



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

October 30, 2012

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

**SUBJECT: TURKEY POINT NUCLEAR PLANT – NRC INTEGRATED INSPECTION REPORT  
05000250/2012004 AND 05000251/2012004**

Dear Mr. Nazar:

On September 30, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Turkey Point Nuclear Plant Units 3 and 4. The enclosed integrated inspection report documents the inspection results, which were discussed on October 17, 2012, with Mr. E. McCartney and other members of your staff.

The inspection examined activities conducted under your license as they relate 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.

One self-revealing finding of very low safety significance (Green) was identified during this inspection. This finding was determined to involve a violation of NRC requirements. Additionally, a licensee-identified violation which was determined to be of very low safety significance is listed in this report. The NRC is treating these violations as non-cited violations consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or significance of these NCVs, 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 20555-0001; 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 the Turkey Point Nuclear Plant.

M. Nazar

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If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this report, with the basis of your disagreement, to the Regional Administrator, Region II; and the NRC Resident Inspector at Turkey Point Nuclear Plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website 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 05000250/2012004, 05000251/2012004 and  
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

M. Nazar

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M. Nazar

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Letter to Mano Nazar from Dan Rich dated October 30, 2012

SUBJECT: TURKEY POINT NUCLEAR PLANT – NRC INTEGRATED INSPECTION REPORT  
05000250/2012004 AND 05000251/2012004

Distribution w/encl:

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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: 05000250/2012004, 05000251/2012004

Licensee: Florida Power & Light Company (FPL)

Facility: Turkey Point Nuclear Plant, Units 3 & 4

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

Dates: July 1, 2012 – September 30, 2012

Inspectors: J. Stewart, Senior Resident Inspector  
M. Barillas, Resident Inspector  
A. Hutto, Senior Resident Inspector, Catawba  
M. Donithan, Project Engineer  
R. Taylor, Senior Project Inspector  
D. Mas Penaranda, Resident Inspector

Accompanied By: T. Lichatz, Nuclear Safety Professional Development Program

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000250/2012004, 05000251/2012004; 07/01/2012 – 09/30/2012; Turkey Point Nuclear Power Plant, Units 3 and 4; Post Maintenance Testing

The report covered a three month period of inspection by resident inspectors and region based inspectors. One Green non-cited violation was identified. The significance of inspection findings are indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP) dated June 2, 2011. The cross-cutting aspect was determined using IMC 310, "Components Within the Cross-Cutting Areas" dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated June 7, 2012. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

### A. NRC-Identified & Self-Revealing Findings

Cornerstone: Mitigating Systems

Green. A self-revealing, non-cited violation (NCV) of Turkey Point Technical Specification (TS) 3.3.1 Reactor Trip System Instrumentation was identified when process tubing to a Unit 3 feedwater flow transmitter was found incorrectly installed. As a result, one channel of reactor protection was not operable when required. When control room indications of erratic feedwater flow were noted, the applicable technical specification action was entered, bistables were tripped, and the process tubing misalignment was corrected. The problem was documented in the corrective action program as action request (AR) 1800833.

Failure to adequately perform maintenance and to verify proper alignment of flow transmitter FT-3-476 process tubing after replacement was a performance deficiency. The performance deficiency was determined to be more than minor because it affected the configuration control attribute of the Mitigating Systems Cornerstone which ensures the reliability of systems that respond to initiating events, such as the reactor protection system. The finding was screened using IMC 0609, Appendix A, The Significance Determination Process for Findings At-Power, Exhibit 2. Because the finding affected only a single reactor protection system (RPS) trip initiator and other redundant trips or diverse methods of reactor shutdown were not affected, the finding was determined to be of very low safety significance (Green). The finding was assigned a cross-cutting aspect in the Work Practices component of the Human Performance area (H.4.a) because the licensee did not establish human error prevention techniques, such as self and peer checking and proper documentation of activities to prevent incorrect installation of the flow transmitter. (Section 1R19)

### B. Licensee Identified Violations

A violation of very low safety significance identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violation and corrective action tracking number are listed in Section 4OA7 of this report.

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## REPORT DETAILS

### Summary of Plant Status:

Unit 3 remained shutdown in an Extended Power Uprate outage until August 15 when criticality was achieved. The unit remained in Mode 2 or Mode 3 until September 8, when the unit started power production and power was slowly increased to 29 percent. Reactor power remained between 25 and 30 percent for the remainder of the period.

Unit 4 operated at full power throughout the period.

#### 1. REACTOR SAFETY

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

#### 1R01 Adverse Weather Protection (02.03 Readiness for Impending Adverse Weather Conditions) Tropical Storm Isaac

##### a. Inspection Scope

During the week of August 20, 2012, the inspectors reviewed the licensee's preparation for Tropical Storm Isaac per licensee procedure 0-ONOP-103.3, Severe Weather Preparations. The inspectors attended licensee meetings for coordination of storm preparations including maintenance activities that could coincide with severe weather conditions and verified that vulnerabilities were being appropriately mitigated. The inspectors conducted area tours and verified that essential equipment such as emergency diesel generators were ready and had been tested within the surveillance interval. Adequate staffing for the storm duration was verified. On August 26, the inspectors reported to the site to verify the licensee's storm readiness and remained onsite until the storm had passed the area. Subsequently, the inspectors toured the site to verify no unidentified storm related problems had developed.

