



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

April 28, 2011

Florida Power and Light Company
ATTN: Mr. Mano Nazar, Senior Vice President
Nuclear and Chief Nuclear Officer
P.O. Box 14000
Juno Beach, FL 33408-0420

**SUBJECT: TURKEY POINT NUCLEAR PLANT – INTEGRATED INSPECTION REPORT
05000250/2011002 AND 05000251/2011002**

Dear Mr. Nazar:

On March 31, 2011, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Turkey Point Units 3 and 4. The enclosed inspection report documents the inspection results, which were discussed on April 6, 2011, and April 22, 2011, with Mr. Kiley and other members of your staff.

The inspection examined activities conducted under your license as they related to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents one NRC-identified finding of very low safety significance (Green). The finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating the findings as a non-cited violation (NCV) consistent with the NRC Enforcement Policy. Also, two licensee identified violations which were of very low safety significance are listed in Section 4OA7 of the report. If you contest any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-001; with copies to the Regional Administrator Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Turkey Point. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at Turkey Point.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Daniel W. Rich, Chief
Reactor Projects Branch 3
Division of Reactor Projects

Docket Nos.: 50-250, 50-251
License Nos.: DPR-31, DPR-41

Enclosure: Inspection Report 05000250/2011002
and 05000251/2011002
w/Attachment: Supplemental Information

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Letter to Mano Nazar from Daniel W. Rich dated April 28, 2011

SUBJECT: TURKEY POINT NUCLEAR PLANT – INTEGRATED INSPECTION REPORT
05000250/2011002 AND 05000251/2011002

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-250, 50-251

License Nos.: DPR-31, DPR-41

Report No: 05000250/2011002, 05000251/2011002

Licensee: Florida Power & Light Company (FP&L)

Facility: Turkey Point Nuclear Plant, Units 3 & 4

Location: 9760 S. W. 344th Street
Homestead, FL 33035

Dates: January 1 to March 31, 2011

Inspectors: J. Stewart, Senior Resident Inspector
M. Barillas, Resident Inspector
R. Taylor, Senior Project Inspector, Region II

Accompanied by: S. Schroer, NSPDP

Approved by: Daniel W. Rich, Branch, Chief
Reactor Projects Branch 3
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000250/2011-002, 05000251/2011-002; 1/1/2011 – 3/31/2011; Turkey Point Nuclear Power Plant, Units 3 and 4; Surveillance Testing.

The report covered a three month period of inspection by resident inspectors and a region based senior project inspector. One Green NCV was identified. The significance of most findings is identified by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP) and the cross-cutting aspect was determined using IMC 310, Components Within The Cross-Cutting Areas. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," and Revision 4, dated December 2006.

A. NRC-Identified & Self-Revealing Findings

Cornerstone: Barrier Integrity

(Green) The inspectors identified a non-cited violation (NCV) of Technical Specifications 6.8.1.a, Procedures, when operators did not adequately monitor reactor power nor the position of valve TC-3-144A, a valve which affects reactivity, during a letdown valve inservice test. As a result, the Unit 3 hourly average reactor power increased above 100 percent for about 40 minutes. When identified to the licensee by the inspectors, the issue was documented in the corrective action program as AR 1643603.

Failure to maintain positive control of reactor power was contrary to plant procedures and was a performance deficiency. The issue was more than minor because it resulted in reactor operation at 100.05 percent power for about 40 minutes. The finding involved configuration control affecting reactivity and was assigned to the Barrier Integrity Cornerstone. In accordance with screening criteria in IMC 0609, Appendix A, Phase 1, for degraded fuel barrier, the issue screened as Green. The finding was determined to be of very low safety significance because throughout the incident, thermal power remained bounded by the reactor safety analyses limit of 102% and no safety limits were exceeded. The finding affected the cross-cutting area of Human Performance, Work Practices, (H.4(a)) when operating personnel were not aware of reactor status, and human error prevention techniques, such as holding pre-job briefings, self and peer checking, and proper documentation of activities were not adequate to assure plant activities were properly performed. (Section 1R22)

B. Licensee Identified Violations

Two violations of very low safety significance identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and associated corrective actions are listed in Section 4OA7 of this report.

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REPORT DETAILS

Summary of Plant Status:

Unit 3 started the period at full power. On March 6 Unit 3 power was reduced to approximately 50 percent because of indications of a main condenser tube leak. Later that day, reactor power was reduced to approximately 20 percent, the reactor was manually tripped, and the unit stabilized in Mode 3 to allow further action to stop the condenser tube leak. Following recovery of secondary systems to normal chemistry, the reactor was critical on March 12 and the unit was returned to power operation on March 14. Full power operation was restored on March 15, 2011, and operated at full power for the remainder of the period.

