



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

January 27, 2011

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 – INTEGRATED INSPECTION REPORT
05000250/2010005 AND 05000251/2010005**

Dear Mr. Nazar:

On December 31, 2010, 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 January 7, 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.

The report documents four findings of very low safety significance (Green). These findings were determined to involve violations of NRC requirements. However, because of very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as Non-cited violations (NCVs) consistent with the NRC Enforcement Policy. Also, one licensee identified violation which was of very low safety significance is 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.

On December 3, 2010, the NRC completed a supplemental inspection performed in response to a White finding related to the identification of degraded boraflex in the Unit 3 spent fuel pool. The inspection was performed in accordance with inspection procedure 95001, and the inspection report, issued on January 6, 2011, (ML110060770), documented that the licensee adequately addressed the finding. The NRC determined the performance at Turkey Point Unit 3 to be in the Licensee Response Column of the Reactor Oversight Process Action Matrix as of January 1, 2011.

FPL

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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 05000250/2010005 and 05000251/2010005
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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Letter to Mano Nazar from Dan Rich dated January 27, 2011

SUBJECT: TURKEY POINT NUCLEAR PLANT – INTEGRATED INSPECTION REPORT
05000250/2010005 AND 05000251/2010005

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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: 05000250/2010005, 05000251/2010005

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: October 1 to December 31, 2010

Inspectors: S. Stewart, Senior Resident Inspector
M. Barillas, Resident Inspector
A. Sengupta, Reactor Inspector (1R08)
A. Vargas, Reactor Inspector (1R08)
R. Carrion, Senior Reactor Inspector (1R08)
G. Kuzo, Senior Health Physicist (Sections 2RS1, 4OA1 & 4OA5)
R. Kellner, Health Physicist (Sections 2RS1, 4OA1 & 4OA5)
R. Aiello, Senior Operations Engineer (1R11)

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

Enclosure

SUMMARY OF FINDINGS

IR 05000250/2010-005, 05000251/2010-005; 10/1/2010 – 12/30/2010; Turkey Point Nuclear Power Plant, Units 3 and 4; Equipment alignment, Fire protection, Inservice inspection, Refueling and outage activities

The report covered a three month period of inspection by resident inspectors; region based engineering specialists, and health physicists. Four Green NCVs were identified. The significance of most findings is identified by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP); the cross-cutting aspect was determined using IMC 305, Operating Reactor Assessment Program; and findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December, 2006.

A. NRC-Identified & Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Non-cited violation (NCV) of Technical Specification 6.8.1, Procedures, when plant alarm response and off-normal procedures were not adequate to prevent lifting of a charging relief valve. As a result, during operations to assure adequate seal injection flow, a charging throttle valve was shut causing lifting of a charging system relief, diversion of charging flow, and degradation of the boration flow path. When identified to the licensee by the inspectors during review of charging system anomalies, the licensee documented the occurrence in the corrective action program as CR 595200 and upgraded procedures. Although the event occurred on Unit 3, similar procedures existed on Unit 4.

While attempting to regulate RCP seal injection flow, operators shut charging throttle valve HCV-3-121. This was a performance deficiency, in that it caused lifting of the charging relief valve(s), diversion of charging flow, and subsequent failure of a charging relief valve. The relief valve failure reduced the reliability of charging flow to the loops and affected the ability of the charging system to perform its design functions including providing for reactivity control, maintaining the proper water inventory in the reactor coolant system, and providing RCP seal injection flow. The issue was more than minor. 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 function, with some level of charging or seal flow remaining throughout the event. All screening questions were answered "No". The Mitigating Systems cornerstone was affected when charging capability and the boration flow path was degraded by diversion of flow through the relief valve back to the charging pump suction. The finding affected the cross-cutting aspect of Human Performance, Resources, when operating procedures did not adequately provide accurate guidance to prevent mis-operation (shutting) of the charging throttle valve. H.2(c).

- Green The inspectors identified a Non-cited violation (NCV) of Turkey Point License Condition 3.D, Fire Protection, when scaffolding was placed as a barricade against personnel access to doors to fire zones 108B and 104. The barricade impeded access

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to the 3B and 3A DC Equipment rooms through doors that are used in the event of a control room evacuation event and may have delayed or prevented operator actions to mitigate a potential fire. When identified to the licensee, the scaffolding was promptly removed and the problem was documented in AR 594112. The issue was more than minor because the objectives of the Mitigating Systems Cornerstone were affected. Using NRC Manual Chapter 0609, Appendix F, the inspectors assigned a moderate degradation rating to the deficiency because of the likely inability of the plant operators being able to implement the procedural actions within the licensee stipulated time.

A regional Senior Reactor Analyst evaluated the performance deficiency under the Phase 3 protocol of the Significance Determination Process. Based upon the results of that evaluation, the performance deficiency was characterized as of very low safety significance (Green) for both units. The evaluation was performed via hand calculation using elements of NRC Manual Chapter 0609, Appendix F, NUREG-6850 as amended by Frequently Asked Questions under the National Fire Protection Association 0805 pilot program. A simplified Reactor Coolant Pump (RCP) seal Loss of Coolant Accident (LOCA) failure probability based upon Westinghouse high temperature seals was used. Key human failure probabilities were estimated using standard techniques. Conditional core damage probabilities, due to a spurious Safety Injection, were derived from the licensee's most current model results. Major assumptions and dominant accident sequence for Units 3 and 4 were discussed and included in analysis section of 1R05 in the inspection report.

The cause of the finding was related to the cross-cutting aspect of Human Performance, Work Control (H.3(a)) when the scaffold-barricade was constructed without a planned contingency or compensatory measure to assure that the fire mitigation activity could be accomplished within design time constraints. (1R05)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a Non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" associated with licensee contract personnel's failure to adhere to welding procedures during the 2010 Unit 3 refueling outage. Specifically, welders failed to measure preheat and interpass temperatures in ASME safety class containment spray pump lines using contact pyrometers, thermocouples, or temperature indicating crayons as required by procedure. As part of the immediate corrective actions, the licensee conducted a stand-down for welders to reinforce procedural compliance expectations. The licensee performed an extent of condition evaluation and entered the issue into their corrective action program as AR 585550.

The inspectors determined that the finding was more than minor because if left uncorrected, it would have become a more significant safety concern. Specifically, the failure to adhere to the welding procedures for temperature measurement affected the assurance that appropriate welding temperatures were maintained. Inadequate temperatures during welding can result in stainless steel sensitization and susceptibility of the weld to failure from intergranular stress corrosion cracking (IGSCC) affecting the

containment spray system. The inspectors also determined that this finding impacted the Barrier Integrity Cornerstone human attribute and affected the cornerstone objective of ensuring the physical barriers protect the public from radionuclide releases caused by accidents. The finding was determined to be of very low safety significance because the finding did not result in an actual loss of operability or functionality of containment spray system per Table 4a, NRC Inspection Manual Chapter 0609, Attachment 4. The cause of the finding is related to the cross-cutting aspect of Human Performance, Work Practices (H.4(c)), because licensee personnel failed to ensure supervisory and management oversight activities of their contractors such that nuclear safety was ensured. (1R08)

- Green: The inspectors identified an NCV of 10 CFR, Part 50, Appendix B, Criterion XVI, for the licensee's failure to implement timely corrective actions to address conditions adverse to quality on the Unit 3 fuel handling manipulator crane. As a result, a lack of calibration on the manipulator crane load cell affected fuel handling interlock setpoints that protect the fuel during fuel handling activities. In addition, an inadequate testing procedure led to a procedure change implemented in the field without proper review and approval. The licensee entered this violation in their corrective action program as AR 592683. Although the event occurred on Unit 3, similar procedures existed on Unit 4.

The inspectors determined that the licensee's failure to implement timely corrective action for lack of calibration on the manipulator crane load cell affecting fuel handling interlock setpoints and other deficiencies to be a performance deficiency. The finding was greater than minor because the Barrier Integrity Cornerstone was affected which provides reasonable assurance that physical design barriers protect the public from radionuclide releases. The finding affects the attributes of configuration control and procedure quality. The inspectors evaluated the finding using Manual Chapter 0609 SDP Phase 1 and determined that it was of very low safety significance because there were no actual challenges to the fuel barrier. The finding had cross-cutting aspect in the area of problem identification and resolution (P.1(d)) because the licensee failed to implement prescribed corrective actions to address adverse trends in a timely manner when the load cell interlock setpoints drifted. (1R20)

B. Licensee Identified Violations

One 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. This violation and associated corrective actions are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status:

Unit 3 started the period in refueling outage 25. The reactor was critical on November 7 and the unit was placed online on November 9, 2010. The reactor returned to full power operation on November 13. On November 15, Unit 3 was manually tripped from full power due to a reported fire in the 3A2 circulating water pump with a second circulating water pump out of service for maintenance. Unit 3 restarted on November 16 and returned to full power on November 18, 2010.

Unit 4 operated at full power throughout the inspection period with the following exception: reactor power was rapidly lowered and the reactor tripped on December 9 in response to a main condenser tube leak. The leak caused contamination of the secondary systems with salt water impurities above the licensee's limits for plant operation. Unit 4 was cooled to Mode 4 and remained shutdown for plugging of the tube and chemistry cleanup until December 17, when the plant was restarted. Unit 4 returned to full power on December 18.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection

.1 Adverse Weather Protection: Cold Weather Readiness (Preparations and Imminent)

a. Inspection Scope

During the week of December 13 and on December 27, the inspectors verified the status of licensee actions in accordance with licensee off-normal procedure 0-ONOP-103.2, Cold/Hot Weather Conditions. The licensee's off-normal procedure was implemented. The inspectors checked Technical Specifications and the Updated Final Safety Analysis Report (UFSAR) for cold weather design features and monitored the periodic testing of the diesel driven instrument air compressors during lower temperature weather. The inspection included the annual review of cold weather preparations and included physical walkdowns of the following plant areas to check for any specific cold weather vulnerabilities.

