



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

October 29, 2010

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

SUBJECT: ST. LUCIE NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT  
05000335/2010004, 05000389/2010004

Dear Mr. Nazar:

On September 30, 2010, the US Nuclear Regulatory Commission (NRC) completed an inspection at your St. Lucie Plant. The enclosed inspection report documents the inspection results, which were discussed on October 14, 2010, with Mr. Anderson and other members of your staff.

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

This report documents two NRC-identified findings and one self-revealing finding, all of very low safety significance (Green). These findings were determined to involve violations of NRC requirements. However, because of the very low safety significance and because they were entered into your corrective action program, the NRC is treating the findings as non-cited violations (NCVs) consistent with the NRC Enforcement Policy. Also, three licensee identified violations which were of very low safety significance are listed in Section 40A7 of the report. If you contest these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the St. Lucie facility. In addition, if you disagree with the cross-cutting aspect assigned to 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 St. Lucie.

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-room/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

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

Docket Nos. 50-335, 50-389  
License Nos. DPR-67, NPF-16

Enclosure: Inspection Report 05000335/2010004, 05000389/2010004  
w/Attachment: Supplemental Information

cc w/encl: (See next page)

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**/RA/**

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Report to M. Nazar from D. Rich dated October 29, 2010.

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-335, 50-389

License Nos: DPR-67, NPF-16

Report No: 05000335/2010004, 05000389/2010004

Licensee: Florida Power & Light Company (FPL)

Facility: St. Lucie Nuclear Plant, Units 1 & 2

Location: 6351 South Ocean Drive  
Jensen Beach, FL 34957

Dates: July 1 to September 30, 2010

Inspectors: T. Hoeg, Senior Resident Inspector  
S. Sanchez, Resident Inspector  
R. Taylor, Senior Reactor Inspector (Sections 1R017 and 4OA5)  
M. Coursey, Reactor Inspector (Sections 1R017 and 4OA5)  
W. Deschaine, Reactor Inspector (Sections 1R017 and 4OA5)  
R. Patterson, Reactor Inspector (Sections 1R017 and 4OA5)  
A. Sengupta, Reactor Inspector (Section 1R07)  
G. Kuzo, Senior Health Physicist (Sections 2RS06, 07, 08 and 4OA1)  
C. Dykes, Health Physicist (Sections 2RS6, 7, 8 and 4OA1)

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

Enclosure

## SUMMARY OF FINDINGS

IR 05000335/2010-004, 05000389/2010-004; 07/01/2010-09/30/2010; St. Lucie Nuclear Plant, Units 1 & 2; Equipment Alignment, Identification and Resolution of Problems, Other Activities.

The report covered a three month period of inspection by resident inspectors and region based inspectors. Three Green non-cited violations (NCVs) were identified. The significance of most findings is identified by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The cross-cutting aspect was determined using IMC 0310, Components Within The Cross-Cutting Areas. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process", Revision 4, dated December 2006.

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

#### Cornerstone: Initiating Events

Green. A self-revealing NCV of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified regarding the licensee's failure to provide adequate guidance in a safety-related maintenance procedure to ensure pressurizer safety valves (PSV) were properly aligned during installation to minimize potential leakage and failure to ensure that the pressurizer nozzle insulation was installed. Following a manual reactor trip due to a leaking PSV, the licensee performed a root cause evaluation to determine the cause(s) of repeated leaking PSVs during reactor coolant system (RCS) heatup. The licensee determined that several procedural deficiencies existed that contributed to PSV leakage. Specifically, maintenance procedure 0-MMP-01.09, Pressurizer Safety Valve Removal, Testing, and Installation, did not specify acceptance criteria during alignment of the inlet and outlet flanges of the PSVs to associated piping. In addition, the procedure did not ensure installation of the pressurizer nozzle insulation. This issue was entered into the Corrective Action Program (CAP) as CR 2009-21705

The finding was determined to be more than minor in accordance with IMC 0612, Appendix B, "Issue Screening", because it affects the Initiating Events cornerstone attribute of procedure quality and adversely affected the cornerstone objective to limit the likelihood of an event that upsets plant stability by resulting in a manual reactor trip. The finding was evaluated in accordance with IMC 0609, Attachment 4, and determined to be of very low safety significance (Green) per the SDP Phase 1 Screening because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding has a cross-cutting aspect in the area of problem identification and resolution because the licensee did not thoroughly evaluate and take corrective actions to address the long-standing safety issue of repetitive leaking pressurizer safety relief valves (IMC 0310 Aspect P.1.c). (Section 4OA2.2)

## Cornerstone: Mitigating Systems

Green. An NRC-identified NCV of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, for failure of the licensee to promptly identify and correct a condition adverse to quality (CAQ) associated with the Unit 2 reactor water tank isolation valve MV-07-1B. The valve motor power cable conduit was completely rusted through exposing the cabling inside. The licensee examined the degraded condition and initiated a prompt operability determination to evaluate the condition. Based on this evaluation, the valve was declared Operable. This issue was entered into the CAP as condition reports 2010-577132 and 2010-577608.

This finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening", because it was associated with the Mitigating Systems cornerstone attribute of protection against external events and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was evaluated in accordance with IMC 0609, Attachment 4, and determined to be of very low safety significance (Green) per the SDP Phase 1 Screening because it did not result in an actual loss of operability to the component. The inspectors also determined that this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because the licensee did not promptly and completely identify an adverse condition in the CAP in a timely manner commensurate with its safety significance (IMC 0310 Aspect P.1.a). (Section 1R04)

Green. An NRC-identified NCV of very low safety significance involving Technical Specification 6.8.1, for failure of the licensee to provide adequate procedures for restoration of non-essential component cooling water (CCW) following a Safety Injection Actuation Signal (SIAS). Specifically, emergency operating procedure, 1-EOP-99, Appendix A, "Sampling Steam Generators" and Appendix J, "Restoration of CCW and CBO to the RCPs", Rev. 38, did not address the potential adverse impact on essential cooling flow required to mitigate a LOCA when the non-essential CCW was restored. This issue was entered into the CAP as CR 2009-22623

The finding was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening", because it was associated with the procedure quality attribute of the mitigating systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and operability of the control room air conditioning system to perform its intended safety function during a design basis event. The inspectors determined that the finding was of very low safety significance because it did not result in an actual loss of operability to the component. This finding was reviewed for cross-cutting aspects and none were identified.