Unit 4 operated at full power until March 20 when power was reduced to 50% to support main steam safety valve testing. On March 21 the unit was shutdown and a cooldown commenced for Refueling outage 25.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity (Reactor-R)

1R04 Equipment Alignment

.1 Partial Equipment Walkdowns

a. Inspection Scope

The inspectors conducted four partial alignment verifications of the safety-related systems listed below. These inspections included reviews using operating procedures and piping and instrumentation drawings which were compared with observed equipment configurations to verify that the critical portions of the systems were correctly aligned to support operability. The inspectors also verified that the licensee had identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems. The inspectors routinely verified that alignment issues were documented in the corrective action program. Walkdowns included:

- Unit 3 emergency diesel generator starting air system following restoration from air crosstie. The restoration was done using licensee procedure 3-OP-023, Section 7.4 and equipment clearance order 3-10-12-003
- Unit 4A high head safety injection pump while unit 4B high head safety injection pump was inoperable for motor replacement under work order 37000761
- Unit 4A emergency diesel generator using 4-OSP-023.1, Diesel Generator Operability Test, when 4B emergency diesel generator was inoperable due to a #19 cylinder cock valve failure
- Unit 3 A Emergency Diesel Generator flowpath using licensee procedure 3-OSP-023.1 when licensee performed work on the auxiliary feedwater system

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b. Findings

No findings were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors conducted a detailed review of the alignment and condition of the System 06, Unit 4, A and B, 480 Load Centers to verify that the existing alignment of the system was consistent with the design. To determine the correct system alignment, the inspectors reviewed the plant Technical Specifications (TS), procedures, drawing, and the Final Safety Analysis Report (FSAR). Plant drawing 5610-T-E-1591, Operating Diagram Electrical Distribution, and licensee procedure 4-NOP-006, 480 Volt Switchgear System were specifically used to do the walkdown. The inspectors walked down the system and reviewed the following:

- Breakers were correctly positioned
- Electrical power was available
- Major system components were correctly labeled, lubricated, cooled, ventilated, etc.
- Hangers and supports were installed and functional
- Essential support systems were operational
- Ancillary equipment or debris did not interfere with system performance

Design and equipment issues were reviewed to determine if the identified deficiencies significantly impacted the system's functions. Items included in this review were the system health report for system 006, the system description, condition reports, and outstanding maintenance work orders (WOs). In addition, the inspectors reviewed the licensee's corrective action program to ensure that the licensee was identifying and resolving equipment alignment problems in a timely manner.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

.1 Fire Area Walkdowns

The inspectors toured the following six plant areas to evaluate conditions related to control of transient combustibles and ignition sources and the material condition and operational status of fire protection systems including fire barriers used to prevent fire damage and propagation. The inspectors reviewed these activities using provisions in the licensee's procedure 0-ADM-016, Fire Protection Plan, and 10 CFR Part 50, Appendix R. The licensee's fire impairment lists were routinely reviewed. In addition,

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the inspectors reviewed the condition report database to verify that fire protection problems were being identified and appropriately resolved. The following areas were inspected:

- Main control room
- Auxiliary building breezeway
- Unit 4 emergency diesel generator control rooms
- Unit 4 containment
- Unit 3 charging pump room
- Cable spreading room

b. Findings

No findings were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors verified heat exchanger performance monitoring for the safety related heat exchangers listed. The testing verified an adequate heat transfer from component cooling to the intake cooling water system by first determining the actual fouling factor of the heat exchangers, then comparing the value against design requirements. The inspectors checked that monitoring and trending of heat exchanger performance was done at an appropriate interval and verified the operational readiness of the system should it be needed for accident mitigation. The inspectors verified that the licensee employed the heat transfer method described in EPRI-NP-7552, Heat Exchanger Performance Monitoring Guidelines. The inspectors walked down portions of the cooling systems for integrity checks and to assess operational lineup and material condition. On February 9, 2011, the inspectors performed an inspection of the intake cooling canal system area and verified structural integrity was being maintained. Maintenance rule monitoring of the system was verified. On February 11, 2011, the inspectors observed mechanical cleaning of the 4A intake cooling water basket strainer using licensee procedure O-PMM-019.7, Intake Cooling Water Basket Strainer Cleaning and Inspection. The inspectors observed that the basket strainer remained capable of performing its design function to filter cooling water. The inspectors confirmed after the maintenance that the basket strainer had been returned to its normal operating lineup. On March 18, 2011, the inspectors observed engineering perform the heat exchanger performance test required by Technical Specifications in accordance with the following procedures:

Unit 3: 3-OSP-030.4, Component Cooling Water Heat Exchanger Performance Test.

