public Information Coordinator
- *A. Kazemfar, Supervisor, Radiological Support Services
- *J. Kraiker, Superintendent, Nuclear Management Support
- *G. Longhauser, Superintendent, Nuclear Security
- *W. Marshall, Nuclear Operations Superintendent
- *P. McKee, Director, Nuclear Plant Operations
- W. Neuman, Supervisor, Inservice Inspection (ISI)
- *T. Raper, Superintendent, Nuclear Scheduling
- *S. Robinson, Superintendent, Nuclear Chemistry and Radiation Protection
- *V. Roppel, Manager, Nuclear Operations Maintenance
- W. Rossfeld, Manager, Nuclear Compliance
- E. Welch, Manager, Nuclear Electrical/Instrumentation and Control Engineering Services
- *R. Widell, Director, Nuclear Operations Support
- *G. Williams, Supervisor, Site Nuclear Engineering Services
- *M. Williams, Nuclear Regulatory Specialist
- K. Wilson, Manager, Nuclear Licensing
- *W. Worley, Manager, Nuclear Chemistry

Other licensee employees contacted included office, operations, engineering, maintenance, chemistry/radiation, and corporate personnel.

*Attended exit interview

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Review of Plant Operations (71707)

The plant entered this inspection period at full power. On October 9, 1990, the plant was taken off line to identify and then repair the RCP oil collection system leaks. On October 13, 1990, there was a fatal fall in the reactor building. A Notice of Unusual Event (NUE) was declared when

the person that fell was transported off site in contaminated protective clothing. This NUC was terminated on October 13, 1990, when all contaminated items were returned to the site. The plant was returned to power operations on October 25, 1990, and continued in power operations to the end of this reporting 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; Short Term Instructions (STI); and Selected Chemistry/Radiation Protection Logs.

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

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.

The inspectors also observed conditions in the following areas:

(1) Monitoring Instrumentation

The following instrumentation and/or indications were 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.

(2) 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.

(3) 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.

On October 30, 1990, the Health Physics Department removed all contaminated trash and clothing bags from their non-sprinkler covered storage locations on E1. 143 in the Auxiliary Building to a Sealand container on the berm or E1. 119 sprinkler covered compacting area. The contamination postings have been removed, but the licensee may use one E1. 143 location during future outages. The transient fire loading had been decreasing since the last outage to a level of 40% of its allowable value. This had been an area of concern for the Fire Protection and Health Physics Departments for some time.

The inspector found a portable oxygen/acetylene bottle set, used in the repair of MUP-1B, located immediately adjacent to the motor of the in-service Make Up Pump, MUP-1A. The shift supervisor immediately had it moved out of the Make Up Pump room.

(4) Radiological Protection Program

Radiation protection control activities were observed to verify that these activities were in conformance with the facility policies and procedures, and in compliance with regulatory requirements. These observations included:

- Entry to and exit from contaminated areas, including step-off pad conditions and disposal of contaminated clothing;
- Area postings and controls;
- Work activity within radiation, high radiation, and contaminated areas;
- Radiation Control Area (RCA) exiting practices; and
- Proper wearing of personnel monitoring equipment, protective clothing, and respiratory equipment.

The inspector reviewed selected Radiation Work Permits (RWPs) to

verify that the RWP was current and that the controls were adequate.

(5) Security Control

In the course of the monthly activities, the inspector included a review of the licensee's physical security program. The performance of various shifts of the security force was observed in the conduct of daily activities to include: protected and vital area access controls; searching of personnel, packages, and vehicles; badge issuance and retrieval; escorting of visitors; patrols; and compensatory posts. In addition, the inspector observed the operational status of Closed Circuit Television (CCTV) monitors, the Intrusion Detection system in the central and secondary alarm stations, protected area lighting, protected and vital area barrier integrity, and the security organization interface with operations and maintenance.

(6) 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.