- Unit 3 and Unit 4 Boric acid storage tank and transfer pump area (Temperature indicator TI-1077)
- Unit 4 charging pump area (TI-4-1075)

b. Findings

No findings were identified.

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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 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.

- October 1, 2010; Unit 4 Safety Injection flowpath using licensee procedure 4-OSP-202.1 when licensee reduced capability of safety injection during a clearance order valve alignment on unit 3
- November 1, 2010; Unit 4 A train of standby steam generator feedwater using FPL procedure, 0-NOP-074.01, Standby Steam Generator Feedwater System, Attachment 1, Normal System Valve Alignment; and portions of Unit 4 auxiliary feedwater system using 4-NOP-075, Auxiliary Feedwater System, Attachment 3 Switch Alignment when B standby steam generator feedwater pump was out of service due to control panel electrical fault (AR 591541)
- Unit 3 charging system alignment following the November 15 reactor transient (EN 46419)

b. Findings

Introduction: (Green) The inspectors identified a Non-cited violation (NCV) of Technical Specification 6.8.1.a when Unit 3 procedures for operating the charging system were not adequate to prevent lifting of a charging pump relief. The relief valve chattered then failed resulting in a loss of charging flow and entry into Technical Specification 3.0.3 for loss of charging capability and degradation of the boration flow path. The flow anomalies lasted until the relief valve was isolated.

Description: On November 15, operators initiated a Unit 3 manual reactor trip because of inadequate circulating water for high power operation (EN 46419). In response to the trip, operators started a second, then a third charging pump. Later in the morning at about 0900 hours, operators experienced charging flow anomalies and indications of an open charging pump relief valve. Later, at 1235 hours, continued charging anomalies led the licensee to enter Technical Specification 3.0.3 for an inoperable charging capability until the C charging pump and its relief valve were isolated at 1345 hours.

Inspectors reviewed plant response to the trip and subsequent complications and noted that records of charging pump discharge pressure and charging throttle valve (HCV-3-121) position showed that the throttle valve had been shut during operations on

November 15, at 0900 hours, causing charging pressure to increase to about 2810 psig, above the 2735 psig setpoint of the charging relief valves. Shutting of the charging throttle valve lifted the charging reliefs and resulted in diversion of charging flow. Subsequently, relief valve RV-3-283C failed and caused charging flow and RCP seal injection flow anomalies. FPL alarm response procedure 3-ARP-097.CR.A; RCP Labrinth Seal Lo dP, states, "Adjust HCV-3-121, Charging Flow to Regenerative Heat Exchanger to increase seal injection flow." FPL procedure 3-ONOP-041.1, Reactor Coolant Pump Off-Normal, directs the operator, in response to low seal injection flow, to "adjust" charging flow to regenerative heat exchanger using valve, HCV-3-121, to (re)establish seal injection flow. The operators referred to this procedure when adjusting charging throttle valve HCV-3-121 in order to maintain seal injection flow to the reactor coolant pumps.

Analysis: While attempting to regulate RCP seal injection flow, operators shut charging throttle valve HCV-3-121. This was a performance deficiency, in that it caused lifting of the charging relief valve(s), diversion of charging flow, and subsequent failure of a charging relief valve. The relief valve failure reduced the reliability of charging flow to the loops and affected the ability of the charging system to perform its design functions including providing for reactivity control, maintaining the proper water inventory in the reactor coolant system, and providing RCP seal injection flow. The issue was more than minor. 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 function, with some level of charging or seal flow remaining throughout the event, and all screening questions were answered "No". The Mitigating Systems cornerstone was affected when charging capability and the boration flow path was degraded by diversion of flow through the relief valve back to the charging pump suction. The finding affected the cross-cutting aspect of Human Performance, Resources, when operating procedures did not adequately provide accurate guidance to prevent mis-operation (shutting) of the charging throttle valve. H.2(c).

Enforcement: Turkey Point Technical Specification 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 in Appendix A of Regulatory Guide 1.33, Appendix A, which includes the Chemical and Volume Control System (CVCS). Further, the QATR requires that the format of procedures include limitations and actions, as appropriate to the task covered. FPL implements this requirement in part with procedure 3-ONOP-041.1, Reactor Coolant Pump Off-Normal, which directs the operator in response to low CVCS seal injection flow, to "adjust" charging flow to regenerative heat exchanger valve, HCV-3-121, to (re)establish seal injection flow. Contrary to the above, FPL procedure 3-ONOP-041.1 did not include appropriate limitations when on November 16, a Unit 3 operator adjusted the flow control valve shut, resulting in a loss of charging flow, lifting and subsequent failure of a charging relief valve, which placed the unit into Technical Specification 3.0.3 for one hour and 10 minutes. The shutting of HCV-3-121 was identified by the NRC during review of the loss of charging event. The licensee entered this issue into the corrective actions program as AR 595200, initiated a cause investigation, provided training to operators, and subsequently revised applicable procedures to warn operators that shutting of HCV-3/4-121 could cause lifting of a charging relief. Because this violation was of very low safety

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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, 251/2010-005-01: Inappropriate procedure guidance results in degradation of boration flow path and loss of charging flow

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, 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:

- 4B Residual Heat Removal pump room
- Unit 4 Electrical Penetration Room
- Unit 3 containment
- Cable Spreading Room
- Control Room HVAC Room
- U4 Motor Generator Set Room

b. Findings

Introduction: (Green) A Non-cited violation (NCV) of Turkey Point License Condition 3.D, Fire Protection, was identified by the inspectors when scaffolding was placed as a barricade against personnel access to doors to fire zones 108B and 104. The barricade impeded access to the 3B and 3A DC Equipment rooms through doors that are used in the event of a control room evacuation event and may have delayed or prevented operator actions to mitigate a potential fire.

Description: The inspectors identified that scaffolds had been authorized on September 14, 2010, under work package 40002841-08, to block personnel access at the rear entrance to the cable spreading room. The barricade prevented personnel in the radiation controls area (RCA) from accessing the DC equipment room in the rear of the cable spreading room. The inspector was informed that the scaffold was used as a barricade to prevent personnel working in the DC equipment room from gaining unauthorized access to the RCA, and vice versa. The scaffolding had not been authorized by the operations department and was not reviewed for impact on the fire protection plan. FPL procedure 0-ONOP-105, Control Room Evacuation; Attachment 7, Non-Fire Brigade Number 1 (Outside SNPO), designates the outside senior nuclear

plant operator (SNPO) to access fire zones 108B and 104 through these rear doors to take manual actions used to facilitate safe shutdown of the reactors in event of a control room evacuation event. The scaffolds were in place 56 days until identified to plant operators by the NRC inspectors. The inspectors had observed the blockade during a routine inspection. When identified, the scaffolds were removed within 24 hours. The licensee entered the occurrence into the corrective action program as CR 594112.

Analysis: The inspectors determined that failing to maintain the Turkey Point License requirements that assured the ability of plant operators to safely mitigate a control room evacuation fire was a performance deficiency. The issue was more than minor because the objectives of the Mitigating System cornerstone were affected. The inspectors assessed the problem using NRC Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," and assigned a moderate degradation rating because of the likely inability of the plant operators being able to implement the procedural actions within the licensee stipulated times.

A regional Senior Reactor Analyst evaluated the performance deficiency under the Phase 3 protocol of the Significance Determination Process. Based upon the results of that evaluation, the performance deficiency was characterized as of very low safety significance (Green) for both units. The evaluation was performed via hand calculation using elements of NRC Manual Chapter 0609, Appendix F, NUREG-6850 as amended by Frequently Asked Questions under the National Fire Protection Association 0805 pilot program. A simplified Reactor Coolant Pump (RCP) seal Loss of Coolant Accident (LOCA) failure probability based upon Westinghouse high temperature seals was used. Key human failure probabilities were estimated using standard techniques. Conditional core damage probabilities, due to a spurious Safety Injection, were derived from the licensee's most current model results. The major assumptions for the evaluation included:

- The performance deficiency created sufficient blockage impairing the outside Senior Nuclear Plant Operator's (SNPO) from accomplishing the two critical tasks of the Shutdown from Outside the Main Control procedure for at-power risk within the designated time frames. These two tasks were preventing a Safety Injection within 5 minutes of initiating the shutdown from outside the Main Control Room procedure and opening RCP seal cooling valves within twenty minutes which went closed due to fire effects.
- There was the possibility that the SNPO would eventually open the RCP seal cooling valves, thermally shocking the RCP seals. The probability of a thermal shock causing a RCP seal LOCA was the same as the probability assigned to a seal failing due to the lack of cooling for an extended period of time.
- The most credible areas for a fire causing Main Control Room evacuation were the Cable Spreading Room and the Main Control Room itself.
- For Unit 4 the exposure period was 57 days at-power. For Unit 3 the exposure period was 14 days at-power and 43 days shutdown. The significant risk contribution during the shutdown was during the two days that the licensee placed the unit in a

mid-loop configuration.