Unit 4: 4-OSP-030.4, Component Cooling Water Heat Exchanger Performance Test.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program

.1 Resident Inspector Quarterly Review

a. Inspection Scope

On January 19, 2011, the inspectors observed and assessed licensed operator performance in the plant specific simulator. The simulated events were done using Turkey Point Unit 3 and 4 Lesson Package titled Steam Generator Tube Rupture with Loss of Offsite Power. The inspectors verified that the operators were able to mitigate the events using abnormal and emergency operating procedures. Procedures that were implemented included 3-ONOP-071.2, 3-EOP-E-0, 3-ONOP-004.2, and 3-EOP-E-3.

Event classifications were checked for proper classification and simulated state notification in accordance with licensee procedures 0-EPIP-20111, Duties of the Emergency Coordinator, and 0-EPIP-20134, Offsite Notifications and Protective Action Recommendations. The simulator board configurations were compared with actual plant control board. The inspectors specifically evaluated the following attributes related to operating crew performance and the licensee evaluation:

- Clarity and formality of communication
- Ability to take timely action to safely control the unit
- Prioritization, interpretation, and verification of alarms
- Correct use and implementation of off-normal and emergency operating procedures and emergency plan implementing procedures
- Control board operation and manipulation, including high-risk operator actions
- Oversight and direction provided by supervision, including ability to identify and implement appropriate TS actions and emergency plan classification and notification
- Crew overall performance and interactions
- Evaluator's critique and findings

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the following equipment problem and associated condition report to verify that the licensee's maintenance efforts met the requirements of 10 CFR 50.65 (Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants) and licensee administrative procedure 0-ADM-728, Maintenance Rule Implementation. The inspectors' efforts focused on maintenance rule scoping, characterization of maintenance problems and failed components, risk significance, determination of a(1) classification, corrective actions, and the appropriateness of established performance goals and monitoring criteria. The inspectors also interviewed

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responsible engineers and observed some of the corrective maintenance activities. The inspectors verified that equipment problems were being identified and entered into the corrective action program. The inspectors used licensee maintenance rule data base, system health reports, and the corrective action program as sources of information on tracking and resolution of issues.

- AR 406403: 4A charging pump 480V load center breaker trip

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors completed in-office reviews and control room inspections of the licensee's risk assessment of four emergent or planned maintenance activities. The inspectors verified the licensee's risk assessment and risk management activities using the requirements of 10 CFR 50.65(a)(4); the recommendations of Nuclear Management and Resource Council 93-01, Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Revision 3; and Procedures O-ADM-068, Work Week Management and O-ADM-225, On Line Risk Assessment and Management. The inspectors also reviewed the effectiveness of the licensee's contingency actions to mitigate increased risk resulting from the degraded equipment and the licensee assessment of aggregate risk using FPL procedure OP-AA-104-1007, Online Aggregate Risk. The inspectors evaluated the following risk assessments during the inspection:

- January 3: Risk management for preventive checks on auxiliary feedwater train 1 trip and throttle valve MOV-6459A (work order 40008528)
- January 19: risk management with the 3B emergency diesel generator inoperable due to radiator cooling fan idle shaft shearing (work order 94015701)
- February 3: risk management when 3A emergency diesel was removed from service for governor replacement. Switchyard activities and protected equipment designation were verified along with EOOS risk status.
- February 15: risk management when Unit 3 train 2 auxiliary feedwater flow control valve FCV-3-2832 to 3B steam generator failed to provide demand flow in manual (work order 40069667-01)

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

For the five operability evaluations described in the condition reports (CR) listed below, the inspectors evaluated the technical adequacy of licensee evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors reviewed the final safety analysis report to verify that the system or component remained available to perform its intended function. In addition, when applicable, the inspectors reviewed compensatory measures implemented to verify that the plant design basis was being maintained. The inspectors also reviewed a sampling of condition reports to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations.

- AR 1608848, Operability of 3B Intake Cooling Water Pump with 3A2 intake screens removed from service for replacement
- AR 1609632, Operability of 3A Accumulator with level lowering at approximately 14-22 gallons per day
- AR 1607627, Operability of 3A Emergency Diesel Generator with TS-3-1400A, EDG immersion heater temperature switch failing to actuate
- AR 1624292, Operability of 3B emergency containment cooler following failure of outlet valve CV-3-2906 to stroke closed during component cooling water inservice testing
- AR 1616291 Operability of Strut 80117-R-332-05 using design drawing 5610-H-809

b. Findings

No findings were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the temporary system modification listed below to ensure that that the modification did not degrade safety system availability or reliability. The inspectors reviewed the modification for departures from design basis and for inadvertent changes that could challenge the component cooling and spent fuel pool cooling systems in fulfilling their safety functions. The inspectors specifically checked contingency staging and plans to restore structural integrity of component cooling should the freeze fail. During routine walk downs, the inspectors discussed system status with engineering and operations personnel to check for the existence of modifications that had not been appropriately identified and evaluated.

- Work Order 38025926, temporary alteration (freeze seal) to component cooling water system to allow replacement of relief valve RV-4-791F

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b. Findings

No findings were identified.

1R19 Post Maintenance Testinga. Inspection Scope

For the five post maintenance tests listed below, the inspectors reviewed the test procedures and either witnessed the testing and/or reviewed test records to determine whether the scope of testing adequately verified that the work performed was correctly completed and demonstrated that the affected equipment was operable. The inspectors used licensee procedure 0-ADM-737, Post Maintenance Testing, in their assessments.

- Common: Stroke test of auxiliary feedwater Train 1, trip throttle valve, MOV-6459A, per licensee procedure 3-OSP-075.1, Auxiliary Feedwater Train 1 Operability Verification, steps 7.1.2.8 to 7.1.2.11 after work order 40008528, MOV 6159A Grease Inspection and Stem Lubrication
- Unit 3: operability test per procedures 3-OP-023.1, Diesel Generator Test for Governor Adjustment or Replacement, and 3-OSP-023.1, Diesel Generator Operability Test, after replacement of the 3A EDG Governor Motor Operated Potentiometer with Digital Reference Unit under WO 40007503-02
- Unit 3: Operability test per licensee procedure 3-OSP-075.2, Auxiliary Feedwater Train 2 Operability Verification; and calibration check per 3-PMI-075.2, Auxiliary Feedwater Flow Indication and Control Instrumentation Calibration channels F-3-1457B; following replacement of HIC-3-1457B per Work Order 40069667 (AR 01619907) The March 2, reliability test (3-OSP-075.2) was used in the verification.
- Unit 3: train 2 Auxiliary Feedwater nitrogen backup test using 3-OSP-075.7, after nitrogen backup supply station header discharge rupture disc replacement planned maintenance (WO 39024185-01)
- Unit 4: 4B emergency diesel generator operability test per licensee procedure 4-OSP-023.1, Diesel Generator Operability Test, after replacement of #19 cylinder test valve WO 40075279-01

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities.1 Unit 3 Short Duration Outagea. Inspection Scope

During a Unit 3 short duration outage that started on March 6 the inspectors evaluated activities as described below, to verify the licensee considered risk in developing schedules, adhered to administrative risk reduction methodologies, and adhered to

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operating license and Technical Specification requirements that maintained defense-in-depth. During the outage, the inspectors checked the items or activities described below, to verify that the licensee followed technical specification requirements and maintained defense-in-depth commensurate with the outage risk-control plan for key safety functions:

- 3-GOP-305, Hot Standby to Cold Shutdown, Section 5.3.5, Cooldown of the pressurizer and reactor coolant system pressure reduction (included Block of low Tave and Low pressurizer pressure safety injection) to facilitate a crud burst

The inspectors reviewed activities during reactor restart and power escalation to verify that reactor parameters were within safety limits and that the startup evolutions were done in accordance with pre-approved procedures and plans.

b. Findings

No findings of significance were identified.