## B. Licensee Identified Violations

Three violations of very low safety significance were identified by the licensee and have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into their CAP. These violations and corrective actions are listed in Section 4OA7 of this report.

## REPORT DETAILS

### Summary of Plant Status:

Unit 1 began the period at full Rated Thermal Power (RTP). On July 13, Unit 1 was down powered to 80 percent RTP when the 1A2 circulating pump motor overheated and tripped off line. Unit 1 remained at 80 percent RTP while troubleshooting and repairing the 1A2 circulating pump motor. On July 22, Unit 1 was down powered to 45 percent RTP when the 1B Main Feedwater Pump (MFP) was taken out of service due to high vibration on the motor. Unit 1 returned to 90 percent RTP on August 8 following repairs and returning the 1B MFP to service. Unit 1 returned to full RTP on September 12 when the 1A2 circulating pump was returned to service following repairs and remained there through this inspection period.

Unit 2 began the period at full RTP. On September 26, Unit 2 was down powered to 84 percent RTP when a high differential pressure alarm indicated a problem with the debris filter system (DFS) and required removing the 2B2 circulating pump from service. Unit 2 was returned to full RTP on September 30 following repairs to the DFS and operated at full power for the remainder of the inspection period.

#### 1. REACTOR SAFETY

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

#### 1R01 Adverse Weather Protection

##### .1 Readiness of Offsite and Alternate AC Power Systems

###### a. Inspection Scope

The inspectors reviewed plant features and procedures for operation and continued availability of offsite and alternate AC power systems to determine if they are capable of monitoring and maintaining availability and reliability of offsite and alternate onsite AC power during seasonal adverse hot weather conditions. In addition, the inspectors reviewed the material condition of various AC power systems to ensure the systems will perform as designed. The following procedures, oversight report, and plant systems were inspected for summer season readiness:

- OP-AA-102-1002, Seasonal Readiness
- Nuclear Oversight Report PSL-10-045
- Electrical Switchyard Area

###### b. Findings

No findings were identified.

.2 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors reviewed lessons learned from previous tropical storm and hurricane events at St. Lucie and performed inspections of Unit 1 and Unit 2 auxiliary feed water (AFW) pump areas, Unit 1 and Unit 2 emergency diesel generator (EDG) fuel oil storage and transfer systems areas, and reactor auxiliary building (RAB) doors and perimeter structures. The inspectors reviewed the applicable Updated Final Safety Analysis Report (UFSAR) section for flooding, including specific plant design features to accommodate the maximum flood level. The inspectors also reviewed ADM-04.01, Hurricane Season Preparation, with regard to protective actions to prevent excessive flooding and reviewed procedure AP-0005753, Severe Weather Preparations, with regard to potential external flooding. Condition reports (CRs) were reviewed to determine if the licensee was identifying and resolving weather related issues.

b. Findings

No findings were identified.

.3 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

On July 22-23, 2010, the inspectors reviewed the status of licensee actions in accordance with Administrative Procedure AP-0005753, Severe Weather Preparations, when Tropical Storm Bonnie was approaching the area while a tropical storm watch was in effect. The inspectors verified conditions were met for entering the procedure and that equipment status was verified as directed by the procedure. The inspectors performed a walkdown of the following safety-related equipment on both units that are exposed to the outside weather conditions to identify any potential adverse conditions:

- Unit 1 and Unit 2 Turbine Buildings
- Unit 1 Component Cooling Water (CCW) Heat Exchanger area
- Unit 1 EDG Fuel Oil Storage Tank area

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial Equipment Walkdowns

a. Inspection Scope

The inspectors conducted four partial alignment verifications of the safety-related systems listed below. These inspections included reviews using plant lineup procedures, 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 or barriers by entering them into the CAP.

- Unit 2 RAB Supply Fan HVS-4A While HVS-4B was Out of Service (OOS)
- 1A CCW System While 1B CCW was OOS
- 2A Containment Spray System (CSS) While 2B CSS was OOS
- 1A EDG While the 1B EDG was OOS

b. Findings

Introduction: A non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, was identified by the inspectors for failure of the licensee to promptly identify and correct a condition adverse to quality (CAQ) associated with the Unit 2 reactor water tank isolation valve MV-07-1B.

Description: During the week of August 9, 2010, the inspectors identified a severely rusted conduit exposing the electrical wires to the outside environment next to the Unit 2 reactor water tank (RWT). The conduit housed the electric power supply cable to safety-related motor operated valve MV-07-1B, which is the RWT isolation valve to the B train emergency core cooling system (ECCS) pumps. The inspectors reported this observation to the control room supervisor upon their discovery. During the week of August 30, 2010, the inspectors inquired about the status of the conduit operability determination and discovered that no condition report had been written. On September 1, 2010, condition report 2010-577132 was written to evaluate the condition. The inspectors also discovered that this condition was previously identified in work request (WR) 38005969 written by the licensee's electrical department on April 29, 2008, and had not been reviewed for operability. The inspectors determined that no condition report was written in 2008 at that time of discovery nor after the inspectors brought it to the attention of the Unit 2 Shift Supervisor during the week of August 9, 2010. The licensee also wrote condition report 2010-577608 to document the failure to initiate a condition report. Failure to enter the condition in the Corrective Action Program (CAP) was in contrast to the requirements of licensee procedures NAP-204, "Condition Reporting" in 2008 and PI-AA-204, "Condition Identification and Screening Process" in 2010. The subject procedures required a condition report to be issued in the CAP to ensure the condition is reviewed for operability and corrected.