- The critical discharge valve restorations by the SNOP restoring residual heat removal for the unit in shutdown designated in the Shutdown from Outside the Main Control Room procedure would not be accomplished before Reactor Coolant System boiling, due to the performance deficiency impairing SNPO tasks earlier in the procedure.
- The extended period of time at which the RCP seal cooling can be lost before the possibility that a seal LOCA could happen is 20 minutes. Subsequent seal cooling after 20 minutes will thermally shock the seals.
- Due to the lack of information 50% of any unsuppressed fires in the Unit 3 portion of the Cable Spread Room will cause closure of the residual heat removal (RHR) discharge valves.

The dominant accident sequence for Unit 4 was a postulated, challenging fire in one of seven Cable Spread Room critical cabinets followed by a failure of the gaseous suppression system to automatically extinguish the fire. An unsuppressed fire in any of these locations would damage cables in the Component Cooling Water and Charging Systems. Through a combination of hot shorts and power losses all cooling to the RCP seals failed. Operator action allowing restoration of cooling before 20 minutes did not occur, due to the performance deficiency. Consequently, an RCP seal LOCA happened which could not be mitigated using equipment associated with Shutdown from Outside the Main Control Room procedure.

The dominant accident sequence for Unit 3 was while the unit was shutdown and in the mid-loop configuration. The sequence began with a postulated, challenging fire within the Unit 3 portion of the Cable Room. The gaseous suppression system failed to extinguish the fire. Given the location of the fire in the Cable Spread Room affecting RHR cables, the RHR discharge valves closed. Due to the performance deficiency, the SNOP failed to restore the discharge valves to the proper position. Due to the lack of core cooling, core damage eventually occurred.

The cause of the finding was related to the cross-cutting aspect of Human Performance, Work Control (H.3.a) when the scaffold-barricade was constructed without a planned contingency or compensatory measure to assure that the fire mitigation activity could be accomplished within design time constraints.

Enforcement: Turkey Point License Condition 3.D, Fire Protection, required the licensee to implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Safety Analysis Report (USAR). USAR Appendix 9.6.A, Section 5.0, Alternate Shutdown Capability, provides a description of how the licensee would provide for safe shutdown and cooldown of both units if certain fires were to occur that would lead to control room evacuation. The licensee implements this plan using procedure 0-ONOP-105, Control Room Evacuation. Further, License Condition 3.D allows the licensee to make changes to the approved program so long as the changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. Contrary to the above, on September 14, 2010, for a period of 56 days, the licensee erected and had in place scaffolding as a physical barricade that inhibited

personnel access to two zones where manual actions were required to complete actions described in 0-ONOP-105. The barricade had not been evaluated to assure adverse impacts to the strategy to achieve and maintain cold shutdown in event of a control room evacuation fire. The scaffolding was identified by the NRC inspectors and was promptly removed. The event was documented in the licensee's corrective action program as CR 594112.

The licensee was in transition to National Fire Protection Association (NFPA) 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," and therefore the NRC identified violation was evaluated in accordance with the criteria established by Section A of the NRC's Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR Part 50.48) for a licensee in NFPA 805 transition. The inspectors determined that, for this violation, the criterion that the licensee would have identified the violation during the scheduled transition to 10 CFR Part 50, Section 48(c) was not met. Specifically, none of the scheduled NFPA 805 transition activities were focused on the identification of inappropriate blockades to personnel access used within the facility. The licensee agreed that the inappropriate use of scaffold as a blockade would not likely have been identified as part of the NFPA 805 transition. As such, discretion associated with the transition to NFPA 805 is not being granted for this violation. Because this violation was of very low safety significance and it was entered into the licensee's corrective action program as AR 594112, this violation is being treated as an NCV, consistent with the NRC Enforcement Policy NCV 05000250, 251/2010-005-02: Scaffold blocked access to fire areas used in a control room evacuation event.

1R08 Inservice Inspection (ISI) Activities (IP 71111.08P, Unit 3)

.1 Non-Destructive Examination (NDE) Activities and Welding Activities

a. Inspection Scope

From October 4-8 and October 8-12, 2010, the inspectors reviewed the implementation of the licensee's Risk Informed In-service Inspection (ISI) program for monitoring degradation of the reactor coolant system (RCS) boundary and risk significant piping boundaries. The inspectors' activities consisted of an on-site review of NDE and welding activities to evaluate compliance with the applicable edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section XI (Code of record: 1998 Edition through the 2000 Addenda), and to verify that indications and defects (if present) were appropriately evaluated and dispositioned in accordance with the requirements of the ASME Code, Section XI acceptance standards.

The inspectors' review of NDE activities specifically covered examination procedures, NDE reports, equipment and consumables certification records, personnel qualification records, and calibration reports (as applicable) for the following examinations:

- UT examination of weld
 - Zone 3-022 RCS Pressurizer Relief Line

The inspectors also reviewed documentation for the following indications, which were accepted for continuous service:

- Visual Inspection, UT, PT of
 - 3-006\5613-M-4-002-R1, UT report of the inner radius of the Pressurizer, 10/4/10
 - VT-2 pressure test RHR inside containment, RHR-A, 9/25/10
 - UT of Zone 3-022 RCS Pressurizer Relief Line

The inspectors' review of welding activities specifically covered the welding activity listed below in order to evaluate compliance with procedures and the ASME Code. The inspectors reviewed the work order, repair and replacement plan, weld data sheets, welding procedures, procedure qualification records, welder qualification records, and NDE reports.

- Observed Welding activity for the 'A' Containment Spray Pump line
- Welding Package associated with Work Order #38008902-03, Containment Spray line repair, 4/1/09
- Welding Package associated with Work Order #4000401714, P/CM 08-026, CSP fabrication/ pipe weld, 10/7/2010

The inspector also reviewed thermal fatigue package under augmented examination:

- MRP-146 Thermal Fatigue UT Examination, CVCS to RC Loop C Hot Leg, 3-045\5613-P-661-S SH. 2 R.2

b. Findings

Introduction: The inspectors identified a finding and an associated Non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to adhere to welding procedures during a weld repair of the 'A' Containment Spray Pump lines during the October 2010 Unit 3 refueling outage.

Description: On October 6, 2010, the inspectors were observing welding activities on an 'A' Containment Spray Pump line, located in the auxiliary building. Contract personnel were conducting welding as part of a permanent modification for this ASME safety class line. The welders were using a gas tungsten arc welding (GTAW) manual welding process. During this activity, the inspector questioned the welders on how they were meeting various procedural requirements and how they were monitoring various parameters described in the Welding Procedure Specification (WPS), including interpass temperature. When questioned about verifying interpass temperature to be less than 350 degrees Fahrenheit (°F), the welders informed the inspector that they had not verified the interpass temperature using a temperature measurement device. The welders stated that based on their experience they believed that interpass temperature had not exceeded 350°F. In addition the welders also did not measure preheat temperature to be not less than 50°F by using a temperature measurement device.

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Furthermore, the welders indicated that this was not done during previous work on the 'B' Containment Spray Pump line the day before.

The inspectors were concerned whether the licensee was maintaining adequate quality control over the welding process. Inadequate temperatures during welding can affect weld quality. Specifically, in a certain temperature range above 350°F, the chromium and carbon in austenitic stainless steel can combine to form chromium carbide in a process referred to as sensitization. This can result in susceptibility to intergranular stress corrosion cracking and can place the welds at increased risk of failure.

After further review, the inspector noted that licensee welding procedure STD-W-002, "General Welding Standard Safety Related Piping," Revision 11, Section 16.4, required verification of preheat and interpass temperatures using a thermocouple, pyrometer or temperature indicating crayon. The inspectors further noted that preheat and interpass temperatures were considered essential and supplementary essential variables per ASME Section IX welding code, Section QW-256.

The inspector informed the licensee of this issue and the licensee conducted a stand down with all welding personnel to reinforce the expectations for procedural compliance, specifically for the contract welders. Welders were given training on the use of procedure STD-W-002. The licensee initiated corrective action AR 585550 to address the issue and performed an engineering evaluation on affected welds.

Analysis: The inspectors determined that the failure of contract personnel to adhere to welding procedures in October 2010 was a performance deficiency warranting significance determination. The inspectors determined that the finding was more than minor because if left uncorrected, it would have become a more significant safety concern. Specifically, the failure to adhere to the welding procedures for temperature measurement affected the assurance that appropriate welding temperatures were maintained. Inadequate temperatures during welding can result in stainless steel sensitization and susceptibility of the weld to failure from intergranular stress corrosion cracking (IGSCC) affecting the containment spray system. The inspectors also determined that this finding impacted the Barrier Integrity Cornerstone human attribute and affected the cornerstone objective of ensuring the physical barriers protect the public from radionuclide releases caused by accidents. The finding was determined to be of very low safety significance because the finding did not result in an actual loss of operability or functionality of containment spray system. The inspectors evaluated the risk of this finding using IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings." Using Tables 1, 2, 3b, and 4a of Exhibit 1 of Attachment 0609.04, the finding was found to be of very low safety significance (Green) because the finding had not resulted in a loss of operability or functionality per Table 4a, IMC 609, attachment 4. The cause of the finding is related to the cross-cutting aspect of Human Performance, Work Practices (H.4(c)), because licensee personnel failed to ensure supervisory and management oversight activities of their contractors, such that nuclear safety was ensured. Specifically, the licensee did not ensure that contract welders were adhering to welding procedures during repairs to safety related containment spray system piping.

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Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" required, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Licensee procedure STD-W-002, "General Welding Guidelines for Safety Related Piping," Revision 11, contained instructions for welding on safety related piping, which was an activity affecting quality. STD-W-002 Section 16.4 stated, in part, "preheat and interpass temperatures shall be measured using contact pyrometers, thermocouples, or temperature indicating crayons." Contrary to the above, in October 2010, licensee contract personnel did not accomplish welding on 'A' Containment Spray System safety related piping in accordance with instructions, in that they did not measure preheat and interpass temperatures using contact pyrometers, thermocouples, or temperature indicating crayons.

As a part of their immediate corrective actions, the licensee conducted a stand-down for welders to reinforce procedural compliance expectations. They performed an extent of condition evaluation and entered the issue into their corrective action program. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program AR 585550, this violation is being treated as a Non-cited violation (NCV) consistent with the NRC Enforcement Policy: NCV 05000250/ 2010005-03, Failure of licensee contactors to adhere to welding procedures.

.2 PWR Vessel Upper Head Penetration (VUHP) Inspection Activities

a. Inspection Scope

There were no RPVH NDE activities scheduled for this refueling outage. The Turkey Point Unit 3 reactor head was replaced in the Spring of 2005 and the licensee completed a bare metal visual examination of the RPV Head Penetrations (a Code Case N-729-1 item) and a bare metal visual examination of the RPV Bottom Head Nozzle Penetrations (a Code Case N-722 item) during the last outage.

b. Findings

Not applicable.

.3 Boric Acid Corrosion Control (BACC) Inspection Activities

a. Inspection Scope

The inspectors reviewed the licensee's BACC program activities to ensure implementation with commitments made in response to NRC Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary," and applicable industry guidance documents. Specifically, the inspectors performed an on-site record review of procedures and the results of the licensee's containment walk-down inspections performed during the Unit 3 Fall 2010 outage. The inspectors also interviewed the BACC program owner and conducted an independent walk-down of the reactor building to evaluate compliance with licensee's BACC program requirements and

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verify that degraded or non-conforming conditions, such as boric acid leaks identified during the containment walk-down, were properly identified and corrected in accordance with the licensee's BACC and Corrective Action Programs.

The inspectors also evaluated the corrective actions for any degraded reactor coolant system components against ASME Code Section XI and other licensee committed documents:

- AR00585550, Welder Did not Use Optical Pyrometer to Check Maximum Interpass Temperature, 10/7/2010
- AR00582265, Boric Acid Issue Identified During Initial Leak Inspection, 10/6/2010
- 2008-7802, Evidence of Leakage at Body to Bonnet Joint of 3-876C, 3/7/2009
- 2009-7854, Containment Visual Leak Inspection During PT3-24 Refueling Outage, 4/30/2009

The inspectors reviewed a sample of engineering evaluations completed for evidence of boric acid found on systems containing borated water to verify that the minimum design code required section thickness had been maintained for the affected components. The inspectors selected the following evaluations for review:

- 2009-25695, Boric Acid Issue Observed During BACC Zone Walkdown of Unit 3 Charging Pump Room, 9/12/2009
- 2009-19148, Several Valves and Components of Unit #3 Pipe and Valve Room during BA issue, 7/1/2009
- 2009-19932, Spent Fuel Line Leak in 8" Line, 7/13/2009
- 2009-2246, Potential Wall Leak in Fuel Transfer Canal during Planned Walkdown 4" Spent Fuel Drain Piping, 4/29/2010
- 2008-25790, ASME Repair/Replacement Program, 10/21/2009

During a planned visual inspection on October 22, 2010 to satisfy ASME Code Section XI, Subsection IWE requirements, the licensee identified corrosion on the containment liner in Unit 3 reactor sump pit room (-15'8" EI). The licensee cleaned the corroded area and conducted a detailed inspection on October 24, 2010. The licensee determined that the corrosion was greater than that allowed by the ASME Code, including several areas where the corrosion had degraded the entire thickness of the liner, (i.e., through-wall), and required repair. The inspectors closely monitored the licensee's repair efforts, which included an extent of condition evaluation, removal of the degraded material, replacement of the degraded material by welding in new material, conducting NDE of the weld, performing a local leak rate test (LLRT) of the replaced liner to assure that it would function as designed, and restoration of the surface

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treatment in the evaluated area to resist future corrosion. The inspectors determined that the licensee repairs were completed to Code requirements and that the containment liner was restored to its original design parameters before the end of the refueling outage. The licensee documented this occurrence in Licensee Event Report, 2010-005.

b. Findings

No findings were identified.

.4 Steam Generator (SG) Tube Inspection Activities

a. Inspection Scope

The NRC inspector observed the following activities and/or reviewed the following documentation and evaluated them against the licensee's technical specifications, commitments made to the NRC, ASME Section XI, and Nuclear Energy Institute (NEI) 97-06 (Steam Generator Program Guidelines):

- Interviewed Eddy Current Testing (ET) data analysts and reviewed samples of ET data.
- Compared the numbers and sizes of SG tube flaws/degradation identified, against the licensee's previous outage Operational Assessment predictions Reviewed the SG tube ET examination scope and expansion criteria.
- Evaluated if the licensee's SG tube ET examination scope included potential areas of tube degradation identified in prior outage SG tube inspections and/or as identified in NRC generic industry operating experience applicable to the licensee's SG tubes.
- No new degradation mechanisms were identified during the EC examinations; reviewed the licensee's repair criteria and processes.
- Primary-to-secondary leakage (e.g., SG tube leakage) was below three gallons per day, or the detection threshold, during the previous operating cycle.
- Evaluated if the ET equipment and techniques used by the licensee to acquire data from the SG tubes were qualified or validated to detect the known/expected types of SG tube degradation in accordance with Appendix H, Performance Demonstration for Eddy Current Examination, of EPRI Pressurized Water Reactor Steam Generator Examination Guidelines, Revision 7.
- Reviewed the licensee's secondary side SG Foreign Object Search and Removal (FOSAR) activities.
- Reviewed the licensee's evaluations and repairs for SG tubes damaged by foreign material or tubes surrounding inaccessible foreign objects left within the secondary side of the steam generators.
- Reviewed ET personnel qualifications.
- Participated in the conference call between NRR/DCI staff and the licensee which detailed the licensee's SG tube examination activities and results.

b. Findings

No findings were identified.

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.5 Identification and Resolution of Problems

a. Inspection Scope

The inspectors performed a review of ISI-related problems that were identified by the licensee, including welding and BACC, and entered them into the corrective action program as Condition Reports (CRs). The inspectors reviewed the CRs to confirm that the licensee had appropriately described the scope of the problem and had initiated corrective actions. The review also included the licensee's consideration and assessment of operating experience events applicable to the plant. The inspectors performed this review to ensure compliance with 10CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requirements. The corrective action documents reviewed by the inspectors are listed in the report attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program

.1 Resident Inspector Quarterly Review

a. Inspection Scope

On November 22, 2010, 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 Continuing Training Evaluation Scenario 750206501, RCS Leak, Loss of All AC Power. The scenario involved a simulated reactor coolant system leak and a total loss of AC power for more than 15 minutes. 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-049.1, 3-EOP-E-0, 3-EOP-ECA-0.0, and 3-EOP-ECA-0.2.

Event classifications (Unusual Event and Site Area Emergency) were checked for proper classification and simulated state notification in accordance with licensee procedures 0-EPIP-20101, 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.

.2 Annual Review of Licensee Requalification Examination Results

a. Inspection Scope

In January 2010 the licensee completed the comprehensive biennial requalification written examinations and annual requalification operating tests required to be administered to all licensed operators in accordance with 10 CFR 55.59(a)(2). The inspectors performed an in-office review of the overall pass/fail results of the written examinations, individual operating tests and the crew simulator operating tests. These results were compared to the thresholds established in Manual Chapter 609 Appendix I, Operator Requalification Human Performance Significance Determination Process.

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 licensee maintenance rule data base, system health reports, and the corrective action program as sources of information on tracking and resolution of issues.

- AR 01600433, 3B component cooling water pump exceeds maintenance rule unavailability criteria
- AR 596196, Unit 3 charging pumps placed in maintenance rule 10CFR50.65 a(1)

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Controla. Inspection Scope

The inspectors reviewed the licensee's risk assessment of five 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:

- October 18, Unit 4 risk when reactor coolant identified leakage spiked due to B charging pump packing leakage (AR 586471)
- November 1, Unit 4 risk when C bus was degraded due to a failed ground component stuck in the bus bar housing (AR 591399)
- November 16, Unit 3 risk when 3A intake cooling system header was removed from service for basket strainer cleaning with instrument air compressor 4CM, 4A1 battery charger, and 3C transformer out of service.
- November 17, Unit 3 risk when Instrument & Controls personnel installed a dewetron in the power cabinet for 3-FCV-498 as part of troubleshooting, that also housed reactor protection equipment (WO 40053124-01)
- December 22, Unit 3 risk when 3B EDG was declared inoperable following slow response to load during surveillance testing

b. Findings

No findings were identified.

1R15 Operability Evaluationsa. 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.

- Operability of Unit 3 train 1 auxiliary feedwater backup nitrogen system following failure of CV-3-2817 to stroke closed during 3-OSP-075.6 Auxiliary Feedwater Backup Nitrogen Test (AR 593223)
- AR 584647, Operability of Unit 3 high head safety injection MOV-3-843 A/B due to improper torque
- AR 584205, Power operated relief valve PCV-3-455C did not meet acceptance criteria during as found test
- AR 585931, MOV-3-863B, RHR recirculation valve to RWST measured motor amps exceeded PMT acceptance criteria
- AR 595207, Operability of B and C auxiliary feedwater pumps following parallel pump recirculation operation in excess of one hour (November 15, 2010)

b. Findings

No findings were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the temporary system modification and one permanent plant modification listed below to ensure that that the modifications did not adversely affect 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. For the permanent modification, the inspectors reviewed the licensee's 10 CFR 50.59 screening to assure that NRC approval was not required prior to installation of the modification. The inspectors specifically checked material compatibility of added components, seismic qualification, adverse containment effects, and structural integrity. 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.

- Temporary rain covers on condensate storage tanks (SPEC-C-013, No. 2010-11035-01, 5-17-2010)
- Replacement of 3B EDG Governor Motor Operated Potentiometer with Digital Reference Unit, PC/M 10-060, CAR 03-051

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 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.

- Unit 3: Valve stroke time testing and seat leakage using 3-OSP-51.5 after replacing the seat of containment valve, 3-POV -2600, under work order 39012315-01
- Unit 3: Vibration measurements on the 3B intake cooling water pump motor following repair of oil level gauge damaged by contact with 3B1 circulating water pump motor (AR) WO40050906, Engineering log entries 11-4-2010.
- Unit 3: 3-OSP-075.6 Auxiliary Feedwater Backup Nitrogen Test (Section 7.1.51) stroke of CV-3-2817 Train 1 steam generator B flow control valve after maintenance to repair valve alignment per WO 38012198-01.
- Unit 3: Local leak rate test using 3-OSP-051.5, Section 7.35 for containment penetration 35 following valve seat replacement for 3-POV-2600 using work order 39012315
- Unit 3: 3-OP-023.1, Diesel Generator Test for Governor Adjustment or Replacement after completion of work order 39020596, 3A emergency diesel generator inspection and 12 years preventive maintenance
- Unit 3: 3-OSP-055.1, Emergency Containment Cooler Operability Test, after completion of work order 38010464-01 for repair of CV-3-2908
- Unit 3: 3-OSP-019.1, Intake Cooling Water Inservice Test, section 7.3, ICW Pump 3C and Discharge Check Valve Test, after discharge check valve replacement per work order 39023232

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities.1 Unit 3 Refueling Outage 25

a. Inspection Scope

The inspectors observed selected Unit 3 outage activities from September 25 – November 9 to determine whether shutdown safety functions such as decay heat removal 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

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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 were verified and 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:

- 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
- Coordination of electrical bus outages
- Monitoring of decay heat removal system performance, lineups, and cooldown/heatup rates; verification that the plant cooldown was conducted in accordance with licensee procedure 3-OSP-041.7, Reactor Coolant System Heatup and Cooldown Temperature Verification
- Fuel handling activities such as core offload and reload
- Equipment clearance (ECO) activities including ECO 3-10-01-001, Reactor coolant system administrative level second drain and ECO 3-10-01-001, Unit 3 A header intake cooling water basket strainer replacement
- Reactor coolant system drain and operations with a short time to boil including verification of alternate electrical supplies and both trains protected
- Final containment inspection with checks of sump system operational lineup
- Control rod testing, including testing of the modified rod position indication system
- Restart readiness and evaluation of open items by the outage management team
- Reactor plant heatup and startup, power ascension, including observations of licensee procedure 3-GOP-503, Cold Shutdown to Hot Standby

b. Findings

Introduction: The inspectors identified an NCV of 10 CFR, Part 50, Appendix B, Criterion XVI, for the licensee's failure to implement timely corrective actions to address conditions adverse to quality on the Unit 3 fuel handling manipulator crane. As a result, a lack of calibration on the manipulator crane load cell affected fuel handling interlock setpoints that protect the fuel during fuel handling activities. The inspectors also found that an inadequate testing procedure led to a procedure change implemented in the field without proper review and approval.

Description: The inspectors reviewed condition reports and work orders associated with the Unit 3 fuel handling manipulator crane dating back to 2008. The inspectors noted that the Sterns Roger Services Job Closeout Report, referenced in two different condition reports, identified that the manipulator crane load cell was last calibrated in 1985 and recommended calibration as part of the operability test prior to the 2009 outage core offload. In response to the April 6, 2009, Job Closeout Report, AR 2009-10642 was written by FPL to address open items contained in the report but did not address load cell calibration as an action item. The 2010 core offload was done without calibrating the load cell. Subsequently, after core offload, but before core reload, it was

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determined the no load weight on the load cell had drifted and needed to be adjusted. Corrections were also made to FPL procedure, 3-OSP-038.2, Manipulator Crane Operability Test, to account for the no-load weight change. No changes to any interlock setpoints were made at the time because FPL believed no setpoints were affected. At time of calibration, FPL used an unapproved procedure, Functional Testing of Fuel Handling Equipment and Tools, to perform the load cell calibration prior to core reload. The inspectors brought this to FPL's attention and FPL wrote condition report AR 592683 to address the use of an unapproved procedure. Prior to the RFO25 core reload, the contractor technician determined the underload and overload interlock setpoints on the manipulator crane needed adjustment due to the new no-load cell calibration value and Westinghouse F-5 Fuels Vendor Manual recommendations. These setpoints protect integrity of fuel by stopping ascent or descent of the hoist if the setpoints are reached. Reaching these setpoints is indicative of possible grid to grid engagement on an adjacent fuel assembly, which would indicate a potential to damage the fuel assembly grids. FPL adjusted values on the manipulator crane prior to core reload using new setpoints per work order 39016448-01.

The open items in Sterns Roger Services Job Closeout Report, dated April 6, 2009, addressed Limit Switch (LS-5) testing inadequacy as written in safety related procedure 3-OSP-038.2, Manipulator Crane Operability Test. The open item was captured as a corrective action in condition report 2009-10642. The corrective action was not completed prior to core offload for unit 3 RFO25. As a result, during Fall 2010 RFO25, prior to core offload, the contractor technician made a procedure change in the field by adding a handwritten step for LS-5 testing without a senior reactor operator approval. The purpose of testing this interlock is to ensure that the hoist gripper will not disengage while loaded with a fuel assembly while over the core. The procedure was updated via a procedure change request 587591 to include the step to test limit switch LS-5 to simulate "over core" and the LS-5 interlock test was completed prior to core reload in WO 39016448-01. Although LS-5 had not been tested previously, there had not been a fuel assembly dropped and once the LS-5 function was tested, it passed satisfactorily.

Analysis: The inspectors determined that the licensee's failure to implement timely corrective action for lack of calibration on the manipulator crane load cell affecting fuel handling interlock setpoints and other deficiencies to be a performance deficiency. The finding was greater than minor because the Barrier Integrity Cornerstone was affected which provides reasonable assurance that physical design of fuel handling equipment protects the public from radionuclide releases. The finding affects the attributes of configuration control and procedure quality. The inspectors evaluated the finding using NRC manual chapter 0609 SDP Phase 1 and determined that it was of very low safety significance (Green) because there was no actual fuel barrier damage. The finding had cross-cutting aspect in the area of problem identification and resolution (P.1 (d)) because the licensee failed to take appropriate corrective actions to address adverse trends in a timely manner when the load cell interlock setpoints drifted.

Enforcement: 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures be established to assure that conditions adverse to quality are promptly identified and corrected. The licensee implements this requirement with corrective action procedure, PI-AA-205, Condition Evaluation and Corrective Action.

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Contrary to the above, between 2008 and 2010, the licensee failed to assure that conditions adverse to quality affecting fuel handling were promptly identified and corrected. Specifically, the licensee failed to identify and correct lack of manipulator crane load cell calibrations identified in a vendor job closeout report. The licensee also failed to correct a procedure inadequacy prior to the Unit 3 core offload that led to an unreviewed procedure being used. Because this finding is of very low safety significance and has been entered into the licensee's corrective action program (CAP) as AR 592683, this violation is being treated as an NCV consistent with the NRC Enforcement Policy: NCV 05000250/2010-05-04, Inadequate Implementation of Corrective Actions Fail to Correct a Condition Adverse to Quality.

.2 Unit 4 Short Duration Outage

a. Inspection Scope

During a Unit 4 short duration outage that started on December 9, 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 operating license and Technical Specification requirements that maintained defense-in-depth. The inspectors responded to the shutdown, including the unplanned reactor trip from 25 percent power, to verify that defense in depth was maintained and the plant was controlled as specified in shutdown procedures, including emergency operating procedure E-0, Reactor Trip or Safety Injection; and 4-GOP-103, Power Operation to Hot Standby.

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:

- 0-OSP-200.5, Miscellaneous Checks, Section 7.14.81, Overpressure Mitigation System Nitrogen Supply
- 4-GOP-301, Hot Standby to Power Operation, Section 5.53, Roll main turbine, synchronize to the grid, and power escalation to 30 percent

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.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors either reviewed or witnessed the following eight surveillance tests 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. Two inservice tests (IST) and one containment isolation function (CIV) 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.