A.1 Unit 4 Refueling Outage 25

a. Inspection Scope

The inspectors observed selected Unit 4 outage activities starting March 21 to determine whether shutdown safety functions were properly maintained as required by technical specifications and plant procedures. The inspectors evaluated specific performance attributes including operator performance, communications, and risk management. The inspectors reviewed procedures and observed selected activities associated with the outage and conducted walkdowns of systems credited to maintain safety margins and defense in depth. The inspectors verified that activities were performed in accordance with the outage plan, plant procedures, and as appropriate, verified that acceptance criteria were met. Conditions adverse to quality documented by the licensee in the corrective action program were checked daily. Also, management activities were monitored to assure adherence to the outage plan and safe resolution of issues. The inspectors specifically evaluated the following activities:

- Pre-outage shutdown safety plan using licensee procedure 0-ADM-051, Outage Risk Assessment and Control
- Initial containment inspections and ability of the licensee to close containment if needed within specified times
- Component and system outages were sequenced to assure critical safety functions and defense in depth in accordance with licensee procedure 0-ADM-051, Outage Risk Assessment and Control
- Outage issues were documented in the corrective actions program
- Monitoring of decay heat removal system performance, lineups, and cooldown rates. The inspectors verified that the plant cooldown was conducted in accordance with licensee procedure 4-OSP-041.7, Reactor Coolant System Heatup and Cooldown Temperature Verification

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- Fuel handling activities including core offload
- Reactor coolant system draining and operations with a short time to boil including verification of alternate electrical supplies and both trains protected

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors either reviewed or witnessed the following nine surveillance tests including two in-service tests (IST), one leak rate test (LRT), and one containment isolation function (CIV), to verify that the tests met the technical specification requirements, the UFSAR, and the licensee's procedural requirements and demonstrated that the systems were operationally ready to perform their intended safety functions. In addition, the inspectors evaluated the effect of the testing activities on the plant to ensure that conditions were adequately addressed by the licensee staff and that after completion of the testing activities, equipment was returned to the positions/status required for the system to be operable. In-service tests were validated using the licensee's Inservice Testing Program Fourth Ten Year Interval, dated March 11, 2004. The inspectors verified that surveillance issues were documented in the corrective action program.

- 3-OSP-206.2, Quarterly Inservice Valve Testing Section 7.4.19 and 20, Exercise of Pressurizer Power Operated Relief Valve, Stop Valves MOV-3-535 and MOV-3-536 (IST)
- 4-OSP-019.1, Intake Cooling Water Inservice Test, Section 7.1, ICW Pump 4A and Discharge Check Valve Test (IST)
- 3-OSP-075.1, Auxiliary Feedwater Train 1 Operability Verification
- 4-OSP-039.3, New Fuel Bridge Crane-Periodic Test
- 3-OSP-041.7, Reactor Coolant System Heatup and Cooldown Temperature Verification
- 4-OSP-300.1, Alternate Shutdown Panel 4C264 Operability Test Section 7.1, CCW to RCPs Isolation Valve, MOV-4-716B, ASP Transfer/Control Switch Test (CIV)
- 3-OSP-075.2, Auxiliary Feedwater Train 2 Operability Verification
- 3-OSP-47.1, Charging Pumps/Valves Inservice Test (IST)
- 4-OSP-041.1, Reactor Coolant System Leak Rate Calculation (LRT)

b. Findings

Introduction: (Green) The inspectors identified a non-cited violation (NCV) of Technical Specifications 6.8.1.a, Procedures, when operators did not maintain awareness of system controls and did not sufficiently monitor Unit 3 reactor power during a letdown valve test.

As a result, a reactivity change occurred, causing one hour average reactor power to increase above 100 percent for 42 minutes.

Description: On February 3, 2011, operators on Unit 3 were performing quarterly testing using procedure 3-OSP-047.1, Charging Pumps/Valves Inservice Test, and concurrently performing lineups using 3-OP-047, CVCS, Charging and Letdown. The procedures establish control (auto or manual) of temperature control valve, TC-3-144A, which controls component cooling water (CCW) flow to the non-regenerative heat exchanger, for various test sequences. During performance of the letdown isolation valve test, 3-OSP-047.1, operators were not aware that TC-3-144A had been placed in the manual position during the preceding test. As a consequence, during the letdown isolation valve test, letdown temperature slowly decreased. This cooler temperature resulted in a positive reactivity addition. The operators did not immediately recognize this condition. After some time, the operators checked calorimetric reactor power and noticed the 10-minute average thermal power was 100.14%. The operators took action to reduce power by adding boron. The operators did not recognize that the one-hour average power also had increased above 100 percent. After the operator action, power was restored to the normal operating band of 99.85 to 99.99 percent. The inspectors reviewed calorimetric power traces for the event and identified that the one-hour average reactor power exceeded 100 percent for 42 minutes, peaking at 100.05 percent. Plant operating procedure 0-ADM-200, Conduct of Operations, requires that board operators monitor 10-minute average power to prevent the hourly heat rate from exceeding 99.99 percent. Operators did not recognize that one-hour average power had increased above 100 percent and did not report this to management nor document the occurrence in a condition report as specified by 0-ADM-200.