At 7:15 a.m. on November 1, 1990, the inspector found that the switch position for at least one fire pump house supply fan was not lined up in the NORMAL position as required by Operating Procedure OP-409, Plant Ventilation System. Both fire pump house supply fan control room switches were noted to be in the "pull to lock" position. Upon being informed of this condition, the Reactor Operator aligned the switches to the required positions. Operation without at least one fire pump house supply fan aligned for NORMAL operation is a violation. Violation (50-302/90-33-01): Both fire pump house fans in "pull to lock" position.

Fire pump house ventilation fans, AHF-33A and AHF-33B, are powered from normal power sources, such that a loss of offsite power would prevent the operation of all fire pump house ventilation. The investigation into the availability of and need for backup power for the fire pump house fans continues. The apparent lack of backup power for the fire pump house fans is an Unresolved Item (URI 50-302/90-33-02).

The number of degraded fire barriers continues to decrease and receives weekly management attention. Mechanical penetrations are not individually identified, for example, PAB-241, making the recognition of degraded penetrations difficult for the

roving fire watch and others. The Fire Protection Engineer was informed of this concern.

The inspector found three fire doors with automatic closure mechanisms that did not function properly. These included: D-202, in the "B" Emergency Diesel Generator Room, during EDG operation on October 23, 1990; southeast door of the Fire Water Pump room, during Fire Water Pump operation on October 30, 1990; and the entrance door to the Chem-Rad Entry Corridor, whose closure device held it open as it jammed into the concrete on October 30, 1990, and which did not close properly on several uses on November 1, 1990. The licensee does not surveillance test the fire doors during periods of maximum ventilation differential pressure. The Fire Protection Engineer is investigating these problems.

On November 2, 1990, the inspector observed a fire drill, which licensee personnel performed with skill and enthusiasm. The inspector noticed that all fire brigade turn out gear, except for four sets in the Auxiliary Building, is located in one room of the Warehouse Building, instead of multiple locations. In case the one location was inaccessible due to fire or smoke, the fire brigade gear could become unavailable. The critique brought out the lack of a working PA in the fire brigade dressing area, which created a minor difficulty in directing the fire brigade to their assembly area. The inspector apprised the licensee of these concerns and the licensee is performing a review.

The inspectors, as a result of routine plant tours and various operational observations, determined the general plant and system material conditions were being satisfactorily maintained, the plant security program was being effective, and the overall performance of plant operations was good.

3. Review of Maintenance (62703) and Surveillance (61726) Activities

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 was utilized; and TS requirements were followed.

The following tests were observed and/or data reviewed:

- SP-104, Hot Channel Factors Calculations;
- SP-324, Containment Inspection;
- SP-340C, MUP-1A, MUP-1B, and Valve Surveillance (partial);
- SP-349B, EFP-2 and Valve Operability Surveillance (partial);
- SP-354B, Monthly Functional Test of the Emergency Diesel Generator EGDG-13 (partial); and
- SP-440, Unit Startup Surveillance Plant.

In addition, 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:

- MAR-85-08-01-01, Spent Fuel Pit Reracking;
- MP-126, Makeup Pump Maintenance MUP-1A, B, and C;
- WR NU 0271661, in accordance with MP-150, Maintenance of Raw Water Pumps RWP-1, 2A, 3A, and 3B; and
- MP-175, Power Piping Pipe Snubber Removal and Installation.

The inspector found a flange, downstream of Building Spray check valve and containment penetration 341, encrusted with boric acid crystals. The licensee removed the crystals, found one bolt partially eroded, and performed an engineering analysis indicating that this was acceptable.

The plant's gas cylinder storage area on the berm does not have the gas names identified - only FPC numbers are posted, contrary to the Compressed Gas Association guidance. Yet, the locations in the plant where the gas cylinders are used are sometimes identified by gas names only and other times by numbers only, creating a possibility of misuse of a gas cylinder. The plant manager was informed in August 1990.

On November 1, 1990, the inspector reviewed Westinghouse procedure (MP2.8.7/BCRY-1, Rev. 0) for MAR 85-08-01-01, for the rerack of the "B" spent fuel pool. It was brought to the attention of the Westinghouse team leader that the sign-off blanks on page 30 for step A-10 for Rack 5 and Rack 6 (RK5 and RK6) were missing, although the steps before and after were signed. The Westinghouse team leader stated that his QC had witnessed the neolube application in that step but had not yet signed it off. He also stated that he would be sure the sign-off was made. On November 7, 1990, the inspector again reviewed the Westinghouse rerack procedure with the FPC project manager. The inspector noted that step A-10 for RK5 was initialed and dated October 26, 1990, and RK6 was initialed and dated October 30, 1990. The inspector also noted that once again there were steps that were apparently complete but not signed off, steps A-8, A-9, A-11, and A-12 for RK7. The FPC project manager immediately brought these non-signed steps to the attention of the Westinghouse team leader, who stated that the steps had been accomplished and that he would assure that the appropriate individual make the sign-offs. About one hour later the inspector again reviewed the procedure and found that steps A-8, A-9, A-11, and A-12 for RK7 were initialed and back dated to November 2, 1990.

The senior resident inspector (SRI), upon having this set of events reported to him, requested that the licensee review the way Westinghouse was documenting their work and then meet with the SRI.

On the afternoon of November 7, 1990, representatives of FPC Quality Programs, Projects (contractor management for FPC), and the FPC project manager met with the inspectors to discuss this issue. The rerack of the "B" spent fuel pool was contracted to Westinghouse as a turnkey job with Westinghouse quality control approved by FPC. FPC overview by the project manager was the extent of the FPC involvement. The Westinghouse procedure was written to allow paralleled work on all eight racks and Appendix A-3 was a sheet of blanks to be initialed and dated for the steps in section 9.5 to maintain status of pre-installation preparation of the new racks. The working copy of the procedure was being maintained on the refueling floor and a duplicate copy was being used by the Westinghouse team leader, in his trailer, to keep up with job progress. On this copy the team leader logged the date and person who witnessed the particular preparatory step. The Westinghouse team leader used this copy of A-3 to determine who should initial the steps in the working copy and what date the witness was made. The resident inspectors stated that the initials should have been dated when made and the practice of back-dating the sign-off of procedure steps is not acceptable. No intent to mislead existed in this case since the team leader had maintained his copy which included by whom and what date each of the steps in question was completed. FPC corrective actions are to provide more oversight on the job and the Westinghouse team leader stated that he would insure that all steps completed during a shift that required initials or signatures would be initialed or signed prior to shift relief. Also it was stressed that back-dating of signatures or initials, even when the date the witness was performed is known from some other source, is not acceptable. The inadequate documentation of step completion in Appendix A-3 of procedure MP2.8.7/BCR7-1 is a non-cited violation. This NRC-identified violation is not being cited because criteria specified in Section V.A. of the NRC Enforcement Policy were satisfied. Non-cited Violation (50-302/90-33-03): Inadequate documentation of step completion in procedure.

For the surveillance and maintenance activities observed and listed above, the inspectors determined that the work was performed in a satisfactory manner in accordance with procedural requirements and met the requirements of the Technical Specifications.

4. Review of Licensee Event Reports (92700)

- a. Licensee Event Reports (LERs) were reviewed for potential generic impact, to detect trends, and to determine whether corrective actions were appropriate. Events that were reported immediately were reviewed as they occurred to determine if the TS were satisfied. LERs were reviewed in accordance with the current NRC Enforcement Policy. LER 90-14 is closed.

(Closed) LER 90-14, Lack of knowledge causes auxiliary nuclear operator to de-energize containment isolation valve prior to being full seated violating containment integrity.

This issue was the subject of an enforcement conference held in Region II offices on October 31, 1990. NRC report 50-302/90-32 contains a violation for breach of containment and follow up of corrective action will be documented as closure of that violation. This LER is closed.

No violations or deviations were identified.

5. NUREG 0737 - TMI Task Action Plan Item Review (TI 2515/065)

Item III.D.3.4.3 (III.D.3.4) Control Room Habitability. This item was left open in Report 85-41 pending the completion of the control room pressurizing modifications. The control room ventilation has not been modified to provide for positive pressurization. In a letter from FPC to NRC dated January 13, 1987, FPC stated that positive pressure is not maintained in the control complex zone. In a Safety Evaluation by NRR dated May 25, 1989, the design of Crystal River 3 control room habitability was found to meet all requirements and TAC 64805 was closed. The requirement to install sulfur dioxide monitoring at the sulfur dioxide tanks at Unit 1 and 2, which will alarm and logic to isolate Unit 3 control room, were met and are in place. Surveillance procedures are in place to assure the toxic gas and control room ventilation isolation on toxic gas or high radiation remain operable. TS covers the radiation, chlorine, and sulfur dioxide monitoring equipment. An Abnormal Procedure provides the control room operators with actions to take in case toxic gas is detected. There is surveillance procedure for monthly testing of the control room ventilation system. This item is closed.

6. Followup of Onsite Events (93702)

On October 10, 1990, the unit was taken off line to Mode 3 for a scheduled 48 hour outage to investigate the source of a previously identified (ref. NRC Report No. 50-302/90-29) oil leak from the D RCP motor and to evaluate the condition of the reactor building. Main generator breakers were opened at 3:00 a.m. on October 10, 1990, and Mode 3 was entered at 5:00 a.m. the same day. Temperatures in the reactor building in the work area were about 104 degrees Fahrenheit. At 7:05 a.m. the maintenance superintendent observed an oil leak from a small diameter oil pipe flange inside the oil collection housing on D RCP. The size of the leak correlated well with the trended leak rate from the D RCP motor upper reservoir. Further inspection revealed that the same flange on the B RCP motor was also leaking; A and C were not leaking at the flange in question. During this same time period, health physics personnel reported that two bolts were missing from the B oil collection system. As more inspections were conducted, the scope of the oil collection system repairs continued to grow. By mid-afternoon on October 11, 1990, three persons had been treated for heat stress despite use of ice vests and limiting stay time in the reactor building. The scope of the job was continuing to expand as more detailed inspections were made. The decision was made to cool down the RCS to about 210 degrees Fahrenheit (Mode 4). Cooldown started about 2:00 p.m. In addition to the oil collection system, repair

work was also underway to change out several position indication tubes on the reactor head and replace one of the Non-Nuclear Instrumentation (NNI) power supplies. On October 12, 1990, after a tour of the work areas by senior management, the decision was made to cool down into Mode 5 and open the large purge valves to reduce reactor building temperature.

The scope of the repair to the oil collection system included all four RCPs. The "D" enclosure required the most repair with about 14 plates missing and other smaller problems. Engineering personnel helped the repair effort by making reactor building entries to obtain measurements for replacement plates and to evaluate other discrepancies with the oil collection systems. On October 17, 1990, the repair to the oil collection system was completed.

In summary, during Refuel 7, which ended June 23, 1990, the Reactor Coolant Pump (RCP) oil collection systems for all four RCPs were improperly reassembled using work request instructions that were not PRC approved. These work instructions were inadequate in that they did not provide sufficient instructions to assure proper reassembly of the oil collection systems. The instructions in work request NU 0259141 stated to reinstall motor lube oil collection structure that was disassembled by WR 259140 for motor removal using drawings noted above. This WR was for RCP "D" but was typical for all motors. The incomplete reassembly of the oil collection system resulted in the system not performing its intended function of collecting leakage from the lube oil system of the "D" RCP. Failure to properly restore the oil collection system is a violation. Violation (50-302/90-33-04): Failure to properly restore the oil collection system.

As the oil collection system work was being completed a surveillance test was to be run on raw water pump (RWP) 3B. When this pump was secured, it seized and could not be rotated. RWP-3B is a safety related pump. The plant was cooled down to Mode 5 and the repair was completed on October 24, 1990. The reactor was critical at 6:00 p.m. and output breakers were closed at 10:55 p.m. on October 25, 1990.

On November 9, 1990, control rod 7-4, a controlling group rod, dropped into the core. A run back to 60% power occurred, as designed, and the appropriate action statements per TS were entered. The rod was found to have only finger tight connections on three of six phase lugs. These were tightened and a megger check of the stator was performed. The megger readings on the stator were lower than normal but within specification. At 10:18 p.m. on November 9, 1990, a pre-job briefing was held on how to recover rod 7-4. At 10:43 p.m. the rod was aligned with its group and return to full power was commenced.

7. Response to Onsite Events (93702)

On October 13, 1990, at 3:22 p.m. a mechanical supervisor fatally fell about 40 feet to the floor of the reactor building. An Unusual Event was declared at 3:41 p.m. due to that contaminated person being transported

off site to the hospital. At about 5:45 p.m. the Unusual Event was exited as all decontamination of areas outside the radiation controlled area was complete and all radiological materials had been returned to the site. The fatality was investigated by OSHA with an exit interview on October 24, 1990. The inspector responded to the site for the Unusual Event and also attended the OSHA exit interview.

8. Exit Interview (30703)

The inspection scope and findings were summarized on November 9, 1990, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results with emphasis on the three violations and the need for information to resolve the unresolved item. Proprietary information is not contained in this report. Dissenting comments were not received from the licensee.

Item Number	Description and Reference
50-302/90-33-01	VIO - Both fire pump house fans in "pull to lock" position.
50-302/90-33-04	VIO - Failure to properly restore the RCP oil collection system.
50-302/90-33-03	NCV - Inadequate documentation of step completion in procedure.
50-302/90-33-02	URI - Emergency power for the fire pump room fans not safety related.

9. Acronyms and Abbreviations

AFW	- Auxiliary Feedwater System
ALARA	- As Low as Reasonably Achievable
B&W	- Babcock & Wilcox
CCTV	- Closed Circuit Television
CFR	- Code of Federal Regulations
DEV	- Deviation
ECCS	- Emergency Core Cooling System(s)
EDG	- Emergency Diesel Generators
EFP	- Emergency Feedwater Pump
FPC	- Florida Power Corporation
FSAR	- Final Safety Analysis Report
I&C	- Instrumentation and Control
ICC	- Inadequate Core Cooling
ICS	- Integrated Control System
IFI	- Inspector Followup Item
ISI	- Inservice Inspection
IST	- Inservice Test
LER	- Licensee Event Report

MAR - Modification Approval Record
MP - Maintenance Procedure
MUP - Make-Up Pump
NCOR - Nonconforming Operation Report
NNI - Non-Nuclear Instrumentation
NRC - Nuclear Regulatory Commission
NRR - Office of Nuclear Reactor Regulation
NUE - Notice of Unusual Event
OSHA - Occupational Safety and Health Administration
PA - Public Address
PM - Preventive Maintenance
PRC - Plant Review Committee
QC - Quality Control
QA - Quality Assurance
RCA - Radiation Control Area
RCP - Reactor Coolant Pump
RCS - Reactor Coolant System
RO - Reactor Operator
RWP - Radiation Work Permits
RWP - Raw Water Pump
S/G - Steam Generator
SP - Surveillance Procedure
SRI - Senior Resident Inspector
STI - Short Term Instruction
SW - Nuclear Services Closed Cycle Cooling System
TS - Technical Specification
UNR - Unresolved Item
VIO - Violation
WR - Work Request