- 4-OSP-075.7, Auxiliary Feedwater Train 2 Backup Nitrogen Test (IST)
- 4-OSP-041.1, Reactor Coolant System Leakrate Calculation
- 3-OSP-075.1, Train 1 Auxiliary Feedwater Operability Test (IST)
- 3-OSP-038.2, Manipulator Crane Operability Train
- 3-OSP-203.2, Train B Engineered Safeguards Integrated Test section 7.3, Loss of Offsite Power coincident with Safety Injection
- 3-OSP-051.5, Local Leak Rate Test, Section 7.35, for containment penetration 35 (CIV)
- 4-OSP-041.1, Reactor Coolant System Leak Rate Calculation
- 3-OSP-072, Main Steam Isolation Valve Closure Test

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

.1 Simulator Based Training Evolution

a. Inspection Scope

On November 29, 2010, the inspectors observed an operating crew in the plant simulator perform emergency declaration and notification actions in response to a simulated event. The scenario included a loss of main feedwater and a steam generator tube rupture. The inspectors observed the Alert declaration due to the loss of the reactor coolant system barrier. During the drill, the inspectors assessed operator actions to verify that emergency classification and notification were timely and made in accordance with the licensee procedure, 0-EPIP-20101, Attachments 1 and 2, Turkey Point Classification Tables. The inspectors also observed whether the simulated initial

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activation of the emergency response centers was timely and as specified in the licensee's emergency plan. 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.

2. RADIATION SAFETY (RS)

Cornerstones: Occupational Radiation Safety (OS) and Public Radiation Safety (PS)

2RS1 Radiological Hazard Assessment and Exposure Controls

a. Inspection Scope

Radiological Hazard Assessment Program Status and Inspection Planning: The inspectors discussed status and changes to the radiation protection program since the previous inspection of occupational radiation protection program activities. The review included evaluation of controls and monitoring equipment capabilities associated with the new Radiation Control Area (RCA) access point and associated monitoring equipment, briefing areas, and remote monitoring station equipment. The inspectors reviewed the scope and results for self-assessments and audits conducted since the last inspection. Status of corrective actions for a Performance Indicator (PI) issue associated with previous Unit 4 fuel transfer activities documented in licensee Condition Report Number (AR) 2009-031494 were reviewed and discussed in detail for their applicability to the current Unit 3 refueling cycle 25 outage (3R25) activities.

Hazard Assessment and Instructions to Workers: During facility tours, the inspectors directly observed and discussed labeling of radioactive material and/or containers; and postings for radiation areas, high radiation area (HRA), locked-high radiation area (LHRA) and Very High Radiation Area (VHRA) locations in RCA locations of the Unit 3 (U3) Reactor Containment Building (RCB), U3 and Unit 4 (U4) Reactor Auxiliary Building (RAB), Radioactive Waste Building (RWB) processing area, dry storage warehouse, and outside equipment and material storage locations. The inspectors conducted or directly observed Health Physics Technician (HPT) staff conduct independent licensee radiation surveys of equipment and areas within the U3 RCB, U3 and U4 RABs, RWB, dry storage warehouse, and outside equipment/storage locations. The inspectors reviewed, evaluated, and discussed pre-job and current survey records for selected plant areas, equipment, and selected tasks including monitoring for alpha emitters, hot particles, airborne radioactivity, and monitoring for tasks involving steep dose rate gradients. The inspectors also discussed changes to plant operations, and shut-down and chemical cleanup operations that could contribute to changing radiological conditions. Impact of shielding effort for selected equipment was evaluated. For selected 3R25 jobs, the inspectors attended pre-job briefings and reviewed radiation work permit (RWP) details to assess communication of radiation control requirements and current radiological conditions to workers. Results of recent dose rate, contamination, and airborne

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monitoring surveys were reviewed for selected areas and equipment within the U3 RCB, U3 and U4 RABs, dry storage warehouse, and outside storage locations. Specifically, the inspectors verified implementation and discussed results of monitoring for alpha and discrete radioactive particles for the licensee staff's initial entry into the lower cavity area.

Hazard Control and Work Practices: The inspectors evaluated access barrier effectiveness for selected HRA, LHRA, and VHRA locations within the U3 RCB, U3 and U4 RAB, Radioactive Waste Building, and Dry Storage Warehouse. Status of procedural guidance for LHRA and VHRA controls were discussed with HPTs and supervisors. Established radiological controls for both external and internal exposure were evaluated for selected 3R25 tasks including shut-down/crud burst chemistry activities, containment sump initial entry, reactor head de-tensioning and lift, cavity decontamination (decon), seal-table maintenance, secondary side steam generator work preparation, and scaffold installation. In addition, licensee activities and radiological controls for RWB storage areas and a U4 Chemical Volume Control System (CVCS) filter change-out and movement were directly observed and evaluated. Proposed radiological controls for the U3 Reactor Water Storage tank maintenance activities were reviewed and discussed.

Occupational workers' adherence to selected RWP and HPT proficiency in providing job coverage were evaluated through direct and remote observations, and through interviews with licensee staff. Electronic Dosimeter (ED) alarm set points and worker stay times were evaluated against area radiation survey results for LHRA activities associated with the 3R25 activities. ED alarm logs were reviewed and worker responses to dose and dose rate alarms during selected work activities were evaluated.

Control of Radioactive Material: The inspectors observed surveys of material and personnel being released from the RCA control point using Small Article Monitor (SAM), Personnel Contamination Monitor (PCM), and portal monitor (PM) instrumentation. The inspectors discussed equipment sensitivity, alarm set-points, and release program guidance with licensee staff. In addition, the inspector reviewed controls for hand surveying large tools and equipment for release from the RCA and the Protected Area (PA). The inspectors compared recent 10 CFR Part 61 results for the Dry Active Waste radioactive waste stream with calibration source radionuclides to evaluate the appropriateness and accuracy of release survey instrumentation. The inspectors also reviewed records of leak tests on selected sealed sources and discussed nationally tracked source transactions, as applicable, with licensee staff.

Problem Identification and Resolution: Condition Reports (ARs) associated with radiological hazard assessment and control were reviewed and assessed. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure PI-AA-204, Condition Identification and Screening Process, Rev. 7 and PI-AA-205, Condition Evaluation and Corrective Action, Rev. 9. The inspectors also evaluated the scope of the licensee's internal audit program and reviewed recent assessment results.

Radiation protection activities were evaluated against the requirements of Updated Final Safety Analysis Report (UFSAR) Section 12; Technical Specifications (TS) Sections 6.8

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Procedures and Programs, and 6.12, High Radiation Area; 10 CFR Parts 19 and 20; and approved licensee procedures. Licensee programs for monitoring materials and personnel released from the RCA were evaluated against 10 CFR Part 20 and IE Circular 81-07, Control of Radioactively Contaminated Material. Documents reviewed are listed in Section 2RS1, 4OA1 and 4OA5 of the report Attachment. The inspectors completed all specified line-items detailed in Inspection Procedure (IP) 71124.01 (Sample size of 1).

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

40A01 Performance Indicator (PI) Verification

a. Inspection Scope

The inspectors sampled licensee records to verify the accuracy of reported Performance Indicator (PI) data for the periods listed below. To verify the accuracy of the reported PI elements, the reviewed data were assessed against guidance contained in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Indicator Guideline, Rev. 6.

Occupational Radiation Safety Cornerstone: The inspectors reviewed PI data collected from October 1, 2009, through June 30, 2010, for the Occupational Exposure Control Effectiveness PI. For the reviewed period, the inspectors assessed CAP records to determine whether HRA, VHRA, or unplanned exposures, resulting in TS or 10 CFR 20 non-conformances, had occurred during the review period. In addition, the inspectors reviewed selected personnel contamination event data, internal dose assessment results, and ED alarms for cumulative doses and/or dose rates exceeding established set-points. The reviewed documents relative to this PI are listed in Section 4OA1 of the Attachment.

Public Radiation Safety Cornerstone: The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the Public Radiation Safety Cornerstone from October 1, 2009, through June 30, 2010. For the assessment period, the inspectors reviewed cumulative and projected doses to the public and AR documents related to Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual issues. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in section 4OA1 of the Attachment.

The inspectors completed all of the specified line-item samples associated with the OS and PS Cornerstones detailed in IP 71151 (sample size of 2).

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, a 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 significance level 1 condition report 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 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 572843-02, Removal of incorrect fuse results in steam generator water level transient (Significance level 1)

b. Findings

No findings were identified. The inspectors found that the licensee had conducted a thorough evaluation of the occurrence and determined the root and contributing causes. Corrective actions were assigned to prevent recurrence and were verified as complete or scheduled for completion.

.3 Semi-Annual Trend Review

a. Inspection Scope

As required by Inspection Procedure 71152, Identification and Resolution of Problems, the inspectors reviewed the licensee's corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector corrective actions item screening discussed in section 4OA2.1 above, plant status reviews, plant tours, document reviews, and licensee trending efforts. Among the documents reviewed was the Turkey Point Station Performance Improvement Health Report, 3rd Quarter 2010, dated December 15, 2010. The inspectors' review nominally considered the six month period of July through December 2010. Corrective actions associated with a sample of the issues identified in the licensee's corrective action program were reviewed for adequacy.

b. Assessment and Observations

No findings were identified.

4OA3 Follow-up of Events

(Closed) Licensee Event Report (LER) 50-251/2010-007-00, Unplanned Entry into Technical Specification 3.0.3 Due to Mispositioning of Unit 3 High Head Safety Injection (HHSI) Discharge Valves.