Analysis: The inspectors considered the failure to identify and correct a CAQ in the CAP in 2008 and again in 2010 for the degraded conduit were performance deficiencies. The performance deficiencies were determined to be more than minor because the issue is associated with the Mitigating Systems cornerstone attribute of protection against external events and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, by not documenting the condition in their CAP, the licensee was unable to evaluate the condition for operability or the impact the condition had on the structural qualification of this safety-related component. The inspectors evaluated this finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1, Initial Screening and Characterization of Findings," Table 4a for the Mitigating Systems Cornerstone. The finding is considered a design or qualification deficiency that did not result in a loss

of operability of the safety component and was determined to be of very low safety significance (Green). The inspectors determined that this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because the licensee did not promptly and completely identify an adverse condition in the CAP in a timely manner commensurate with its safety significance. (P.1.a)

Enforcement: The 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, on April 29, 2008, the licensee's initial identification in WR 38005969 failed to promptly identify and correct a CAQ regarding the qualification of safety-related components. Specifically, a condition report was not written in the SITRIS to ensure the condition was reviewed for operability and reportability as required by licensee procedure NAP-204. Subsequently, the licensee performed an immediate operability determination and declared the affected valve operable and a CAP tracking item was initiated along with work order 38005969 to repair the degraded conduit. Because this violation was of very low safety significance and issue was entered into the licensee's CAP, this violation is being treated as an NCV, consistent with the NRC Enforcement Policy: NCV 05000389/2010004-01, Failure to Properly Identify and Correct a Condition Adverse to Quality.

## 1R05 Fire Protection

### .1 Fire Area Walkdowns

#### a. Inspection Scope

The inspectors toured the following four plant areas during this inspection period 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 or fire propagation. The inspectors reviewed these activities against provisions in licensee's procedure AP-1800022, Fire Protection Plan, and 10 CFR Part 50, Appendix R. The licensee's fire impairment lists, updated on an as-needed basis, were routinely reviewed. In addition, the inspectors reviewed the Condition Report (CR) database to verify that fire protection problems were being identified and appropriately resolved. The following areas were inspected:

- Unit 2 ECCS Pump Room
- Unit 1 43-foot Elevation Cable Spreading Room
- Unit 2 AFW Pump Areas
- Unit 1 EDG

#### b. Findings

No findings were identified.

.2 Fire Protection - Drill Observation

a. Inspection Scope

The inspectors observed an unannounced fire drill on July 15, 2010, that took place in the 2B EDG building. The drill was observed to evaluate the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner at the debrief, and took appropriate corrective actions as required. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient fire fighting equipment brought to the scene; (5) effectiveness of command and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the pre-planned drill scenario; and (10) drill objectives.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07T)

.1 Triennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed operability determinations, completed surveillances, vendor manual information, associated calculations, performance test results and cooler inspection results associated with the 1B and 2A Component Cooling Water heat exchangers (CCW HX) and the 1A Residual Heat Removal heat exchangers (RHR HX). These heat exchangers were chosen based on their risk significance in the licensee's probabilistic safety analysis, their important safety-related mitigating system support functions, and their relatively low margin.

For the CCW HXs (Unit 1 CCW Train B, Unit 2 CCW Train A), the inspectors determined whether testing, inspection, maintenance, and monitoring of biotic fouling and macrofouling programs were adequate to ensure proper heat transfer. This was accomplished by determining whether the test method used was consistent with accepted industry practices, or equivalent, the test conditions were consistent with the selected methodology, the test acceptance criteria were consistent with the design basis values, and reviewing results of heat exchanger performance testing. The inspectors also determined whether the test results appropriately considered differences between testing conditions and design conditions, the frequency of testing based on trending of test results was sufficient to detect degradation prior to loss of heat removal capabilities below design basis values and test results considered test instrument inaccuracies and differences.

For the CCW (Unit 1 CCW Train B, Unit 2 CCW Train A) and 1A RHR HXs, the inspectors reviewed the methods and results of heat exchanger performance inspections. The inspectors determined whether the methods used to inspect and clean heat exchangers were consistent with a-found conditions identified and expected

degradation trends and industry standards, the licensee's inspection and cleaning activities had established acceptance criteria consistent with industry standards, and the as-found results were recorded, evaluated, and appropriately dispositioned such that the as-left condition was acceptable.

In addition, the inspectors determined whether the condition and operation of the CCW (Unit 1 CCW Train B, Unit 2 CCW Train A) and 1A RHR HXs were consistent with design assumptions in heat transfer calculations and as described in the final safety analysis report. This included determining whether the number of plugged tubes was within pre-established limits based on capacity and heat transfer assumptions. The inspectors determined whether the licensee evaluated the potential for water hammer and established adequate controls and operational limits to prevent heat exchanger degradation due to excessive flow induced vibration during operation. In addition, eddy current test reports and visual inspection records were reviewed to determine the structural integrity of the heat exchanger.

The inspectors determined whether the performance of ultimate heat sinks (UHS) and their subcomponents such as piping, intake screens, pumps, valves, etc. was appropriately evaluated by tests or other equivalent methods to ensure availability and accessibility to the in-plant cooling water systems.

The inspectors determined whether the licensee's inspection of the UHS was thorough and of sufficient depth to identify degradation of the shoreline protection or loss of structural integrity. This included determination whether vegetation present along the slopes was trimmed, maintained and was not adversely impacted the embankment. In addition, the inspectors determined whether the licensee ensured sufficient reservoir capacity by trending and removing debris or sediment buildup in the UHS.

The inspectors performed a system walkdown on service water and closed cooling water systems, which included the CCW Surge tank, the CCW Unit 1, 2 HXs, to determine whether the licensee's assessment on structural integrity was adequate. In addition, the inspectors reviewed available licensee's testing and inspections results, licensee's disposition of any active thru wall pipe leaks, and the history of thru wall pipe leakage to identify any adverse trends since the last NRC inspection. For closed cooling water systems, the inspectors reviewed operating logs or interviewed operators or system engineer, to identify adverse make-up trends that could be indicative of excessive leakage out of the closed system. For buried or inaccessible piping, the inspectors reviewed the licensee's pipe testing, inspection, or monitoring program to determine whether structural integrity was ensured and that any leakage or degradation was appropriately identified and dispositioned by the licensee.

The inspector performed a system walkdown of the service water intake structure to determine whether the licensee's assessment on structural integrity and component functionality was adequate and that the licensee ensured proper functioning of traveling screens and strainers, and structural integrity of component mounts. In addition, the inspectors determined whether service water pump bay silt accumulation was monitored, trended, and maintained at an acceptable level by the licensee, and that water level instruments were functional and routinely monitored. The inspectors also determined whether the licensee's ability to ensure functionality during adverse weather conditions was adequate.

In addition, the inspectors reviewed condition reports related to the heat exchangers and heat sink performance issues to determine whether the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions. The documents that were reviewed are included in the Attachment to this report.

These inspection activities constituted three heat sink inspection samples as defined in IP 71111.07.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Training Program

Resident Inspector Quarterly Review

a. Inspection Scope

On September 22, 2010, the inspectors observed and assessed licensed operator actions during a simulated steam generator tube rupture and subsequent reactor trip training exercise. The inspectors also reviewed simulator physical fidelity and specifically evaluated the following attributes related to the operating crews' performance:

- Clarity and formality of communication
- Ability to take timely action to safely control the unit
- Prioritization, interpretation, and verification of alarms
- Correct use and implementation of off-normal and emergency operation procedures; and emergency plan implementing procedures
- Control board operation and manipulation, including high-risk operator actions
- Oversight and direction provided by supervision, including ability to identify and implement appropriate technical specification actions, regulatory reporting requirements, and emergency plan classification and notification
- Crew overall performance and interactions
- Effectiveness of the post-evaluation critique

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed system performance data and associated CRs for the two systems listed below 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 ADM-17-08, Implementation of 10CFR50.65, Maintenance Rule. The inspectors' efforts focused

on maintenance rule scoping, characterization of maintenance problems and failed components, risk significance, determination of a(1) and a(2) 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 also attended applicable expert panel meetings and reviewed associated system health reports. The inspectors verified that equipment problems were being identified and entered into the licensee's CAP.

- Unit 1 4160 Volt System
- Unit 2 4160 Volt System

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors completed in-office reviews, plant walkdowns, and control room inspections of the licensee's risk assessment of six 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 licensee procedure ADM-17.16, Implementation of the Configuration Risk Management Program. The inspectors also reviewed the effectiveness of the licensee's contingency actions to mitigate increased risk resulting from the degraded equipment. The inspectors interviewed responsible Senior Reactor Operators on-shift, verified actual system configurations, and specifically evaluated results from the online risk monitor (OLRM) for the combinations of out of service (OOS) risk significant systems, structures, and components (SSCs) listed below:

- 2B CCW pump, 2A EDG, HVS-1A fan, and 2A charging pump OOS
- 1B CCW train, 1A circulating water pump, 1AB battery charger, 1A instrument air compressor (IAC), and 1B IAC OOS
- 2B CCW pump, 2C intake cooling water (ICW) pump, and 2A ECCS train OOS
- 2B CCW pump, 2B ICW pump, 2B CCW train OOS
- 1A/1B/1D IACs, 1A2 circulating water pump, 1A high pressure safety injection (HPSI) pump OOS
- 1A/1B IACs, 1A2 circulating water pump, 1A charging pump, 1A low pressure safety injection (LPSI) pump OOS

b. Findings

No findings were identified.

## 1R15 Operability Evaluations

### a. Inspection Scope

The inspectors reviewed the following seven condition report (CR) interim dispositions and operability determinations to ensure that operability was properly supported and the affected SSCs remained available to perform its safety function with no increase in risk. The inspectors reviewed the applicable UFSAR, and associated supporting documents and procedures, and interviewed plant personnel to assess the adequacy of the interim disposition.

- 2010-000033, Inadvertent Actuation of Auxiliary Feedwater Actuation Signal
- 2010-566450, 1B EDG Temperature Switch Failure
- 2010-568366, 1B CCW System Pipe Leak
- 2010-566703, Unit 1 Control Element Drive System Power Supply Alarm Locked-In
- 2010-572211, Unit 2 AFW System Pipe Corrosion
- 2010-574726, Backwash Outlet Valve 2-HCV-21-7B Not Fully Closing
- 2010-582406, 1B Shutdown Cooling Heat Exchanger Design Flow Exceeded

### b. Findings

No findings were identified.

## 1R17 Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

### a. Inspection Scope

The inspectors reviewed selected samples of evaluations to confirm that the licensee had appropriately considered the conditions under which changes to the facility, Updated Final Safety Analysis Report (UFSAR), or procedures may be made, and tests conducted, without prior NRC approval. The inspectors reviewed evaluations for seven changes and additional information, such as drawings, calculations, supporting analyses, the UFSAR, and Technical Specifications (TS) to confirm that the licensee had appropriately concluded that the changes could be accomplished without obtaining a license amendment. The seven evaluations reviewed are listed in the List of Documents Reviewed.

The inspectors reviewed 21 samples of changes for which the licensee had determined that evaluations were not required, to confirm that the licensee's conclusions to screen out these changes were correct and consistent with 10CFR50.59.

The inspectors evaluated engineering design change packages for ten material, component, and design based modifications to evaluate the modifications for adverse effects on system availability, reliability, and functional capability. The ten modifications and the affected Initiating Events and Mitigating Systems cornerstones are as follows:

- MEP 07-090, HPSI Pump Seal Modification
- MEP 06-189, Unit 2 Reactor Breaker Trip Replacement
- EP 05-129, Steam Generator 2A/2B Supports Modification

- MEP 08-013, Steam Generator 2A/2B Feedwater and Main Steam Piping Modifications
- ARP 07-028, Quality Safety Parameter Display System
- MEP 08-116, Refueling Water Tank Vortex Breaker Installation
- MEP 09-115, Unit 1 EDG Day Tank Level Switch Replacement
- MEP 07-094, Ultimate Heat Sink
- ARP 10-066, Addition of Manual Isolation Valves to the Air Supply for the 2B Air Receiver Tanks
- EP 04-059, Feedwater Control Replacement – Phase 2

Documents reviewed included procedures, engineering calculations, modification design and implementation packages, work orders, site drawings, corrective action documents, applicable sections of the living UFSAR, supporting analyses, Technical Specifications, and design basis information. The inspectors additionally reviewed test documentation to ensure adequacy in scope and conclusion. The inspectors review was also intended to verify that all appropriate details were incorporated in licensing and design basis documents and associated plant procedures.

b. Findings

No findings were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed the documentation for the temporary modification listed below. The inspectors reviewed the 10 CFR 50.59 screening and evaluation to verify that the modification had not affected system operability/availability. The inspectors reviewed associated plant drawings and UFSAR documents impacted by the modification and discussed the changes with licensee personnel to verify that the installations were consistent with the modification document. The inspectors walked down accessible portions of the modification to determine if they were installed in the field as described in the associated documents. Additionally, the inspectors verified that any problems associated with modifications were being identified and entered into the CAP.

- Temporary System Alteration TSA 1-10-024, CEDM Group #8 Voltage Transit Monitor Removal

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

For the five post maintenance tests (PMTs) 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 functional and operable. The inspectors verified that the requirements of licensee procedure ADM-78.01, Post Maintenance Testing, were incorporated into test requirements. The inspectors reviewed the following work orders (WO) and/or work requests (WR):

- WO 39018372, 2A LPSI Pump Suction Valve Operator Planned Maintenance
- WO 39005107, 2B HPSI Pump Injection Valves Planned Maintenance
- WO 36008386, 2AB to 2B 480 Volt Breaker Swap
- WO 39019887, 1A HPSI Discharge Valve V3656 Lube and Inspect
- WO 36020847, 1A HPSI Pump Motor 4160 Volt Switchgear Clean and Inspect

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors either reviewed or witnessed the following six surveillance tests to verify that the tests met the TS, the UFSAR, the licensee's procedural requirements, and demonstrated the systems were capable of performing their intended safety functions and their operational readiness. 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 perform its safety function. The tests reviewed included one in-service test (IST) surveillance. The inspectors verified that surveillance issues were documented in the CAP.

- OP-3200051, At Power Determination of Moderator Temperature Coefficient and Power Coefficient
- 2-OSP-69.25, Engineered Safeguards Feature Relay Test – Train B
- 1-OSP-25.07B, Unit 1 Control Room Ventilation Monthly Test – Train B
- 2-OP-0010125A, Surveillance Data Sheet 8B - Primary Sample Valve (IST)
- 1-OSP-09.01C, 1C AFW Pump Code Run
- 1-OSP-59.01B, 1B EDG Monthly Test

b. Findings

No findings were identified.

1EP6 Drill Evaluation

Emergency Preparedness Drill

a. Inspection Scope

On August 6, 2010, the inspectors observed licensed operators in the simulator, technical support center, and the operations support center during a drill of the site emergency response organization. The drill included a loss of coolant accident followed

by fuel failure. During the drill the inspectors assessed operator actions to verify that emergency classifications and notifications were made in accordance with licensee emergency plan implementing procedures (EIPs) and 10 CFR 50.72 requirements. The inspectors specifically reviewed the Site Area Emergency and General Emergency classifications and notifications were in accordance with licensee procedures EPIP-01, Classification of Emergencies and EPIP-02, Duties and Responsibilities of the Emergency Coordinator. The inspectors also observed whether (1) the initial activation of the emergency response centers was timely and as specified in the licensee's emergency plan; (2) the required TS actions for the drill scenario were reviewed to assess correct implementation; (3) the licensee identified critique items were discussed and reviewed to verify that drill weaknesses were identified and captured in the CAP. On September 1, 2010, the inspectors observed licensed operators in the simulator and other personnel in the technical support center during a drill of the site emergency response organization. The drill included a steam generator tube leak followed by a steam line rupture. During the drill the inspectors assessed operator actions to verify that emergency classifications and notifications were made in accordance with licensee emergency plan implementing procedures and 10 CFR 50.72 requirements. The inspectors specifically reviewed the Alert and Site Area Emergency classifications and notifications were in accordance with licensee procedures EPIP-01, Classification of Emergencies, and EPIP-02, Duties and Responsibilities of the Emergency Coordinator. The inspectors also observed whether (1) the initial activation of the emergency response centers was timely and as specified in the licensee's emergency plan; (2) the required TS actions for the drill scenario were reviewed to assess correct implementation; (3) the licensee identified critique items were discussed and reviewed to verify that drill weaknesses were identified and captured in the CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY (RS)

Cornerstones: Public Radiation Safety (PS)

2RS06 Radioactive Gaseous and Liquid Effluent Treatment

a. Inspection Scope:

Event and Effluent Program Reviews: The inspectors reviewed the 2008 and 2009 Annual Radiological Effluent Release Report (ARERR) documents for consistency with the requirements in the Offsite Dose Calculation Manual (ODCM) and Technical Specification (TS) details. Routine and abnormal effluent release results and reports, as applicable, were reviewed and discussed with responsible licensee representatives. Status of the radioactive gaseous and liquid effluent processing and monitoring equipment and activities, and changes thereto, as applicable, as described in the Updated Final Safety Analysis Report (UFSAR) and current ODCM were discussed with responsible staff.

Equipment Walk downs: The inspectors walked-down and discussed selected components of Unit 2 gaseous processing systems, and selected U1 and U2 liquid waste processing and discharge systems to ascertain material condition, configuration

and alignment. To the extent practical, the inspectors observed and evaluated the material condition of in-place liquid waste processing equipment for indications of degradation or leakage that could constitute a possible release pathway to the environment. The walk-downs conducted with senior operations personnel included discussion and evaluation of observed leaks, degraded material condition, status of in-place plant work order tags, and configuration control associated with the U2 chemical drain tank and pumps, laundry tank, gas decay tanks, and the U1 waste monitor tanks, and associated piping, valves.

#### Instrumentation and Equipment

The inspectors discussed and verified sample line and system flow rates for the Unit 1 Plant Vent and Unit 1 Fuel Handling Building exhaust systems. For the subject systems, sampling and processing of weekly effluent release permits were observed and discussed with responsible chemistry staff. In addition, the inspectors reviewed and discussed the most recent surveillance test results for the Unit 1 and Unit 2 Emergency Core Cooling System (ECCS) Engineered Safety Feature (ESF) (2 HVE-9) and Unit 2 Main Plant Vent (HVE-10) ventilation and filtration equipment. In addition, the inspectors discussed and reviewed status of corrective actions associated with material condition issues associated with the Unit 1 waste ion exchanges initiated in 2006.

Effluents: The inspectors reviewed two gaseous release permits for continuous releases from the U1 Plant Vent, Unit 1 Fuel Handling Building, and , for a previous abnormal monitored gaseous release from the Unit 2 RAB. The reviews included review and discussion of selected dose calculation summaries. Release quantities and dose impacts were reviewed and discussed. The inspectors reviewed 10 CFR 61 analysis data for expected nuclide distributions used quantify effluents, the treatment of hard to detect nuclides, determining appropriate calibration nuclides for instruments and whole body counting libraries. The inspectors followed up on abnormal releases from the June 25, 2009 from the '2B' Gas Decay tank. The inspectors reviewed the contributions to public dose of the abnormal releases.

Ground Water Protection: The licensee's implementation of the Industry Ground Water Protection Initiative was reviewed for changes since the last inspection conducted in April 2010. This review included evaluation of onsite monitoring results for installed groundwater monitoring wells, vaults, manholes, and onsite ponds. In addition, the inspectors directly observed and discussed surveillance activities associated with the U2 SFP leak detection system.

Problem Identification and Resolution: The inspectors reviewed selected Corrective Action Program (CAP) Condition Report (CR) documents in the areas of gaseous and liquid effluent processing and release activities. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with Performance Improvement (PI) – St Lucie (SL) Procedure – 204, Condition Identification and Screening Process, Revision (Rev. 0) and PI-SL-205, Condition Evaluation and Corrective Action, Rev. 1. The inspectors also discussed the scope of the licensee's internal audit program and reviewed recent assessment results. Documents reviewed are listed in section 2RS06 in the Attachment.

Effluent process and monitoring activities were evaluated against details and requirements documented in the Updated Final Safety Analysis Report (UFSAR)

Sections 11 and 12; Technical Specification (TS) Sections 3/4.7.8, Limiting Conditions for Operation, 6.8.1 Procedures and Programs, 6.8.4 (f), Radioactive Effluents Control Program, 6.8.4 (k), Ventilation Filter Test Program, and 6.9.1, Routine Reports; ODCM; 10 Code of Federal Regulations (CFR) Part 20; 10 CFR, Appendix I to Part 50; and approved licensee procedures. Records reviewed are listed in Sections 2RS6 and 2RS7. In addition, ODCM and UFSAR changes since the last onsite inspection were reviewed against the guidance in NUREG-1301 and Regulatory Guide (RG) 1.109, RG 1.21, and RG 4.1.

The inspectors completed all of the specified line-item samples detailed in IP 71124.06.

b. Findings

No findings were identified.

2RS07 Radiological Environmental Monitoring Program (REMP)

a. Inspection Scope

REMP Status and Results: The inspectors reviewed and discussed changes to the Offsite Dose Calculation Manual (ODCM) and results presented in the Annual Environmental Radiological Environmental Operating Report (AREOR) documents issued for calendar year (CY) 2008 and CY 2009. REMP contract laboratory cross-check program results, and current procedural guidance for offsite collection, processing and analysis of airborne particulate and iodine, broadleaf vegetation, and surface water samples were reviewed and discussed. The AREOR environmental measurement results were reviewed for consistency with licensee effluent data and evaluated for radionuclide concentration trends. The inspectors reviewed and discussed detection level sensitivity requirements and results for selected environmental media analyzed by the offsite environmental laboratory.

Equipment Walk-down: The inspectors observed implementation of selected REMP monitoring and sample collection activities for atmospheric and broadleaf vegetation samples as specified in the current ODCM and applicable procedures. The inspectors observed equipment material condition and verified operability, including verification of flow rates and total sample volume results for the weekly airborne particulate filter and iodine cartridge change-outs at four atmospheric sampling stations. In addition, the inspectors observed and discussed broadleaf vegetation sampling for selected stations. Select surface water locations were verified and sample collection observed. Thermoluminescent dosimeter material condition and placement were verified by direct verification at select ODCM locations. Land use census results, actions for missed samples including compensatory measures, sediment sample collection/processing activities, and availability of replacement equipment were discussed with environmental technicians and knowledgeable licensee staff. In addition, sample pump calibration and maintenance surveillance records for the installed environmental at the air sampling stations were reviewed.

Procedural guidance, program implementation, quantitative analysis sensitivities, and environmental monitoring results were reviewed against 10 CFR Part 20; Appendix I to 10 CFR Part 50; TS Sections 6.8.1, Procedures and Programs, 6.8.4 (g) Radiological Environmental Monitoring Program, 6.9.1, Routine Reports, 6.9.1.8, the Annual

Radiological Environmental Operating Report; ODCM, Rev. 32; RG 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operation) - Effluent Streams and the Environment; and the Branch Technical Position, An Acceptable Radiological Environmental Monitoring Program - 1979. Documents reviewed are listed in Section 2RS07 of the report Attachment.

Meteorological Monitoring Program: The inspectors conducted a tour of the meteorological tower and observed local data collection equipment readouts. The inspectors observed the physical condition of the tower and associated instruments and discussed equipment operability, maintenance history, and backup power supplies with responsible licensee staff. The inspectors evaluated transmission of locally generated meteorological data from the meteorological tower to the main control room operators. For the meteorological measurements of wind speed, wind direction, and temperature, the inspectors reviewed applicable tower instrumentation calibration records and evaluated meteorological measurement data recovery for CY 2008 and CY 2009.

Licensee procedures and activities related to meteorological monitoring were evaluated against: ODCM; UFSAR Section 2; RG 1.23, Meteorological Monitoring Programs For Nuclear Power Plants, and ANSI/ANS-2.5-1984, Standard for Determining Meteorological Information at Nuclear Power Sites. Documents reviewed are listed in Section 2RS07 of the Attachment.

Problem Identification and Resolution: The inspectors reviewed selected CAP CR documents in the areas of environmental and meteorological monitoring. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with PI-SL – 204, Condition Identification and Screening Process, Rev. 0) and PI-SL-205, Condition Evaluation and Corrective Action, Rev. 1.

The inspectors completed all of the specified line-item samples detailed in IP 71124.07.

b. Findings

No findings were identified.

2RS08 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

a. Inspection Scope

Waste Processing and Characterization: During inspector walk-downs, accessible sections of the liquid and solid radioactive waste (radwaste) processing systems were assessed for material condition and conformance with system design diagrams. Inspected equipment included radwaste storage tanks; resin transfer piping, resin and filter packaging components; and unused evaporator equipment. The inspectors discussed component function, processing system changes, and radwaste program implementation with licensee staff. In addition, the inspectors completed a tabletop walkthrough of a spent resin storage tank transfer to a High Integrity Container (HIC) with licensee staff, including system walkdown and setup of radiological controls (e.g. high radiation boundary postings, survey instrumentation placement, and contamination control measures.

The 2009 Effluent Report and radionuclide characterizations from 2008 - 2010 for each major waste stream were reviewed and discussed with radwaste staff. For primary resin, reactor coolant system filters, and Dry Active Waste (DAW) the inspectors evaluated analyses for hard-to-detect nuclides, reviewed the use of scaling factors, and examined quality assurance (QA) comparison results between licensee waste stream characterizations and outside laboratory data. Waste stream mixing and concentration averaging methodology for resins and filters was evaluated and discussed with radwaste staff. The inspectors also reviewed the licensee's procedural guidance for monitoring changes in waste stream isotopic mixtures.

Radwaste processing activities and equipment configuration were reviewed for compliance with the licensee's Process Control Program (PCP) and FSAR, Chapter 11. Waste stream characterization analyses were reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 61, and guidance provided in the Branch Technical Position on Waste Classification (1983). Reviewed documents are listed in Section 2RS8 of the Attachment.

Radioactive Material Storage: During walk-downs of indoor and outdoor radioactive material storage areas, the inspectors observed the physical condition and labeling of storage containers and the posting of Radioactive Material Areas. The inspectors also reviewed licensee procedural guidance for storage and monitoring of radioactive material.

Radioactive material and waste storage activities were reviewed against the requirements of 10 CFR Part 20. Reviewed documents are listed in Section 2RS8 of the Attachment.

Transportation: The inspectors directly evaluated licensee actions for a recently prepared spent resin container. The inspectors noted package markings and labeling, performed independent dose rate measurements, and interviewed shipping technicians regarding their knowledge of Department of Transportation (DOT) regulations.

Selected shipping records were reviewed for consistency with licensee procedures and compliance with NRC and DOT regulations. The inspectors reviewed emergency response information, DOT shipping package classification, waste classification, radiation survey results, and evaluated whether receiving licensees were authorized to accept the packages. Licensee procedures for opening and closing Type A shipping containers were compared to manufacturer requirements. In addition, training records for selected individuals currently qualified to ship radioactive material were reviewed.

Transportation program implementation was reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 71, 49 CFR Parts 172-178, as well as the guidance provided in NUREG-1608. Training activities were assessed against 49 CFR Part 172 Subpart H. Documents reviewed during the inspection are listed in Section 2RS8 of the report Attachment.

Problem Identification and Resolution: The inspectors reviewed NCRs in the area of radwaste/shipping. The inspectors evaluated the licensee's ability to identify and resolve the issues in accordance with procedure PI-AL-204, Condition Evaluation and Identification and Screening Process, Rev. 0 and PI-SL-205, Condition evaluation and Corrective Action, Rev. 1. The inspectors also evaluated the scope of the licensee's

internal audit program and reviewed recent assessment results. Licensee CAP documents reviewed are listed in Section 2RS8 of the Attachment.

The inspectors completed one sample as required by inspection procedure 71124.08.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

.1 Initiating Events and Mitigating Systems Cornerstones

a. Inspection Scope

The inspectors checked licensee submittals for the performance indicators (PIs) listed below for the period July 1, 2009, through June 30, 2010, to verify the accuracy of the PI data reported during that period. Performance indicator definitions and guidance contained in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, and licensee procedures ADM-25.02, NRC Performance Indicators, and NAP-206, NRC Performance Indicators, were used to check the reporting for each data element. The inspectors checked operator logs, plant status reports, condition reports, system health reports, and PI data sheets to verify that the licensee had identified the required data, as applicable. The inspectors interviewed licensee personnel associated with performance indicator data collection, evaluation, and distribution.

- Unit 1 Safety System Functional Failures
- Unit 2 Safety System Functional Failures

b. Findings

No findings were identified.

.2 Occupational and Public Radiation Safety Cornerstones

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 NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 6.

Occupational Radiation Safety Cornerstone: The inspectors reviewed, evaluated, and discussed PI data collected from January 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 High Radiation Area (HRA), Very High Radiation Area (VHRA) or unplanned exposures, resulting in TS or 10 CFR 20 non-conformances, had occurred during the review period. The review included evaluation of selected personnel contamination event data, internal dose assessment

results, and Electronic Personnel Dosimeter (EPD) alarms for cumulative doses and/or dose rates exceeding established set-points. In addition, training provided to junior and senior health physics technicians responsible for monitoring and evaluating radiation protection activities were reviewed and discussed. 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 January 1, 2009, through June 30, 2010. For the assessment period, the inspectors reviewed cumulative and projected doses to the public and CR documents related to Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual issues. The inspectors also reviewed licensee training and performance results of associated junior and senior HPT actions for evaluating the release of potentially contaminated material from onsite radiologically controlled area (RCA) locations. Documents reviewed are listed in section 4OA1 of the Attachment.

The inspectors completed all of the specified line-item samples associated with the Occupational and Public Radiation Protection Cornerstones detailed in IP 71151.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems

.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 CAP. This review was accomplished by reviewing daily printed summaries of CRs and by reviewing the licensee's electronic CR database. Additionally, reactor coolant system unidentified leakage was checked on a daily basis to verify no substantive or unexplained changes.

b. Findings

No findings were identified.

.2 Annual Sample: Unit 2 Pressurizer Code Safeties Have Installation Alignment Concerns

a. Inspection Scope

The inspectors selected CR 2007-39710, "Code Safeties Have Installation Alignment Concerns," for a more in-depth review of the circumstances that led up to the condition and the corrective actions that followed. The event described in this condition report is also discussed in more detail in Section 4OA3 of this report. The inspectors reviewed the licensee's evaluation of the event and the associated corrective actions. The inspectors interviewed plant personnel and evaluated the licensee's administration of

this selected condition report in accordance with their CAP as specified in licensee procedures PI-AA-204, "Condition Identification and Screening Process," and PI-AA-205, "Condition Evaluation and Corrective Actions."

b. Findings

Introduction: A self-revealing Green Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, Instructions, Procedures, and Drawings, was identified regarding the licensee's failure to provide adequate guidance in a safety-related maintenance procedure to ensure pressurizer safety valves (PSV) were properly aligned during installation to minimize potential leakage and failure to ensure that the pressurizer nozzle insulation was installed. Following a manual reactor trip due to a leaking PSV, the licensee performed a root cause evaluation to determine the cause(s) of repeated leaking PSVs during reactor coolant system (RCS) heatup. The licensee determined that several procedural deficiencies existed that contributed to PSV leakage. Specifically, maintenance procedure 0-MMP-01.09, Pressurizer Safety Valve Removal, Testing, and Installation, did not specify acceptance criteria during alignment of the inlet and outlet flanges of the PSVs to associated piping. In addition, the procedure did not provide instructions to reinstall associated pressurizer nozzle insulation. The maintenance procedure was inadequate because it did not require further action if the PSV flange face alignment measurements were excessive.

Description: On September 21, 2009, during a reactor startup in Mode 2 following a forced outage, the reactor operators observed one of three PSV tailpipe temperatures increase coincident with a quench tank pressure increase after RCS pressure and temperature had stabilized for a few hours. The unit supervisor directed a manual reactor trip prior to reactor criticality having been achieved. A subsequent root cause evaluation determined two root causes and several contributing causes. Most notably, during previous installation of pressurizer vessel nozzles as part of the Alloy 600 replacement project, maintenance personnel failed to ensure proper alignment when welding the replacement nozzles to the pressurizer. This caused PSV flange face misalignment and mechanical loading on the PSV body and the associated valve discharge piping. The excessive loading on the body of the safety valves due to this misalignment caused leakage of gas past the seating surfaces of the nozzle and disc insert. The pressurizer nozzle replacement Work Order (WO) requirements for fit up did not specify gap or rotational alignment requirements for PSV flange faces. The WO referred to safety-related maintenance procedure 0-MMP-01.09, Pressurizer Safety Valve Removal, Testing, and Installation, which required that the gap and alignment of the PSV flange flanges be documented, but the procedure did not provide any alignment acceptance criteria. In addition, this procedure did not ensure that pressurizer nozzle insulation was reinstalled, which the licensee determined to be critical for valve thermal stability during RCS heatup. The licensee resolved the condition by modifying the discharge piping to allow adequate flange face alignment. The root cause report also identified that in the past, multiple CRs had been written identifying PSV seat leakage, but the CRs were either coded as correct only or apparent cause. Thus, a rigorous analysis to address a long standing equipment problem was not performed.

Analysis: The inspectors determined that the licensee's failure to provide adequate guidance in a safety-related maintenance procedure that resulted in the misalignment of a PSV that eventually leaked and required a manual reactor trip, was a performance deficiency. The finding was more than minor because it affected the Initiating Events

cornerstone attribute of procedure quality and adversely affected the cornerstone objective to limit the likelihood of an event that upsets plant stability by resulting in a manual reactor trip. The finding was evaluated in accordance with IMC 0609, Attachment 4, and determined to be of very low safety significance (Green) per the SDP Phase 1 determination because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding has a cross-cutting aspect in the area of problem identification and resolution because the licensee did not thoroughly evaluate and take appropriate corrective actions to address the long-standing safety issue of repetitive leaking pressurizer safety valves. (P.1.c )

Enforcement: 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, "Procedures shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Contrary to the above, safety-related maintenance procedure 0-MMP-01.09, Pressurizer Safety Valve Removal, Testing, and Installation, did not provide any flange face alignment acceptance criteria when aligning the inlet and outlet flanges of the pressurizer safety valve to the associated piping, nor did the procedure ensure installation of pressurizer safety valve nozzle insulation. Consequently, during a reactor startup, a pressurizer safety valve leaked-by its mechanical seat, causing the operators to manually trip the reactor and reduce RCS pressure to stop the leak. Because this violation was of very low safety significance and was entered into the CAP as CR 2009-21705, this violation is being treated as an NCV, consistent with the NRC Enforcement Policy: NCV 05000389/2010004-02, Inadequate Procedure for Installation of Pressurizer Safety Valves.

- .3 Annual Sample: Operator Work Around Record 2-007-6, Annunciator N-46, Reactor Cavity Leakage High Alarm Failure.

a. Inspection Scope

The inspectors selected CR 2010-4322, "Failure of Annunciator N-46 Has Been Declared an Operator Work Around," for a more in-depth review of the circumstances that led up to the condition and the corrective actions that followed.

The inspectors reviewed the licensee's evaluation of the event and the associated corrective actions. The inspectors interviewed plant personnel and evaluated the licensee's administration of this selected condition report in accordance with their CAP as specified in licensee procedures PI-AA-204, "Condition Identification and Screening Process," and PI-AA-205, "Condition Evaluation and Corrective Actions."

b. Findings

No findings were identified.

4OA3 Event Follow-up

- .1 (Closed) LER 05000335/2010-004-00, Operation in a Condition Prohibited by Technical Specifications (TS) for the Shield Building Ventilation System (SBVS)

On April 15, 2010, the licensee identified that both trains of Unit 1 SBVS were inoperable longer than the allowed technical specification limiting condition of operation during the performance of its periodic surveillance test 1-SME-25.-09, "Unit 1 Shield Building Ventilation System 18 Month Heater Performance Test," performed on July 9, 2007. The licensee determined that the condition was prohibited by technical specifications and was the result of an inadequate test procedure lacking administrative controls while performing the test. Additional corrective actions, completed or planned, included revising the associated surveillance test procedure. This finding constitutes violations of very low safety significance and the enforcement aspects of this finding are discussed in Section 4OA7 of this report. This LER is closed.

.2 (Closed) LER 05000389/2009-004-00, Unit 2 Unplanned Manual Reactor Trip During Reactor Startup

On September 21, 2009, the licensee was performing a plant startup following a forced outage to repair the 2B2 reactor coolant pump. