

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

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Report Nos.: 50-250/99-07, 50-251/99-07

Licensee: Florida Power and Light Company

Facility: Turkey Point Nuclear Plant, Units 3 & 4

Location: 9760 S. W. 344 Street  
Florida City, FL 33035

Dates: October 17 - November 27, 1999

Inspectors: C. Patterson, Senior Resident Inspector  
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Approved by: L. Wert, Chief  
Reactor Projects Branch 3  
Division of Reactor Projects

Enclosure

## EXECUTIVE SUMMARY

### Turkey Point Nuclear Plant, Units 3 & 4 NRC Inspection Report 50-250/99-07, 50-251/99-07

This integrated inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 6-week period of resident inspection.

#### Operations

- A conservative decision was made to take Unit 3 offline to repair a turbine control valve. Plant maneuvers were well planned and conducted (Section O1.2).
- The 4160 volt switchgear rooms were well maintained and material condition of the equipment was very good. The control room emergency ventilation system was satisfactorily maintained (Section O2.1).

#### Maintenance

- Routine maintenance and surveillance activities were properly performed and tracked. A detailed troubleshooting plan was developed and executed for repair of the containment escape hatch. Thorough safety precautions were used during entry into the hatch (Section M1.1).
- Some corrective actions intended to prevent personnel from working on the wrong component were not effectively implemented. Additionally, communications of corrective action to the Fix-It-Now maintenance supervisor were ineffective. The licensee promptly addressed the inconsistencies (Section M4.1).

#### Engineering

- Plant modification package reviews were conducted in accordance with procedures and were properly reviewed for 10 CFR 50.59 requirements (Section E2.1).
- Monthly flow path verification surveillances for selected risk significant safety-related systems met the Technical Specification requirements. The system engineers were familiar with the risk significant aspects of their systems (Section E3.1).

#### Plant Support

- Security diesel generator testing was conducted in accordance with procedures (Section S1.1).
- A plant fire drill was satisfactorily performed. Several areas for improvements were identified by the licensee (Section F4.1).

## Report Details

### Summary of Plant Status

On November 16, 1999, Unit 3 shutdown to hot standby to perform corrective maintenance on a turbine control valve. The unit had been online since June 24, 1999. The unit returned to power operation on November 18, 1999, and has operated at full power.

On November 9, 1999, Unit 4 reduced power to 40 percent to perform turbine stop valve testing. The unit returned to full power on November 10, 1999. The unit has been online since April 18, 1999.

## I. Operations

### **O1 Conduct of Operations**

#### O1.1 General Comments (71707)

Using Inspection Procedure 71707, the inspectors conducted frequent reviews of ongoing plant operations. In general, the conduct of operations was professional and safety-conscious; specific events and noteworthy observations are detailed in the sections below.

#### O1.2 Plant Maneuvers for Main Turbine Generator Control Valve Repair

##### a. Inspection Scope (71707)

The inspectors monitored plant maneuvers when Unit 3 was taken to hot shutdown to perform maintenance on a main turbine generator control valve.

##### b. Observations and Findings

On November 16, 1999, the Unit 3 main turbine generator was taken out of service to repair a turbine control valve. This was a conservative decision by the licensee to take the unit offline and make the repairs. The reactor was manually tripped from 25 percent power and remained in hot standby while repairs were made. The reactor was taken critical on November 17, 1999. The unit was returned to power operation on November 18, 1999. The control valve malfunction was caused by a servo motor that would not move due to binding of the piston rod in a guide bushing. This was attributed to a problem during overhaul of the servo motor by the vendor during the last refueling outage. The licensee conducted a root cause determination and documented this in Condition Report (CR) 99-1601.

The inspectors observed the unit shutdown and subsequent reactor startup in the control room. Periodically, repair activities were observed at the turbine. The restart Plant Nuclear Safety Review Committee and post trip review meeting was attended on November 17, 1998. The plant maneuvers and repair activities were well planned and coordinated. Operations management and other plant management were present in the

control room during these activities. Conservative direction was given to insure only one major activity occurred at one time in the control room.

c. Conclusions

A conservative decision was made to take Unit 3 offline to repair a turbine control valve. Plant maneuvers were well planned and conducted.