On October 1, 2010, plant operators were hanging a clearance (tagout) on the Unit 3 high head safety injection system and opened the Unit 3 injection valves to facilitate planned maintenance. The next step in the clearance was to close the manual isolation valve for Unit 3 HHSI. When the injection valves opened, there was a gravity transfer of water from the Unit 4 refueling water storage tank (RWST) to the Unit 3 reactor coolant system, which was opened to the flooded refueling cavity. Unit 4 was operating at full power at the time. The Unit 4 reactor controls operator noted a change in the Unit 4 RWST level and questioned the cause. Within a few minutes, the flowpath was identified and isolated by shutting the manual isolation. Later, operators identified that the diversion resulted in a functional failure of the Unit 4 HHSI capability because of the open diversion flowpath to Unit 3. The diversion lasted for 36 minutes and resulted in an inadvertent entry of Unit 4 into technical Specification 3.0.3, which requires action within one hour. The Unit 4 RWST inventory remained above technical specification limits. The issue was documented into the licensee's corrective action program as AR 584026 and an investigation was initiated. The licensee attributed the event to inadequate administrative controls and poor organizational processes that led to reliance on knowledge only. Process and procedural improvements were implemented including adding notes to applicable procedures specifying that placards be placed on the injection valves when a Unit is shutdown to ensure that integrity of the other unit HHSI system is considered when operating the valves. Enforcement regarding this item is in Section 4OA7 of this report. The LER is closed.

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4OA5 Other Activities

.1 Inspector Review of INPO Report

a. Inspection Scope

The inspectors reviewed the Final Report for the Institute of Nuclear Power Operations (INPO) evaluation of Turkey Point Nuclear Power Plant, March 2010. The onsite evaluation was completed in March 2010. The inspectors reviewed the report to ensure that issues identified were consistent with NRC perspectives of licensee performance and to verify if any significant safety issues were identified that required further NRC follow-up.

b. Findings

No findings were identified.

.2 (Closed) Temporary Instruction 2515/179, Verification of licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System Pursuant to Title 10 Code Of Federal Regulations, Part 20.2207 (10CFR 20.2207).

a. Inspection Scope

The inspectors interviewed responsible licensee staff and directly verified the licensee's reporting of the initial inventories of sealed sources pursuant to 10 CFR 20.2207 and determined that the National Source Tracking System (NSTS) database correctly reflects the Category 1 and 3 sealed sources maintained by the licensee. During the onsite inspection the following activities were conducted:

- Reviewed the current licensee's source inventory
- Verified presence and material condition of current NSTS materials
- Reviewed and evaluated procedures and leak test data for storage, handling and maintenance of sources
- Discussed requirements and actions for NSTS source transfers
- Reviewed adequacy of licensee postings and labels of source materials

Documents reviewed are listed in section 4OA5 in the Attachment. The inspectors completed all specified line-item samples detailed in Temporary Instruction 2515/179.

b. Findings

No findings were identified with the licensee's implementation of TI 2515/179. This completes the Region II inspection requirements for this issue.

.3 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.

.4 Reactor Coolant System Dissimilar Metal Butt Welds (TI 2515/172, Revision 1)

Turkey Point Unit 3 does not have a dissimilar metal butt welds (TI-172) inspection.

40A6 Exit

Exit Meeting Summary

The resident inspectors presented the inspection results to Mr. Kiley and other members of licensee management on January 7, 2010. 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. Interim exit meetings by specialist inspectors were held at the conclusion of the onsite visits by those inspectors.

40A7 Licensee Identified Violations

The following violation of very low safety significance (Green) was identified by the Licensee and constituted a violation of NRC requirements which met the criteria of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a Non-cited violation.

Turkey Point Technical Specification 6.8.1.a, states that written procedures required by the Quality Assurance Topical Report (QATR) shall be implemented. The QATR commits to use the procedures in Appendix A of Regulatory Guide 1.33, which includes in Section 1.c, Equipment control (tagging). FPL implements this requirement, in part, with procedure 0-ADM-212.1, Operations In-plant Equipment Clearance Orders, which requires in Step 5.1.9, that "Prior to approving an equipment clearance order, it shall be determined the impact on equipment availability to meet technical specifications". Contrary to the above, during preparation and execution of equipment clearance order 3-10-01-001, for the Unit 3 high head safety injection system, the impact on equipment available to meet Unit 4 Technical Specifications requirements was not determined prior to approval. As a result, while implementing the clearance order, the Unit 4 high head

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safety injection system was rendered inoperable for a period of 36 minutes, until the manual isolation valve 3-867 was shut, as required by the clearance. The technical specification impact, diversion of Unit 4 high head safety injection to Unit 3 and entry of Unit 4 into TS 3.0.3 for 36 minutes, was determined after the clearance was implemented. When identified by the licensee during operator surveillance of control room indications, the manual valve was promptly shut in accordance with the clearance. The event was documented in the corrective action program as AR 584026 and an investigation was initiated. A regional Senior Reactor Analyst evaluated the performance deficiency under the Phase 3 protocol of the Significance Determination Process. Based upon the results of this evaluation, the performance deficiency was characterized as of very low safety significance (Green). The NRC's most current Probabilistic Risk Assessment model for Turkey Point was used to perform the evaluation. The basic event for the common cause failure of the High Head Safety Injection valves, 843A and B, was set to always occur in the model as the surrogate for the performance deficiency. The major evaluation assumptions included a one hour exposure time and no potential to re-position either of the two valves during the exposure time. The dominant accident sequence was a Small Break Loss of Coolant Accident followed by operators failing to use the High Head Safety Injection hot leg injection path, given a failure of the cold leg injection path due to the performance deficiency.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:

B. Carberry, Emergency Preparedness Manager
C. Cashwell, Radiation Protection Manager
R. Coffey, Maintenance Manager
M. Crosby, Quality Manager
J. Danek, Radiation Protection
J. Garcia, Engineering Manager
M. Kiley, Site Vice-President
G. Mendoza, Chemistry Manager
K. O'Hare, Radiation Protection / Chemistry CFAM
J. Patterson, Fire Protection Supervisor
P. Rubin, Plant General Manager
S. Shafer, Assistant Operations Manager
R. Tomonto, Licensing Manager
R. Wright, Operations Manager

NRC personnel:

D. Rich, Chief, Reactor Projects Branch 3

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Closed

| | | |
|------------------------|-----|--|
| 05000250, 251/2515/179 | TI | Verification of licensee Responses to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System Pursuant to Title 10 Code Of Federal Regulations, Part 20.2207 (10CFR 20.2207)(4OA5) |
| 50-251/2010-007-00 | LER | Unplanned Entry into Technical Specification 3.0.3 Due to Mispositioning of Unit 3 High Head Safety Injection (HHSI) Discharge Valves |

Opened and Closed

| | | |
|---------------------------|-----|--|
| 0500250/2010-005-01 | NCV | Inappropriate procedure guidance results in degradation of boration flow path and loss of charging flow (Section 1R04) |
| 05000250,251/2010-005-02. | NCV | Scaffold blocked access to fire areas used in a control room evacuation event. (Section 1R05) |
| 05000250/2010-005-03 | NCV | Welders failed to measure preheat and interpass temperatures. (Section 1R08) |
| 05000250/2010-05-04 | NCV | Inadequate implementation of corrective actions fail to correct a condition adverse to quality. (Section 1R20) |

LIST OF DOCUMENTS/DATA REVIEWED

Section 2RS01: Radiological Hazard Assessment and Exposure Controls

Procedures and Guidance Documents

0-Nuclear Chemistry Operating Procedure (NCOP)-001.1, Primary Chemistry Control During Shutdown

0-Health Physics Administrative Procedure (HPA)-030, Personnel Monitoring of External Dose, Rev. 1

0-Health Physics Surveillance Procedure (HPS)-021.3, Identification, Survey, and Release of Material for Unrestricted Use, Rev. 1

0-HPS-025.2, Posting and Survey Requirements for Fuel Movement, Rev 1B

0-HPS-053.5, Removal and Transports of CVCS, SFP, and RWB Fluid Filters, 12/7/07C

0-HPS-055, Steam Generator Radiation Protection Controls, 03/21/07C1

0-HPS-106, Survey & Posting Guidelines for Plant Evolutions, 02/05/09

Radiation Protection Work Plan, Fuel Movement Dose Rate Study, Rev. 0

RP-SR-101-1003, Personnel Contamination Monitoring and Decontamination, Rev. 1

RP-SR-102-1001, Area Radiological Survey and Analysis, Rev. 2

RP-SR-103-1002, High Radiation Controls, Rev. 2

RP-SR-103-1001, Posting Requirements for Radiological Hazards, Rev. 4

RP-SR-1001-1005, Internal Dose Assessment, Rev. 0

Radiation Work Permit (RWP) 10-0007, Filter Change-out, Task 2, U-4 CVCS, Filter Change-out and Transport to the Radioactive Waste Building High Level Storage Area, Rev. 0007Task

RWP 10-3007, Containment General Outage Maintenance – Non High Radiation Areas, Rev 2

RWP 10-3008, Containment General Outage Maintenance – High Radiation Areas, Rev 2

RWP 10-3012, Scaffold Work, Rev.01

RWP 10-3019, Steam Generator Primary Side Work, Rev. 0

RWP 10-3020, Steam Generator Secondary Side Work, Rev. 0

RWP 10-3103, Reactor Head Lift, Rev. 1

RWP 10-3110, Lower Reactor Cavity Work, Rev. 1

RWP 10-3202, Task 5, Scaffold Installation and Removal (Non High Rad Area), Rev. 1

RWP 10-3202, Task 6, Insulation Activities Including Asbestos Work (Non High Rad Area, Rev. 1