##### b. Findings

No findings were identified. No adverse storm effects were noted.

#### 1R04 Equipment Alignment

##### .1 Partial Equipment Walkdowns

##### a. Inspection Scope

The inspectors conducted three 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

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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.

- Unit 3: Sodium tetraborate (NaTB) basket walk down to ensure the proper location of the baskets and to verify the level of NaTB in order to appropriately control the containment sump acidity, post-accident. The walk down was done using licensee drawings 5610-M-56/08-040, Ground Floor Plan Elevation 18'-0" and 5613-M-157, sheet 1, Containment Sump Strainer Piping Layout. Licensee procedure 3-SMM-068.01, Containment Sump pH Control Baskets, was used in preparing for the walk down. The 10 containment sump pH control baskets were installed during the Unit 3 cycle 26 extended power uprate (EPU) refueling outage to meet new Technical Specification 3.6.2.3, Recirculation pH Control System.
- Unit 3: Spent Fuel Pit walkdown to ensure proper valve alignment after valve 3-772D was found approximately ¼ turn open. The incident was documented in AR 1788860 and the cause of the valve being cracked open was attributed to temporary cables having contacted the valve handwheel. Leakage through the open valve resulted in a slight rise in level in the waste hold-up tank over the course of several days. The walkdown was done using licensee drawing 5613-M-3033, sheet 1, Spent Fuel Pool Cooling System, and licensee procedure 3-NOP-033, Spent Fuel Pit Cooling System.
- Unit 3: Steam Generator Feed Flow Channel Transmitters FT-3-476, FT-3-486 and FT-3-496, after 3-FT-476 transmitter tubing was connected backwards. The issue was documented in the corrective action program as AR 1800993. The inspectors performed a detailed review of the alignment and condition of the high and low pressure tubing and valves for the redundant flow transmitters. The inspectors also walked down several newly installed valves in the feedwater system. The walkdowns were done using licensee drawing 5613-M-3074, sheet 3, Feedwater System, and licensee procedure 3-NOP-074, Steam Generator Feedwater System.

b. Findings

No findings were identified.

.2 Complete Equipment Walkdown

The inspectors performed a detailed review and walkdown of the alignment and condition of the high head safety injection system, to verify that the alignment was consistent with the operating requirements. To determine the correct system alignment, the inspectors reviewed the following documents: Technical Specifications; licensee procedure 3-NOP-062, Safety Injection; piping and instrumentation drawings 5613-M-3062, sheets 1 and 2, and 5613-M-3064, sheet 1; and the Updated Final Safety Analysis Report (UFSAR). During the walkdown, the inspectors reviewed the following:

- Valves were correctly positioned and pumps were operable.
- Electrical power was available as required.
- Major system components were correctly labeled.

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- Selected hangers and supports were correctly installed and functional.
- Essential support systems were operational.
- Ancillary equipment or debris did not interfere with system performance.
- Tagging clearances were appropriate.

Items included in this review were equipment out-of-service logs, the system health report, the system description, condition reports, and outstanding maintenance work orders. Routinely, 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 were identified.

1R05 Fire Protection

a. Inspection Scope

.1 Fire Area Walkdowns

The inspectors toured the following five plant areas to evaluate conditions related to control of transient combustibles, 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, the inspectors reviewed the condition report database to verify that fire protection problems were being identified and appropriately resolved. The following areas were inspected:

- Unit 4: 4160 volt switchgear rooms
- Unit 3: containment
- Common: Standby steam generator feedwater pump area
- Common: main control room
- Unit 4: 'A' residual heat removal pump room

b. Findings

No findings were identified.

## .2 Annual Fire Drill

### a. Inspection Scope

On September 12, 2012, the inspectors observed the licensee's fire brigade response to a simulated fire near the Unit 4 intake cooling water pump area. The simulation was done as an unannounced fire drill. The inspectors verified that control room communications with the fire brigade were established and announcement of the fire location and sounding of alarms were made in a timely manner. The inspectors checked the brigade's communications, ability to set-up and execute fire operations, and their use of fire fighting equipment. Five plant operators responded in full fire response gear and additional responders were available to dress if needed. The simulated fire was appropriately extinguished by the fire brigade which simulated using locally available fire extinguishers. An Unusual Event classification per emergency action levels was required and the control room made the correct classification of the fire. The inspectors verified that the licensee implemented the aspects described below.

- Control room personnel verified and announced the fire location. The fire alarm was sounded and fire brigade personnel were dispatched. Pre-fire strategies and the emergency response classification guide were referenced by control room supervisors.
- The brigade, including the fire brigade leader, consisted of a minimum of five team members and five brigade members responded. Additional operators arrived at the scene and were available to respond, if needed.
- The team members acquired and donned the appropriate turnout gear including self-contained breathing apparatus (SCBA).
- The fire brigade leader maintained control. Members were briefed (including potential hazards), discussed plan of attack, received assignments, and performed communications checks. A second qualified brigade leader provided support.
- The responders arrived at the scene in a timely manner, taking an appropriate access route.
- Command and control were established near the fire location. Communications were established and maintained with control room personnel. Communications were effective between the control room, command post, plant operators and fire brigade response teams.
- Fire extinguishing equipment was available in the area and was properly used to extinguish the fire.
- A post-fire critique was held to identify areas for improvement and to reinforce good practices.
- All fire-fighting equipment associated with the drill was returned to a state of readiness following completion of the response. The inspectors checked that fire readiness was quickly restored.