**O2 Operational Status of Facilities and Equipment**

O2.1 System Walkdowns

a. Inspection Scope (71707, 37551)

The inspectors performed walkdowns of the Unit 3 and Unit 4 4160 volt switch gear rooms and the control room emergency ventilation system.

b. Observations and Findings

The 4160 volt busses were well maintained and the equipment material condition was good on all three busses located in the switchgear rooms. The 4160 'D' busses, located in the Unit 4 emergency diesel generator room, were also in a similar condition. Updated Final Safety Analysis Report (UFSAR) system descriptions were reviewed and compared with drawings and no discrepancies were identified. In addition, the inspectors reviewed and discussed several system design features with Engineering and Operations personnel. Control room bus breaker switch positions correctly matched the field breaker lineups. The emergency bus breaker lineups were verified to meet procedural requirements during several operational evolutions and maintenance activities that occurred during the inspection period.

The inspectors performed a detailed walkdown of the control room emergency ventilation system. Unit 3 and Unit 4 share a common control room. Selected UFSAR system operational requirements and system prints were verified to match the as built configuration. The monthly surveillance, 0-SMI-067.4, Control Room Heating, Ventilating and Air Conditioning Radiation Monitors RAI-6642 and RAI-6643, was observed by the inspectors. During the recirculating portion of the test, selected system operational requirements were verified. Emergency operating procedures relating to the system were reviewed and no discrepancies were identified. Throughout the inspection period, work relating the system was either observed or reviewed with the licensee. Entry into Technical Specification action statements was consistent with system operability requirements. A system walkdown was performed with the responsible system engineer. The equipment operability, material condition, and housekeeping were adequate. The inspectors identified no significant concerns.

c. Conclusions

The 4160 volt switchgear rooms were well maintained and material condition of the equipment was very good. The control room emergency ventilation system was satisfactorily maintained.

**O7 Quality Assurance in Operations**

**O7.1 Licensee Self-Assessment Activities (40500)**

The inspectors attended the Plant Nuclear Safety Committee meeting conducted November 4, 1999. Two license amendment proposals were discussed concerning charcoal filter testing and changes in subcritical margin in the spent fuel pool to account for degradation of Boraflex panels in the fuel storage racks. The review was thorough and questioned assumptions made in the analysis.

The inspectors attended the post trip review Plant Nuclear Safety Committee meeting conducted on November 17, 1999. CR 99-1629 was reviewed during the meeting. Attached to the CR was the post trip review restart report. The plant response was thoroughly reviewed. Decision making was conservative and a mode one hold was placed on disposition of the turbine control valve failure per CR-1604.

**II. Maintenance**

**M1 Conduct of Maintenance**

**M1.1 Maintenance Work Order (WO) and Surveillance Observations**

a. Inspection Scope (61726, 62707)

The inspectors observed the following surveillance and maintenance activities:

4-OSP-041.1	Reactor Coolant System Leak Rate Calculations
Various WO's	"A" Auxiliary Feedwater (AFW) Pump Overhaul & Testing
0-PMM-019.10	Intake Cooling Water Butterfly Valve Operator Inspection/Repair
WO99012722-01	Power operated valve - 4882 Turbine Plant Cooling Water (TPCW) Isolation Valve Diagnostic Test
TP-99-040	Diagnostic Testing Of TPCW Isolation Valves
4-OSP-089	Main Turbine Valve Operability Test
0-OSP-074.3	Standby Steam Generator Feedwater Pumps Availability Test

0-SMI-067.4	Control Room Heating, Ventilating, and Air Conditioning Radiation Monitors RAI-6642 and RAI-6643 Monthly Operational Test
4-OSP-075.7	Auxiliary Feedwater Train 2 Backup Nitrogen Test
WO 96025902-01	4.16KV Bus Tie Breaker To Buses B&C
3-PMI-071.2	Steam Generator Level (Narrow Range) Protection Instrumentation Channel Calibration
TP 99-048	Containment Escape Hatch Repair

b. Observations and Findings

All of these activities were properly performed and no problems were identified. The inspectors noted that plant operation was safety conscious. An example of this was the installation of a barrier rope around the two other AFW pumps to limit access into the area while work occurred on the "A" AFW pump.

In addition, the inspectors reviewed the scheduling of surveillances and plant procedure O-ADM-215, Plant Surveillance Tracking Program. Routine surveillances are scheduled based on fixed performance dates such as the first Monday of a month and not on the date of the last performance. The inspectors discussed this with the Surveillance Analyst, who demonstrated several examples using the computer software.

The inspectors observed troubleshooting and testing of the Unit 3 containment escape hatch. Due to a failed leak test of the Unit 3 containment escape hatch door, the licensee wrote a temporary procedure TP 99-048, Escape Hatch Inner Door Equalizing Valve - Troubleshooting and Repair. The licensee determined that the problem was not the equalizing valve but that the sealing surface of the inner door needed cleaning. On November 3, 1999, the licensee performed cleaning of the inner door sealing area and leak tested the inner and outer doors. Good safety precautions were taken for this entry. Health physics, security, system engineer, and an emergency medical technician were present for the entry. The air quality was checked and a half hour stay time assigned. Both doors subsequently passed the leak test in accordance with procedure 3-OSP-051.1, Containment Emergency Air Lock Seal Vacuum Test. The inspectors verified that the test equipment was in the specified calibration frequency and the test pressure during testing was appropriate.

c. Conclusions

Routine maintenance and surveillance activities were properly performed and tracked. A detailed troubleshooting plan was developed and executed for repair of the containment escape hatch. Thorough safety precautions were used during entry into the hatch.

## M1.2 Radiologically Controlled Area and Spent Fuel Pool Rooms (62707)

The inspectors made tours of the spent fuel pool area and reviewed Foreign Material Exclusion (FME) controls in the area. General housekeeping in the Radiologically Controlled Area (RCA) was reviewed. The inspectors noted, during tours of the spent fuel pool areas, that there were inconsistencies in the posting of FME boundaries. Some of this was due to changing to the boundaries outside the pool area due to ongoing work activities. The licensee initiated several CRs to address this issue. Additionally, the inspectors noted that due to ongoing work in the RCA particularly with grinding and painting of the outside overhead crane and crane rail, housekeeping in certain areas was not maintained to previous standards. The licensee promptly addressed the issues. Additionally, during the morning meeting, management started displaying and discussing digital camera pictures of the areas needing more housekeeping attention.

## M4 **Maintenance Staff Knowledge and Performance**

### M4.1 Clearance Issues Corrective Actions

#### a. Inspection Scope (40500)

The inspectors reviewed implementation of corrective actions for recent clearance issues.

#### b. Observations and Findings

Several recent clearance issues have occurred which involved personnel working on the wrong components. As described in NRC inspection reports 50-250, 251/99-04 and 99-06, mechanical maintenance personnel uncoupled the wrong boric acid transfer pump and electrical maintenance personnel performed troubleshooting on the wrong deaerator pump motor. The licensee had written a CR for each issue. The root cause of both issues was similar. Namely, human performance errors, lack of attention to detail, and inadequate review and utilization of the work order/clearance document to ensure safety of personnel and property prior to the start of maintenance.

The boric acid pump issue was documented on CR 99-1062. An immediate corrective action required that "Plant work activities/components requiring a clearance order shall have an initial check and second check to ensure component correctness prior to the start of work. Both component checks shall be documented, initialed, and dated in the work report. The deaerator pump motor issue was documented in CR 99-1340. Corrective action item number one was the same action as described in the previous CR.

On October 19, 1999, the inspectors attended the Plant Nuclear Safety Committee meeting which reviewed the root cause and corrective actions to CR 99-1340. It was reported to the committee and documented in the CR that corrective action number one was completed on September 27, 1999. After the meeting, the inspectors reviewed corrective action number one with several maintenance workers that were chosen at

random. Inconsistent and incorrect replies were obtained when workers were asked what the corrective action meant and how it was being implemented. For example, one worker believed that a second review of the clearance was required. The inspectors also reviewed the corrective action item with the Fix-It-Now maintenance supervisor. The supervisor indicated that he was not aware of the requirement to implement that action and therefore it had not been implemented in his department. The inspectors communicated this issue to licensee management. The licensee wrote CR 99-1491 to review this issue.

The licensee's root cause identified that "implementation of written and verbal communication was less than adequate." Additionally, there was "ineffective execution of written and/or verbal communications of required corrective actions by Maintenance Supervision." Further, the licensee found that the Fix-It-Now team supervisor was not included in all the relevant communications on these clearance issues. Immediate corrective actions included ensuring (by signature designation) that each applicable worker fully understands the component initial check and second check requirements. The licensee completed this action on October 25, 1999.

c. Conclusions

Some corrective actions intended to prevent personnel from working on the wrong component were not effectively implemented. Additionally, communications of corrective action to the Fix-It-Now maintenance supervisor were ineffective. The licensee promptly addressed the inconsistencies.

### **III. Engineering**

#### **E2 Engineering Support of Facilities and Equipment**

##### **E2.1 Plant Modifications**

a. Inspection Scope (37551)

The inspectors reviewed two ongoing plant modifications for correct application of 10 CFR 50.59 reviews.

b. Observations and Findings

The inspectors reviewed two modifications; plant change/modification (PCM) 99-025, Condensate Storage Tank Level Control Enhancement, and PCM 99-017, Screen Wash Modifications. Both of these modifications were performed as Minor Engineering Packages (MEPs). The inspectors reviewed procedures QI-3-PTN-1, Design Control, and ENG-QI- 1.2, Minor Engineering Package. For a MEP, a 10 CFR 50.59 screening review is required and modification cannot be performed by MEP if any of the screening review questions are answered as yes.

The inspectors reviewed each PCM package and made periodic observations of the work in the field. The screen wash modification consisted of replacement of most of the screen wash piping located at the intake structure. A small trench was excavated for this work. The 10CFR 50.59 screening review was correctly performed for the modification to replace the pipe. The licensee identified a conflict with the UFSAR description of the supply of screen wash water and initiated CR 99-1657 to address this issue.

The inspectors reviewed the PCM for the condensate storage tank (CST) overflow enhancement and previous CR concerning this issue. This PCM will correct an operator workaround concerning monitoring of the CST while filling the tank. The 10 CFR 50.59 screening review was correctly performed for this modification.

c. Conclusion

Plant modification package reviews were conducted in accordance with procedures and were properly reviewed for 10 CFR 50.59 requirements.

**E3 Engineering Procedures and Documentation**

**E3.1 Flow Path Verification Surveillance**

a. Inspection Scope (37551)

The inspectors reviewed Technical Specification surveillance records for monthly flow path verification on risk significant safety-related systems. Additionally, the inspectors reviewed specific aspects of system risk significance with the responsible systems engineers.

b. Observations and Findings

The inspectors reviewed the completed monthly flow path surveillance procedures for the Unit 3 and Unit 4 containment spray system which were performed on October 20, 1999. Additionally, the inspectors performed an independent walkdown of the Unit 4 containment spray flow path as described in the surveillance procedure. No discrepancies were identified with the completed procedures or during the walkdown.