RWP 10-3207, Outage Valve Maintenance (Non-Containment), Rev. 1

RWP 10-3203, Task 5, Scaffold Installation and Removal (HRA), Rev. 1

RWP 10-3216, Reactor Water Storage Tank, Draft, 09/29/2010

Reactor Water Storage tank Inspection, Modification, and Cleaning Work Scope and RWP Planning, Draft, 09/29/2010

RWP 10-3203, Task 6, Insulation Activities Including Asbestos work (HRA), Rev. 1

Performance Improvement Procedure (PI)–AA–203, Action Tracking Management, Rev. 3

PI-AA-204, Condition Identification and Screening Process, Rev. 10

PI-AA-205, Condition Evaluation and Corrective Action, Rev. 9

Records and Data Reviewed

Technical Report, Sensitivity Study of Personnel Contamination Monitors at Turkey Point Nuclear Power Station, 02/10/10

U4 R 25 Personnel Contamination Event Summary 2009

U3 R 23 Personnel Contamination Event Summary through September 30, 2010

Survey Log 10-3062, RWB High Level Storage, 09/08/2010

Survey Log 10-3514, RWB High Level Storage, 09/29/2010

Survey Log 10-3570, Seal Table 30 foot (") 6 inch (") Elevation, 09/10/2010

Survey Log 10-03445, U3 Initial Entry into Lower Cavity, 09/28/2010

Survey Log 10-03409, U3 58' Elevation, 09/27/2010

Survey Log 10-03394, U3 Top of Reactor Head, 09/27/2010

Survey Log 10-03402, U3, Reactor Cavity – Upper Cavity Post Decon, 09/27/2010

Survey Log 10-03274, U3 30'6" Elevation – Initial Entry, 09/24/2010

Survey Log 10-03364, U3 Seal Table – Post Shielding, 09/26/2010

Survey Log 10-03347, U3 14' Elevation, 09/26/2010

Survey Log 10-03311, U3 14' Regenerative Heat Exchanger Posted LHRA/Locked, 09/25/2010

Survey Log 10-02881, U3 Spent Fuel Pit, 08/26/2010

Survey Log 10-03519, U3 Residual Heat Removal (RHR) 'A' and 'B' Pump Room, 09/29/2010

Survey Log 10-03561, U3 RHR Heat Exchangers, 09/29/2010

Survey Log 10-03559, U3 Access to RHR Pit, 09/29/2010

Air Sample Log (Form RP-SR-102-1001-F02) for samples from 09/24-30/2010

Air Calculation Sheets (Forms RP-SR-102-1001-F02) Evaluated for alpha monitoring program implementation and results for Air Sample Numbers P11-10-0220, P11-10-0231, P11-10-0248, P11-10-0250, P11-10-0252,

RP-TP-103-2003-F01, U3, Attachment 1, RCS Crud Burst Checklist and Supporting Surveys, Preparation for Crud Burst Activities, Crud Burst Monitoring Completion, 09/26-27/2010,

RP-TP-103-2003-F02, Crud Burst Telemetric Data, 9/27/2010

3R25 Crud Burst Dose Rate Trending Point Data: U3 Pipe and Valve Room (P&V) Residual Heat Removal (RHR) Inlet, U3 P&V Let-down Elbow, CPR, Let Down Elbow

Unit 3 Crud Burst Cleanup – Co 58 Historical Comparison Data microcuries per milliliter (uCi/l)

Unit 3 Dose rate (mrem/hr) monitoring survey point data,

Drawing Number 5610-C-257, Sheet 1, Elevations, Sections & Details Auxiliary Building, Areas 7 & 15, Concrete Walls,

Air Sample Log Data: Identification Number PO-I1-10-0289

Exposure Investigation Report Log Numbers: 09-140, 09-141, 09-142, 09-143, 09-144, 09-151, 09-160, 09-161, 09-163, 10-003, 10-006, 10-009, 10-010, 10-019

Radiological Respirator Issue Record (Form HP-94), for respirators issued from 08/20/2010 – 09/30/2010

Corrective Action Program (CAP) Documents

Turkey Point Nuclear Oversight Report Number PTN-10-015, Radiation Protection, 6/16/2010
Condition Report Number (CR) 2009-31494, Elevated dose rates while transferring fueling along shielded transfer path

CR 2010-14891, Multiple occasions where radiation workers or RP technicians did not display expected behaviors

CR 2010-5591, Some RP technicians do not understand how to interpret results from the MS-2

CR 2010-6718, No dose rate survey conducted post radiological change requiring HRA posting

CR 2010-5149, Radioactive material left unposted and unguarded during the shipping receipt process.

CR 2009-32234, Temporary power outage inside containment caused a loss of remote monitoring capabilities.

CR 2009-32132, Radioactive Source Received by CRF on 11/10/09 at 0120 hrs, RP not notified until 11/11/09 at 0122 hrs

CR 2009-31250, Distractions in Remote Monitoring Facility lead to documentation error for U4 sump entry remote monitoring coverage

CR 2009-30779, The thimble tube locking devices were installed "upside down".

CR 2009-22693, Review of alpha levels and ratios following Unit 3 and Unit 4 2009 Outages Action Request Number (AR) 00583079, HEPA Unit near Radioactive Waste Building LHRA wall

AR 00583169, Containment personnel hatch rain water intrusion

AR 00583799, PA system not audible in RCA east of RAB and RWB during filter transfer Activities

Section 71151: Performance Indicator (PI) Verification

Procedures and Guidance Documents

Records and Data Reviewed

Turkey Point Units 3 and 4 Annual Radioactive Effluent Release Report, January 2009, through December 2009.

RETS/ODCM Radiological Effluent Occurrence PI Data Sheet, 4th Quarter 2009, 1st Quarter 2010, and 2nd Quarter 2010.

Corrective Action Program (CAP) Documents

AR 2010-15313, Worker separated from their dosimeter

AR 2010-10121, Security officer instructed to remain at post even though Personnel Alarming Dosimetry was alarming

AR 2010-9440, Worker dose rate alarm while working in U-3 Pipe & Valve Room

AR 2010-6718, No dose rate verification survey performed post radiological change requiring HRA posting

AR 2010-5591, Through observation, it was determined that some RP technicians do not understand how to interpret results from the MS-2.

AR 2010-4792, Worker received dose rate alarm on ED.

AR 2009-35746, Valve 3-243 (Delta Demineralizer to Spent Resin Storage Tank Isolation Valve) was discovered to be reading 752mrem/hour on contact and 91mrem/hour at 30 cm during a survey conducted to investigate elevated radiation dose rates in the U-3 Demin Valve Gallery area

AR 2009-33920, Unit 4 Personnel Hatch Lock

AR 2009-33865, Worker received dose rate alarm

AR 2009-32320, Worker received rate alarm

AR 2009-31825, Worker lost TLD in U4 containment 14 foot (') elevation outside biowall working on valve #4-865B

AR 2009-31533, During the initial survey of the B Steam Generator Cold Leg Primary Manway, a Radiation Protection Technician (RPT) received a dose rate alarm on his telemetric dosimeter.

AR 2009-32169, Worker received dose rate alarm
 AR 2009-31533, Radiation protection technician received dose rate alarm during initial 'B' S/G cold leg primary Manway
 AR 2009-31825, Lost TLD
 AR 2009-33436, B GDT pressure drop while on cover gas after ECO zone 61-03B and 61-05 release

Section TI 2515/179: Verification of Licensee Response to NRC Requirement for Inventories of Materials Tracked in the National Source Tracking System Pursuant to Title 10 Code of Federal Regulations, Part 20.2207 (10 CFR 20.2207)

Procedures and Guidance Documents

HPS-092, Leak Testing of Radioactive Sources, 12/20/2007
 O-Health Physics technical (HPT)-076, Certification and Operation of the IRD2000 Calibrator, Rev 1A

Records and Data Reviewed

L-2009-027, Initial Inventory of Category 2 Nationally Tracked Sources, 1/29,2009
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LIST OF ACRONYMS

| | |
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| AR | Action Request Number |
| CAP | Corrective Action Program |
| CFR | Code of Federal Regulations |
| CR | Condition Report Number |
| CVCS | Chemical Volume and Control System |
| ED | Electronic dosimeter |
| HPA | Health Physics Administrative Procedure |
| HPS | Health Physics Surveillance Procedure |
| HPT | Health Physics Technician |
| HRA | High Radiation Area |
| IP | Inspection Procedure |
| NCOP | Nuclear Chemistry Operating Procedure |
| NEI | Nuclear Energy Institute |
| NSTS | National Source Tracking System |
| ODCM | Offsite Dose Calculation Manual |
| OS | Occupational Radiation Safety |
| OA | Other Activity |
| PA | Protected Area |
| PCM | Personnel Contamination Monitor |
| PI | Performance Indicator |
| PI-AA | Performance Improvement Administrative Procedure |
| PM | Portal Monitor |
| PS | Public Radiation Safety |
| PTN | Plant Turkey Point Nuclear |
| RAB | Reactor Auxiliary Building |
| RCA | Radiologically Controlled Area |
| RCB | Reactor Containment Building |
| RETS | Radiological Environmental Technical Specification |
| Rev. | Revision |
| RS | Radiation Safety |
| RWB | Reactor Waste Building |
| RWP | Radiation Work Permit |
| TI | Temporary Instruction |
| TLD | Thermoluminescent dosimeter |
| TS | Technical Specification |
| U3 | Unit 3 |
| U4 | Unit 4 |
| UFSAR | Updated Final Safety Analysis |
| VHRA | Very High Radiation Area |
| 3R25 | Unit 3 Refueling Outage Cycle 25 |