### b. Findings

No findings were identified.

## 1R11 Licensed Operator Requalification Training Program

### .1 Resident Inspector Quarterly Review-Training for Extended Power Uprate Conditions

#### a. Inspection Scope

On September 20, 2012, the inspectors assessed licensed operator performance in the plant specific simulator as it relates to Unit 3 extended power uprate conditions. Event simulations were accomplished using a training evaluation scenario which involved a pressure transmitter failure, followed by a steam generator tube leak that progressed to a steam generator tube rupture, loss of component cooling water and reactor trip. Operators responded to the events using off-normal procedures 3-ONOP-071.2, Steam Generator Tube Leak; 3-ONOP-030, Component Cooling Water Malfunction, and plant emergency procedures 3-EOP-E-0, Reactor Trip and Safety Injection, and 3-EOP-E-3, Steam Generator Tube Rupture.

The simulator board configurations were compared with actual plant control board configurations concerning recent plant modifications. 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 operation 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 technical specification actions, regulatory reporting requirements, and emergency plan classification and notification
- Crew overall performance and interactions
- Effectiveness of the post-evaluation critique

#### b. Findings

No findings were identified.

### .2 Control Room Observations

#### a. Inspection Scope

Inspectors performed the following three focused control room observations and assessed licensed operator performance in the plant and main control room, particularly during periods of heightened activity or risk and where the activities could affect plant safety. These observations routinely included surveillance testing, response to alarms, communications, and coordination of activities. These observations were conducted to verify operator compliance with station operating protocols, such as use of procedures,

control and manipulation of components, and communications. On July 31 the inspectors did a focused observation which included restoring the Unit 3 ATWS Mitigating System Actuation Circuitry (AMSAC) system to service, making preparations to stop the 3B condensate pump, and completion of the Mode 4 prerequisites checklist in preparation for a mode change on Unit 3. On August 1, the inspectors observed control room activities including the monthly operability test of AFW pump 'B' using licensee procedure 4-OSP-075.2 (which required a 10 megawatt reactor power reduction) and re-energization of the 3C 4kV electrical bus following planned maintenance. On August 30, the inspectors observed control room operators transition Unit 3 from Mode 3 to Mode 2 using licensee procedure 3-GOP-301, Hot Standby to Power Operations.

During these observations, the inspectors focused on the following conduct of operations attributes:

- Operator compliance and use of procedures
- Control board manipulations
- Communication between crew members
- Use and interpretation of plant instruments, indications and alarms
- Use of human error prevention techniques such as peer checks
- Documentation of activities, including initials and sign-offs in procedures
- Supervision of activities, including risk and reactivity management oversight

This activity constituted three inspection samples.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the following two equipment problems and associated condition reports 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 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 the licensee's maintenance rule database, system health reports, and the corrective action program as sources of information on tracking and resolution of issues.

- AR 1771733-02, Lack of established test program for System 003, Molded case circuit breakers. The review included the a(1) action plan. The inspectors observed breaker testing in accordance with the action plan and verified the licensee had a plan to restore the system to a(2) status.
- AR 1691746, Process radiation monitor for Unit 3 RCS letdown exceeding maintenance rule unavailability hours.

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 three 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; WM-AA-1000, Work Activity Risk 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:

- August 20: Unit 4 risk and risk management when instrument air compressor 4CM was removed from service for modification. Temporary Compressor 4 remained on-line and instrument air was cross-tied between units. The inspector verified the ability of operators to open the Unit 4 air dryer bypass valve, IAS-4-042 and provide air using TC-1 if needed.
- August 27: Unit 3 risk when A standby steam generator feedwater pump lost power due to lockout of the C bus and main feedwater was not available. The risk included bistables tripped for Steam Flow/Feed Flow (SF-FF) mismatch due to failure of the SF-FF comparator. (AR 1797593) The inspectors verified the ability of operators to maintain steam generator levels using condensate pumps per licensee procedure 3-ONOP-075, if needed.
- September 19: Unit 4 risk when auxiliary feedwater valve CV-3-2832 failed to close following Train 1 auxiliary feedwater testing (AR 1804442)

b. Findings

No findings were identified.

## 1R15 Operability Evaluations

### a. Inspection Scope

For the ten operability evaluations described in the action requests (ARs) 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 UFSAR 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. Operability issues associated with the extended power uprate (EPU) are noted.