System risk significance was discussed with several systems engineers and was compared with information in the Individual Plant Examination report. Responsible system engineers were well versed with the risk significant aspects of their systems. The inspectors reviewed Quality Assurance records for 24 months of monthly flow path TS surveillance requirements for the following Unit 3 and Unit 4 safety related risk significant systems:

Component Cooling Water System	3/4-OSP-030.3
Chemical Volume and Control System	3/4-OSP-046.3
Auxiliary Feedwater System	3/4-OSP-075.5
Safety Injection / Residual Heat Removal System	3/4-OSP-202.1

Intake Cooling Water System	3/4-OSP-019.2
Containment Spray System	3/4-OSP-068.3

The inspectors reviewed selected surveillances for completeness and accuracy. No regulatory issues were identified as a result of this inspection.

c. Conclusions

Monthly flow path verification surveillances for selected risk significant safety-related systems met the Technical Specification requirements. The system engineers were familiar with the risk significant aspects of their systems.

#### IV. Plant Support

### **S1 Conduct of Security and Safeguards Activities**

#### **S1.1 Testing of Security Diesel Generator**

a. Inspection Scope (71750)

The inspectors observed testing of the security diesel generator using the high mast lights for loading.

b. Observations and Findings

The inspectors observed testing on the security diesel generator on November 1, 1999, using procedure 0-OP-026, Cat 400 Operations. Non-licensed operators performed this test. The diesel generator start was satisfactory and the high mast lights were used to provide a load on the generator. A precaution in the procedure stated that 600 amps should not be exceeded. The inspectors observed that the load was 240 amperes and not near 600 amperes. The inspectors toured the outside diesel generator building and observed that many of the high mast lights were not illuminated. There had been some problems with the lights after hurricane Irene on October 15, 1999, but those problems had been previously addressed.

The inspectors discussed this observation with the nuclear plant supervisor. Also, discussed was that the procedure did not specify a normal ampere loading or require anyone to observe actual operation of the high mast lights during the test. The Nuclear Plant Supervisor initiated CR 99-1559 to address these issues. Subsequently, the licensee initiated corrective actions and determined that the plant still met the security lighting requirements. No violations of NRC regulatory requirements were identified.

c. Conclusions

The security diesel generator testing was conducted in accordance with procedures.

**F4 Fire Protection Staff Knowledge and Performance****F4.1 Auxiliary Feed Pump Cage Fire Drill****a. Inspection Scope (71750)**

The inspectors observed the plant fire brigade and support groups extinguish a simulated fire in the auxiliary feed pump cage.

**b. Observations and Findings**

On October 25, 1999, at 10:30 a.m. the control room announced a simulated fire in the auxiliary feed pump cage. The drill also included a simulated personnel injury. The plant fire brigade, consisting of the three Operations and two Health Physics personnel arrived at the fire area within nine minutes. Response from security and the medical representatives was also timely. The inspectors noted that the medical representative was not given good guidance when he arrived at the fire area. The fire was extinguished by spraying foam from outside the cage area and later from inside the cage.

The inspectors attended the drill critique. The licensee determined the fire drill was performed satisfactorily. Several areas for improvements were identified. Also, it was identified that initial attempts to extinguish the fire using extinguishers were expected but were not done. The inspectors reviewed the drill observations, areas for improvements, and the licensee's criteria used to determine that the drill was satisfactorily performed.

**c. Conclusions**

A plant fire drill was satisfactorily performed. Several areas for improvements were identified by the licensee.

**V. Management Meetings and Other Areas****X1 Exit Meeting Summary**

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on December 2, 1999. The licensee acknowledged the findings presented.

The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

**PARTIAL LIST OF PERSONS CONTACTED****Licensee**

D. Lowens, Quality Assurance Manager  
S. Franzone, Licensing Manager  
R. Hovey, Site Vice-President  
D. Jernigan, Plant General Manager  
T. Jones, Operations Manager  
J. Kirkpatrick, Protection Services Manager  
M. Lacal, Training Manager  
G. Hollinger, Work Control Manager  
R. Rose, Maintenance Manager  
E. Thompson, License Renewal Project Manager  
D. Tomaszewski, Site Engineering Manager  
J. Trejo, Health Physics/Chemistry Supervisor  
A. Zielonka, System Engineering Manager

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

**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: Maintenance Observations  
IP 71707: Plant Operations  
IP 71750: Plant Support Activities