Analysis: Failure to maintain positive control of reactor power by failing to be aware of the operation of temperature control valve (TC-3-144A), a valve that affected reactivity management, and failure to adequately monitor 10 minute average power, was contrary to plant procedures and was a performance deficiency. The issue was more than minor because it resulted in operating the reactor at greater than 100 percent power for about 40 minutes during a preplanned test. The inspectors used NRC Manual Chapter 0612, Appendix E, Example 8.a in the assessment. Once recognized by the operators, action was taken to restore power to within normal operating limits, and the maximum thermal power did not result in operations above the analyzed limit of 102 percent. In accordance with screening criteria in IMC 0609, Appendix A, Phase 1, for degraded fuel barrier, the issue screened as Green. The finding was determined to be of very low safety significance because throughout the incident, thermal power remained bounded by the reactor safety analyses limit of 102% and no safety limits were exceeded. The finding affected the cross-cutting area of Human Performance, Work Practices, when operating personnel were not aware of reactor status, and human error prevention techniques, such as holding pre-job briefings, self and peer checking, and proper documentation of activities were not adequate to assure plant activities were properly performed (H.4(a)).

Enforcement: Turkey Point Technical Specifications 6.8.1.a, states that written procedures required by the Quality Assurance Topical Report (QATR) shall be implemented. The QATR requires use of the procedures, which includes procedures that

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control plant operation and are used for operating the Chemical and Volume Control System (CVCS). FPL implements this requirement, in part, with procedures 0-ADM-200, Conduct of Operations, which specifies monitoring of the 10-minute average power level to ensure the hourly indicated power remains below 99.99 percent, and 3-OP-047, CVCS, Charging and Letdown, which directs the operators to maintain letdown system valves, such as TC-3-144A, in the normal automatic configuration. Contrary to the above, on February 3, 2011, Unit 3 operators did not restore TC-3-144A to its automatic position following a test and did not monitor 10-minute average power sufficiently to ensure that hourly indicated power remained below 99.99 percent. As a result, the one-hour average reactor power increased above 100 percent for about 40 minutes. When the power change was identified by operators during status checks, operators took action to reduce reactor power. When it was identified by the inspectors that power exceeded 100 percent on the hourly average, action report AR 1643603 was written to evaluate the issue to prevent recurrence. Because the violation was of very low safety significance and was entered into the licensee's corrective action program, this violation is being treated as an NCV, consistent with the NRC Enforcement Policy: NCV 05000250/2011002-01-01 Failure to monitor a reactivity change results in power operation above 100 percent.

4. OTHER ACTIVITIES

4OA2 Problem Identification and Resolution

.1 Daily Review

a. Inspection Scope

As required by Inspection Procedure 71152, Identification and Resolution of Problems, and to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a screening of items entered daily into the licensee's corrective action program. This review was accomplished by reviewing daily summaries of condition reports and by reviewing the licensee's electronic condition report database. Additionally, reactor coolant system unidentified leakage was checked on a daily basis to verify no substantive or unexplained changes.

b. Findings

No findings were identified.

.2 Annual Sample Review

a. Inspection Scope

The inspectors selected the following condition reports for detailed review and discussion with the licensee. The condition report was reviewed to ensure that an appropriate evaluation was performed and appropriate corrective actions were specified and prioritized. Other attributes checked included assignment of a senior management

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sponsor for the review, resolution of the problem including cause determination, and appropriate assignment and completion of corrective actions. The inspectors evaluated the condition report in accordance with the requirements of the licensee's corrective actions process as specified in licensee procedures PI-AA-204, Condition Identification and Screening Process, and PI-AA-205, Condition Evaluation and Corrective Action. The inspectors also periodically reviewed operator workarounds to verify that the licensee was identifying operator workaround problems at an appropriate threshold and entering them in the corrective action program.

- AR 406403, 4A Charging Pump trip
- AR 01619907; During performance of auxiliary feedwater Train 2 Operability Verification, feedwater flow control valve CV-3-2832 exhibited erratic control when HIC-3-1457B was placed in manual control

b. Findings

No findings were identified.

4OA3 Follow-up of Events

.1 (Closed) Licensee Event Report (LER) 50-250/2011-005-00, Containment Liner Through Wall Defect

On October 22, 2010, FPL identified an area of corrosion in the Unit 3 containment liner plate at the -15' area below the reactor vessel. The affected area was carbon steel, approximately 3 inches by 36 inches, with some thru-wall holes that opened only to subterranean concrete below the containment structure. There was no direct open pathway to the environment. The root cause was determined to be liner coating failure resulting in exposure of the carbon steel liner plate to borated water. The liner exterior which interfaced with concrete was observed to be intact with no evidence of external corrosion. The licensee also found that prior inspections had not been adequate to detect and mitigate the corrosion. An evaluation of the liner penetrations and the possible contribution to offsite dose was done in Numerical Applications Inc, evaluation NAI-1561-001, dated February 18, 2011. The evaluation found the potential radiological consequence of the liner holes to be negligible (less than 0.1 percent increase). The licensee conducted a detailed inspection of the containment liner to assure no other wall corrosion below minimum thickness existed. The inspectors verified that a planned detailed inspection of Unit 4 containment liner was conducted at the beginning of refuel outage 25 and no through wall deficiencies were identified. Enforcement associated with this occurrence is provided in Section 4OA7 of this report. The LER is closed.

.2 (Closed) (LER) 50-251/2010-002-00, Reactor Trip Resulting From Steam Generator Feedwater Pump Trip

The LER describes a January 11, 2010, Unit 4 unplanned manual reactor trip that was initiated in anticipation of steam generator levels reaching the automatic reactor trip setpoint. The transient started early on the morning of January 11 when both heater

drain pumps tripped because of sluggish response of heater drain control valves. Later, after the heater drain system was returned to service, sluggish response of a seal water injection control valve, combined with a clogged gravity drain for seal water, caused a loss of oil to the pump bearings. Engineering personnel observing pump operations at the time of the problem noted no oil in the oil reservoir sight glass and recommended that the feedwater pump be stopped. When operators stopped the pump, a plant runback occurred, as expected, and the reactor was manually tripped in anticipation of an automatic trip on steam generator high level. There were no complications to the trip, which was observed by inspectors in the control room at the time of the event. Also, there were no safety system actuations associated with the trip. FPL upgraded and replaced the faulty seal water injection control valves and the heater drain control valves. No performance deficiencies were identified. The LER is closed.

.3 (Closed) LER 05000251/2010-006-00: High Pressurizer Pressure Trip Signal

The LER documented that on September 21, 2010, while Unit 4 was operating at 100% power an unplanned automatic reactor trip occurred while the quarterly surveillance for the Channel II High Pressurizer Protection Loop (P-4-456) was in progress. The licensee determined the cause of the trip was determined to be excessive pin separation in ELCO connectors causing component failures due to inadequate installation instructions and inspection criteria. A contributing cause was determined to be a lack of special instructions with respect to pin separation in ELCO connectors. Corrective Actions included: the replacement of NUS Instruments Comparator Module PC-4-455A; ELCO connector requirements added to plant procedure; formal training to Maintenance personnel to properly inspect NUS module ELCO connector pins and to properly mate the ELCO connectors; and inspection of NUS modules with ELCO connectors. The inspectors reviewed the LER and AR 00581322 documenting this event. Enforcement regarding this issue is provided in section 4OA7 of this report. The LER is closed.

.4 (Closed) LER 05000251/2010-004-00: Reactor Trip During Replacement of Degraded Relay in the Reactor Protection System

The LER documented that on September 8, 2010, while Unit 4 was operating at 100% power, an unplanned reactor trip occurred at approximately 13:45 during replacement of the 4B Reactor Protection System (RPS) Left Turbine Stop Valve Closure Logic Relay 4-SL-X-B. The licensee determined that the reactor trip occurred because deficiencies in the work order package and guiding procedures failed to establish and/or verify the plant conditions required to successfully complete the evolution were complete and relied on Operations staffing to provide the validation that the evolution could be performed. Corrective actions included: replacement of the degraded 4-SL-X-B relay; updating work order preparation checklist 0-ADM-701.1 to specify and establish required plant conditions prior to work; and a review of RPS work orders that involve relay replacements. The inspectors previously reviewed the circumstances of this condition as documented in NRC Inspection Report 2010-004 and issued NCV 05000250,251/2010-004-01. The inspectors reviewed the LER and AR 578473 documenting the event. The inspectors checked the accuracy and completeness of the LER and the appropriateness of the licensee's corrective actions. Enforcement action associated with this event was

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documented in NRC Inspection Report 05000250,251/2010-004. No new findings of significance or violations of NRC requirements were identified. This LER is closed.

.5 (Closed) LER 05000251/2010-005-00: Failure of Group Step Counter with Valid Manual Action of Reactor Protection System

The LER documented that on September 9, 2010, while Unit 4 was operating in Mode 3, the unit entered Technical Specification (TS) 3.1.3.3 Action as a result of Control Bank C Group 1 Step Counter failing to increment. The reactor trip breakers were opened as required by the Action of TS 3.1.3.3. All rods fully inserted and the unit remained in Mode 3. The licensee determined that the cause of the event was the failure of the Step Counter to increment as required because of an early failure of the recently installed battery. With an expected life of 8 to 10 years, a battery replacement cycle of 36 months, the batteries positive service history, impending battery failure was unexpected. Corrective action was to replace all of the Unit 4 step counter batteries. The inspectors reviewed the LER and Condition Report (CR) 2010-00578725 documenting this event. The inspectors checked the accuracy and completeness of the LER and the appropriateness of the licensee's corrective actions. No findings of significance or violations of NRC requirements were identified. This LER is closed.

40A5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the plant inspection period, the inspectors conducted observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours. These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspection activities.

b. Findings

No findings of significance were identified.

40A6 Exit

Exit Meeting Summary

The resident inspectors presented the inspection results to Mr. Kiley and other members of licensee management on April 6, 2011 and April 22, 2011. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary information. The licensee identified Numerical Applications Inc, evaluation NAI-1561-001, dated February 18, 2011, as proprietary information.

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4OA7 Licensee Identified Violations

The following violations of very low safety significance (Green) was identified by the Licensee and constituted a violation of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as a Non-Cited Violation.

- 10 CFR Part 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed by documented instructions or procedures of a type appropriate to the circumstances. Contrary to the above, on September 21, 2010, an unplanned reactor trip occurred while the quarterly surveillance for the Channel II High Pressurizer Pressure Protection Loop (P-4-456) was in progress. The licensee determined the root cause to be inadequate inspection and installation criteria used for ELCO connectors because acceptance criteria and method of verification were not addressed by procedures. The issue was screened to be of very low safety significance (Green). When identified, the licensee took corrective actions to add ELCO connector inspection requirements to a plant procedure and conduct formal training for maintenance personnel to properly inspect and mate connectors. The issue was documented in AR 00581322. Because the licensee identified the issue and documented it into their corrective action program, and because the finding is of very low safety significance, this violation is being treated as a licensee identified NCV consistent with the NRC Enforcement Policy.
- Technical Specification 5.2.1.f requires the containment steel liner to have a nominal thickness of 0.25 inches. Contrary to the above, on October 22, 2010, during a planned inspection, FPL found corrosion in the lower liner plate at the -15 foot level with areas of the liner to be below 0.25 inches. The liner was backed by concrete and no direct path to the environment was identified. FPL repaired the liner and planned to recoat the lower cavity area in a future outage. FPL contracted an evaluation of the liner holes to radiological consequence of an accident and found the contribution to dose from the degradation to be negligible. The finding was screened as Green using NRC Inspection Manual Chapter 0609, Attachment 0609.04, SDP Phase 1 screening because the finding did not result in any loss of containment barrier function.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:

C. Cashwell, Radiation Protection Manager
R. Coffey, Maintenance Manager
M. Crosby, Quality Manager
J. Garcia, Engineering Manager
B. Carberry, Emergency Preparedness Manager
O. Hanek, Licensing Manager (Acting)
M. Kiley, Site Vice-President
G. Mendoza, Chemistry Manager
J. Patterson, Fire Protection Supervisor
P. Rubin, Plant General Manager
R. Tomonto, Reactor Engineering Supervisor (Acting)
S. Shafer, Assistant Operations Manager
R. Wright, Operations Manager

NRC personnel:

W. Jones, Deputy Director, Division of Reactor Projects

LIST OF ITEMS CLOSED

Opened and closed

05000250/2011002-01-01	NCV	Failure to Monitor a Reactivity Change Results in Power Operation Above 100 Percent (Section 1R22)
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Closed

50-250/2011-005-00	LER	Containment Liner Through Wall Defect (Section 4OA3)
50-251/2010-002-00	LER	Reactor Trip Resulting From Steam Generator Feedwater Pump Trip (Section 4OA3)
50-251/2010-006-00	LER	High Pressurizer Pressure Trip Signal (Section 4OA3)
50-251/2010-004-00	LER	Reactor Trip During Replacement of Degraded Relay in the Reactor Protection System (Section 4OA3)
50-251/2010-005-00	LER	Failure of Group Step Counter with Valid Manual Action of Reactor Protection System (Section 4OA3)