- AR 1760559, Potential nonconformance of PTN fuel assemblies
- AR 1777970, Additional aluminum discovered in Unit 4 containment not previously evaluated for effects on containment sump analysis
- Smart Sample 2012/02, Rev. 1, Inspection element 04.01.b; Technical Specification Interpretation and Operability Determination when the licensee credits a manual operator action; AR 1765293, FS-6659B not actuating the trip to V29B when both emergency supply fans were running in the control room emergency ventilation system (EPU)
- AR 1780081, Dewetron anomaly during safeguard test full load rejection (3B EDG)
- AR 1782432, Engineering evaluation for operability of new 'B' AFW pump (EPU)
- AR 1784305, moisture found in Instrument Air lines during Auxiliary Feedwater Air Operated Valve Testing
- AR 1785984 and AR 1786253, Troubleshoot 3B emergency diesel generator (EDG) output breaker and 3B EDG loss of load during testing, respectively
  - 5613-E-28 Sheet 8A: Electrical Auxiliaries Diesel Generator Breaker 3AA20
  - 5613-E-28 Sheet 16A1-4: Electrical Auxiliaries Main Generator 3 Lock Out
- AR 1803611, FCV-3-2832 flow oscillations during stroke test of unit 3 Train 2 Auxiliary Feedwater Operability Verification per 3-OSP-075.2
- AR 1794698, Unit 3B and C AFW Pump operability when momentary spike downward in flow (82 gpm and 61 gpm) for valve CV-3-2832.
- AR 1790600, Approximately 26 ounces of water removed from the A auxiliary feedwater (AFW) pump lube oil sump.

### b. Findings

No findings were identified.

1R18 Plant Modificationa. Inspection Scope

The inspectors reviewed one temporary system modification to ensure that the modification did not adversely affect the safety system availability or reliability. The inspectors reviewed plant modifications for systems that were ranked high in risk for departures from design basis and for inadvertent changes that could challenge the systems to fulfill their safety function. The inspectors specifically reviewed work order 40179921-01, licensee procedure 0-NOP-074.01, the system flow-path, operations, energy needs, and the 10 CFR 50.59 screening to verify the licensee's conclusions in meeting its licensing basis. The inspectors conducted plant tours and discussed system status with engineering and operations personnel to check for the existence of modifications that had not been appropriately identified and evaluated.

- EC 277200 Standby Steam Generator Feed Pump P82A Temporary Power (temporary)

b. Findings

No findings were identified.

1R19 Post Maintenance Testinga. Inspection Scope

For the seven post maintenance tests listed below, the inspectors reviewed the test procedures and either witnessed the testing 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. Modifications made in accordance with the extended power uprate (EPU) are noted.

- Common: 0-OSP-075.11, Auxiliary Feedwater Inservice Test following P2B pump replacement under W/O 40085015-5 (EC 275011). AR 1782432 was reviewed following vibration testing of the new pump.
- Unit 3: 3-OSP-075.7, Auxiliary Feedwater Train 2 Backup Nitrogen Test test of AFW flow control valves. Test of Train 2 AFW flow control valves CV-3-2831, CV-3-2832, and CV-3-2833, including backup nitrogen consumption capability following adjustment of control valve stops in accordance with Engineering Change (EC) 275011 (AFW pump B and C refurbishment and flow control valve adjustment) and AR 1755814 AFW flow uncertainty. (EPU)



- Unit 3: 3-PTP-074.13, Test of Main Feedwater Isolation Valve, verification of stroke close for the installed fast acting isolation valve MOV-3-1408 following EC 242442, Feedwater Isolation Valve Upgrade. Stroke times for MOV-3-1407, MOV-3-1409 were also verified. Selected field observations of testing were done by the inspectors. (EPU)
- Unit 3: 3-PTP-074.13, Test of main feedwater isolation bypass valve, verification of stroke close for the installed bypass valve POV-3-487 following EC 242442, Feedwater Isolation Valve Upgrade. Stroke times for POV-3-477, and POV-3-497 were also verified. Selected field observations of testing were done by the inspectors. (EPU)
- Unit 3: Test Instruction (TI)–09-143-01, Hot leg Injection alternate flowpath, MOV-869 Single Point Vulnerability, wiring continuity, functional stroke test, bypass functional stroke test, and verification of locking following installation of valve 3-990 and upgrade of MOV-3-869 to assure no single failure vulnerability. The upgrade was done under EC 247012. Procedure revisions verified included 3-OSP-062.2C, Safety Injection System Inservice Valve Testing, Section 4.2.4, Quarterly Inservice Test of 3-990 and 3-EOP-ES-1.3, Step 9, establish hot leg recirculation capability. (EPU)
- Unit 3: WO 40179905-23, Engineering Technical Response Memorandum to Perform Post Maintenance Testing for 3C 4KV Bus. Meggered bus (phase-phase, phase-ground), meggered the load cables (phase-to-ground), performed a Hi Pot test at 9kv and polarity check on the CTs for cubicle 3AC14.
- Unit 3: WO 40181434-01, Steam Generator 3A Feed Flow Channel 4, F-3-476 Controlling Low. Troubleshoot. Walkdown of FT-3-476 found high and low side process tubing were installed backwards, high signal tube installed into the low side port and vice versa. FT-3-476 process tubing misalignment was corrected. Process tubing filled and vented. Loop restoration and post maintenance channel check done.

b. Findings

Introduction: A self-revealing Green non-cited violation (NCV) of Turkey Point Technical Specification (TS) 3.3.1 Reactor Trip System Instrumentation was identified when process tubing to feedwater flow transmitter FT-3-476 was found incorrectly installed. Specifically, during the Unit 3 outage, the feedwater flow transmitter FT-3-476 high and low side process tubing were reversed on the instrument ports. When revealed on September 7 by erratic instrument flow indication, the licensee entered the appropriate technical specification action and restored the tubing to its correct alignment.

Description: On May 21, 2012, the licensee replaced the process tubing for the feedwater flow transmitter, FT-3-476, under work order 40115670-01. During the flow transmitter hook-up, the high and low pressure process tubing connections were incorrectly installed (high pressure tubing to transmitter low pressure port, low pressure tubing to high port). The tubing was replaced using skill-of-the-craft instructions and no post-work verifications were required. The post maintenance test of the transmitter following the work was inadequate, and the system was placed into service.

On September 6, 2012, during startup of Unit 3 from the refueling outage, steam generator main feedwater flow transmitter FT-3-476 (channel IV) was indicating no flow while the redundant instrument on the same pipe, FT-3-477 (channel III) was indicating flow. The 3A Feedwater pump was running and providing flow to the Unit 3 steam generators. Work request 94056749 was initiated for the low flow indication. On September 7, 2012, during troubleshooting, the Instrument and Control (I&C) technician noted that the high and low sides of the process tubing were installed backwards.

Feedwater flow instrument FT-3-476 is required to be operable in Modes 1 and 2 by Technical Specification Table 3.3-1, Reactor Trip System Instrumentation, item 12. The flow indication is used for the reactor protection system, low steam generator water level coincident with feedwater flow - steam flow mismatch reactor trip. With FT-3-476 inoperable in Modes 1 or 2, Technical Specification Table 3.3-1, Action 6 requires applicable bistables be tripped within six hours or the plant placed in Mode 3 within an additional seven hours as required by Technical Specification 3.0.3. The plant was operated in Modes 1 and 2 on the following occasions in excess of the 13 hours completion time allowed by technical specifications (six hours to trip the bistables with seven additional hours to place the plant in Mode 3 if the bistables were not tripped):

- August 15, 2012 at 16:07 Unit 3 changed modes from Mode 3 to Mode 2.
- August 18, 2012 at 12:38 Unit 3 changed modes from Mode 2 to Mode 3.
- August 20, 2012 at 04:33 Unit 3 changed modes from Mode 3 to Mode 2.
- August 25, 2012 at 20:00 Unit 3 changed modes from Mode 2 to Mode 3.
- August 30, 2012 at 13:52 Unit 3 changed modes from Mode 3 to Mode 2.
- September 5, 2012 at 19:30 Unit 3 changed modes from Mode 2 to 1.
- September 5, 2012 at 23:22 Unit 3 changed modes from Mode 1 to 2.
- September 6, 2012 at 16:59 Unit 3 changed modes from Mode 2 to 1.
- September 7, 2012 at 04:15 Unit 3 changed modes from Mode 1 to 2.

On September 7, 2012, as reactor power was increased, the inoperable flow instrumentation became self-revealing when feed flow indication from transmitter FT-3-476 indicated no flow as all other channels increased. Operators responded to the erratic indication by entering the applicable technical specification and tripping bistables. Subsequently, the process tubing was corrected under work order 40181434. The problem was documented in the corrective action program as action request 1800833.

Analysis: Failure to adequately perform maintenance and to verify proper alignment of flow transmitter FT-3-476 process tubing after replacement was a performance deficiency. The performance deficiency was determined to be more than minor because it affected the configuration control attribute of the Mitigating Systems Cornerstone which ensures the reliability of systems that respond to initiating events. The finding was screened using IMC 0609, Appendix A, The Significance Determination Process for Findings At-Power, Exhibit 2. Because the finding affected only a single reactor protection system (RPS) trip initiator, and other redundant trips or diverse methods of reactor shutdown were not affected, the finding was determined to be of very low safety significance (Green). The finding was assigned a cross-cutting aspect in the Work Practices component of the Human Performance area because the licensee did not

establish human error prevention techniques, such as self and peer checking and proper documentation of activities to prevent incorrect installation of the flow transmitter.

(H.4(a))

Enforcement: Turkey Point Technical Specification 3.3.1 requires the reactor trip instrumentation channels of Table 3.3-1 to be operable. Table 3.3-1, item 12, requires that two steam flow / feedwater flow mismatch channels be operable for each steam generator in Modes 1 and 2, and with one channel inoperable, applicable bistables must be tripped within six hours or the reactor placed in Mode 3 within an additional seven hours as required by Technical Specification 3.0.3 (for a total completion time of 13 hours). Contrary to the above, on several occasions between August 15 and September 7, 2012, the licensee operated Unit 3 in Modes 1 and 2 in excess of the 13 total hours of TS completion time with one channel of feedwater flow instrumentation inoperable (FT-3-476 (channel IV)) and without tripping applicable bistables or entering Mode 3. The problem was self-revealing on September 7, 2012, when feedwater flow was increased and the affected channel of feedwater flow showed a pegged low indication on the main control board indication. When noted by control room personnel, the applicable technical specification action was entered, bistables were tripped, and the FT-3-476 process tubing misalignment was corrected under work order 40181434. The violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy, because it was of very low safety significance and was entered into the licensee's corrective action program as action request 1800833 to address recurrence. (NCV 05000250/2012004-01; Operation at power with Unit 3 feedwater flow transmitter connected incorrectly)

1R20 Unit 3 Refueling and Extended Power Up-rate Outage 26 (EPU)

a. Inspection Scope

The inspectors observed selected Unit 3 outage activities starting February 26 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. The inspectors verified that conditions adverse to quality were documented by the licensee in the corrective action program. Also, management activities were monitored to assure adherence to the outage plan and safe resolution of issues. The inspectors specifically evaluated the following activities:

- Observed reactor restart on August 30 for main generator testing. The restart was conducted in accordance with licensee procedure 3-GOP-301, Hot Standby to Power Operations.
- Observed Mode 2 operations using standby steam generator feedwater and main feedwater bypass valves in manual control.

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- Reviewed the following work orders: EPU/EC 242442: WO 40069732-11, Replace Valve Stem and Actuator, 0-GME-102.14, Accelerated Diagnostic Testing of Safety Related Limitorque Motor Operated Valve Actuators for MOV-3-1407 (fast acting feedwater isolation valve). Similarly WO 40071578-10 for diagnostic testing of MOV-3-1408; and WO 40071579-39 for diagnostic testing of MOV-3-1409.
- Review of licensee procedure 3-PTP-072.2, 3R26 Extended Power Uprate Return to Service Testing, Rev. 0. The review was completed prior to power range testing.
- Observed planned power transient 180 MWe to 112 MWe in one hour with all systems in automatic control on September 21.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors either reviewed or witnessed the ten surveillance tests listed below to verify that the tests met the TS 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 alignment required for the system to perform its safety function. Inservice tests (IST) 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. The inspectors evaluated EPU testing using NRC Inspection Procedure 71004 as guidance.

- 4-OSP-206.2, Quarterly Inservice Valve Testing, section 7.10, Residual Heat Removal, for RHR pump B suction isolation valve, 4-752B (IST)
- 3-OSP-089.1, Revision 2, Turbine Generator Overspeed Trip Test (EPU)
- 3-OSP-051.16, Integrated Leak Rate Test
- 4-OSP-075.2, Auxiliary Feedwater Train 2 Operability Verification
- 40168003 3-P07-20 Test Breaker using 0-PME-003.31, Vital 120 VAC and 125 VDC Breaker Maintenance
- 3-OSP-041.1, Reactor Coolant System Leak Rate Calculation (RCS Leak)
- 4-OSP-041.1, Reactor Coolant System Leak Rate Calculation (RCS Leak)
- 3-OSP-075.6, Auxiliary Feedwater Train 1 Backup Nitrogen Test
- 4-OSP-030.1, Component Cooling Water Pump Inservice Test (IST)
- 3-OSP-203.2, Section 7.3 Loss of Offsite Power Coincident with Safety Injection (EPU)

b. Findings

No findings were identified.

1EP6 Drill Evaluation

Simulator Based Training Evolution

a. Inspection Scope

On September 6, 2012, the inspectors observed an operating crew in the plant simulator. The simulation included a loss of reactor coolant, steam generator tube rupture in accordance with the licensee's initial/continuing Training Evaluation Scenario 750204200, and Loss of CCW/Steam Generator Tube Rupture. Leakage of primary coolant into the steam generator required the declaration of an Unusual Event. Later the leak degraded into a tube rupture requiring an Alert classification and declared activation of the emergency response organization. During the drill, the inspectors assessed operator actions to verify that emergency classification and simulated notification to local officials were made in accordance with the emergency plan implementing procedures and 10 CFR 50.72 requirements. The inspectors reviewed the event classifications and notifications to ensure these were made in accordance with licensee procedure 0-EPIP-20101, Attachments 1 and 2, Turkey Point Classification Tables. Drill critique items were discussed with the licensee and reviewed to verify that drill issues were identified and captured in the licensee's corrective action program.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

40A1 Performance Indicator Verification

Initiating Events and Mitigating Systems Cornerstones

a. Inspection Scope

The inspectors checked licensee submittals for the performance indicators (PIs) listed below for the period July 1, 2011, through June 30, 2012, to verify the accuracy of the PI data reported during that period. Performance indicator definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 6 and licensee procedure 0-ADM-032, "NRC Performance Indicators Turkey Point," were used to check the reporting for each data element. The inspectors checked licensee event reports (LERs), operator logs, plant status reports, action requests (ARs), and performance indicator data sheets to verify the licensee had reported plant transients and equipment failures, as applicable. The inspectors interviewed licensee personnel associated with performance indicator data collection, evaluation, and distribution. Reactor coolant sampling in accordance with licensee procedure 0-NCZP-046.4 was

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observed. Testing of safety systems done in accordance with the surveillance procedures for those systems was routinely observed or credited in Section 1R22 of this report. Equipment failures were tracked through corrective action program entries. The inspectors reviewed the following performance indicators for Unit 3 and Unit 4

- Unplanned Scrams per 7000 Critical Hours
- Unplanned Scrams with Complications
- Unplanned Power Changes per 7000 Critical Hours
- Safety System Functional Failures
- Mitigating Systems Performance Indicator (MSPI) Emergency AC Power
- MSPI High Head Safety Injection
- MSPI Residual Heat Removal System
- MSPI Auxiliary Feedwater System
- MSPI Cooling Water Support Systems
- Reactor Coolant System Leakage
- Reactor Coolant System Activity

b. Findings

No findings were identified.

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 action requests and by reviewing the licensee's electronic condition report database. Additionally, reactor coolant system gross and unidentified leakage was checked on a daily basis to verify no substantive or unexplained changes.

b. Findings

No findings were identified.

## .2 Annual Review of Operator Workarounds

### a. Inspection Scope

As required by Inspection procedure 71152, the inspectors selected operator workarounds for an in-depth review to determine if mitigating system functions were affected by equipment issues. Specifically, the inspectors evaluated if equipment issues affected the operators' ability to implement abnormal and emergency operating procedures. The inspectors reviewed informational caution tags for indications of operations that are contrary to routine operations or operational practices that could affect mitigating systems and reviewed the licensee's list of operational workarounds. Also, the inspectors reviewed equipment status and various compensatory actions for indications of equipment controls which might not be appropriate. Routinely, the inspectors verified that operators screened abnormal equipment conditions for burdens or workarounds.

### b. Findings and Observations

No findings were identified. The licensee routinely tracked equipment problems for operator impacts and addressed deficiencies through the corrective action program.

## 4OA3 Event Follow-up

### .1 (Closed) Licensee Event Report (LER) 50-250/2012-001-00 Containment Concrete Thickness at Spalled Patch does Not Meet Technical Specification Design Value

During a planned surveillance, the licensee found an area of the Unit 3 containment building exterior that had spalled. The affected area was at the top of a construction joint in the exterior concrete containment wall, had a maximum depth of about two inches, and exposed a portion of the rebar. Previous technical specifications stated that the containment had a minimum wall thickness of 3.75 feet and the licensee could not verify that the actual constructed wall thickness in the spalled area was greater than this value and that the occurrence was determined to be reportable in accordance with 10 CFR 50.73(a)(2)(i)(B). The licensee concluded that the spalled grout was non-structural and the affected area would not adversely affect the containment function. The inspector reviewed the LER and the Turkey Point UFSAR Chapter 5.0, Section 5.1, which described the containment as a continuous post-tensioned concrete structure with a welded steel liner to provide leak tightness. The affected area of containment was walked down to verify it was relatively small with respect to containment size and that the spalled area had been patched. In July 2012, the licensee satisfactorily completed surveillance 3-OSP-051.16, Integrated Leakage Rate Test, which verified containment integrity at a pressure greater than that required for accident analysis assumptions. The inspector did not identify any performance deficiency and determined that the technical specification non-compliance was of minor significance in accordance with NRC Manual Chapter 0612, Appendix E, examples 3.h or 3.i. The LER is closed.

4OA5 Other Activities.1 Unit 3 Power Uprate, Inspection Procedure 71004a. Inspection Scope

The inspectors observed selected plant testing and other power ascension activities during the implementation of the extended power uprate totaling approximately 15 percent power (2350 MWt to 2644 MWt). Inspectors observed and/or reviewed selected plant changes and testing prior to the power ascension that began in August 2012. The inspectors observed control room and in-plant activities, and walked down plant systems to ensure adverse conditions were both identified, and if warranted, entered into the corrective action program for resolution. The inspectors also reviewed operator actions, applicable procedure changes, and reviewed selected plant design changes and other inspection activities conducted under the normal baseline inspection program, to ensure an adequate sample of risk-significant attributes required by the governing procedure were evaluated.

Listed below are samples that can be credited to the performance of IP 71004, Power Uprate, for Turkey Point Units 3 and 4 extended power uprates:

## Equipment Walkdown (Section 1R04.1)

- Sodium tetraborate (NaTB) basket system walk down

## Licensed Operator Training Requalification Program (Section 1R11.1)

- Licensed operator simulator training for extended power uprate conditions

## Operability Evaluations (Section 1R15)

- AR 1765293, FS-6659B not actuating the trip to V29B when both emergency supply fans were running in the control room emergency ventilation system
- AR 1782432, Engineering evaluation for operability of the new 'B' AFW pump

## Post Maintenance Testing (Section 1R19)

- 3-OSP-075.7, Auxiliary feedwater train 2 backup nitrogen test
- 3-PTP-074.13, Test of the main feedwater isolation and bypass valves
- TI-09-143-01, Hot leg injection alternate flowpath

## Surveillance Testing (Section 1R22)

- 3-OSP-089.1, Turbine Generator Overspeed Trip Test
- 3-OSP-203.2, Section 7.3, Loss of Offsite Power Coincident with Safety Injection

b. Findings

No findings were identified.



.2 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 were identified.

.3 (Discussed) NRC Temporary Instruction (TI) 2515/187, Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns, and NRC TI 2515/188, Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns

a. Inspection Scope

Inspectors accompanied the licensee on a sampling basis, during their flooding and seismic walkdowns, to verify that the licensee's walkdown activities were conducted using the methodology endorsed by the NRC. These walkdowns are being performed at all sites in response to a letter from the NRC to licensees, entitled "Request for Information Pursuant to Title 10 of the *Code of Federal Regulations* 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated March 12, 2012 (ADAMS Accession No. ML12053A340).

Enclosure 3 of the March 12, 2012, letter requested licensees to perform seismic walkdowns using an NRC-endorsed walkdown methodology. Electric Power Research Institute (EPRI) document 1025286 titled, "Seismic Walkdown Guidance," (ADAMS Accession No. ML12188A031) provided the NRC-endorsed methodology for performing seismic walkdowns to verify that plant features, credited in the current licensing basis (CLB) for seismic events, are available, functional, and properly maintained.

Enclosure 4 of the letter requested licensees to perform external flooding walkdowns using an NRC-endorsed walkdown methodology (ADAMS Accession No. ML12056A050). Nuclear Energy Industry (NEI) document 12-07 titled, "Guidelines for Performing Verification Walkdowns of Plant Protection Features," (ADAMS Accession No. ML12173A215) provided the NRC-endorsed methodology for assessing external flood protection and mitigation capabilities to verify that plant features, credited in the CLB for protection and mitigation from external flood events, are available, functional, and properly maintained.

b. Findings

Findings or violations associated with the flooding and seismic walkdowns, if any, will be documented in future reports.

40A6 Exit

Exit Meeting Summary

The resident inspectors presented the inspection results to Mr. E. McCartney and other members of licensee management on October 17, 2012. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary information. The licensee did not identify any proprietary information.

40A7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for disposition as an NCV.

The licensee identified that Unit 3 train 2 auxiliary feedwater flow control valve FCV-3-2832 was rendered inoperable when a maintenance technician installed a cap over the solenoid vent port. The cap was installed after removal of test equipment. Turkey Point Technical Specification 6.8.1 requires that procedures required by the FPL Quality Assurance Topical Report (QATR) be maintained and implemented. The topical report includes procedures for control of maintenance and specifies that maintenance procedures contain instructions in sufficient detail to permit maintenance work to be performed correctly. The licensee met this requirement, in part, with work order 40181373-01, written for the investigation and testing of train 2 auxiliary feedwater flow control valve (FCV-3-2832) following observed erratic operation. After the testing was completed, the work order required the maintenance technician to un-install the test equipment. Contrary to the above, on September 18, 2012, work order 40181373-01 did not contain instructions in sufficient detail to un-install the test equipment correctly, and a technician mistakenly placed a cap over a solenoid vent line for FCV-3-2832, making the valve unable to close after being opened by an actuation signal. The error was discovered by the licensee during a planned auxiliary feedwater test conducted the next day. When discovered, the licensee entered the appropriate technical specification action, removed the cap to restore operability to the valve, and demonstrated operability by completing a surveillance test. The inspectors evaluated the event using NRC Inspection Manual 0612, Power Reactor Inspection Reports; Inspection Manual Chapter 0609.04, Initial Characterization of Findings; and Inspection Manual Chapter 0609, Appendix A, The Significance Determination Process for Findings at Power, Exhibit 2. The performance deficiency was more than minor because it was associated with the configuration control attribute of the Mitigating Systems cornerstone and adversely impacted the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. The finding was screened as being of very low safety significance (Green) when all screening questions in IMC 0609 Appendix A were

Enclosure

answered "no". Because this violation was of very low safety significance and was entered in the licensee's corrective action program as AR 1804442, this violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the NRC Enforcement Policy.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee personnel:**

R. Coffey, Work Controls Manager  
C. Cashwell, Radiation Protection Manager  
M. Crosby, Quality Manager  
M. Epstein, Emergency Preparedness Manager  
J. Garcia, Engineering Manager  
M. Jones, Operations Manager  
M. Kiley, Site Vice-President  
E. McCartney, Plant General Manager  
G. Melin, Assistant Operations Manager  
G. Mendoza, Chemistry Manager  
J. Patterson, Fire Protection Supervisor  
J. Pallin, Maintenance Manager  
R. Tomonto, Licensing Manager

### **ITEMS OPENED, CLOSED, AND DISCUSSED**

#### **Opened and Closed**

05000250/2012004-01      NCV      Operation at power with Unit 3 feedwater flow transmitter connected incorrectly (Section 1R19)

#### **Closed**

05000250/2012-001-00      LER      Containment Concrete Thickness at Spalled Patch does Not Meet Technical Specifcaiton Design Value (Section 4OA3.1)

#### **Discussed**

05000250, 251/2515/187      TI      Inspection of Near-Term Task Force Recommendation 2.3 Flooding Walkdowns (Section 4OA5.3)

05000250, 251/2515/188      TI      Inspection of Near-Term Task Force Recommendation 2.3 Seismic Walkdowns (Section 4OA5.3)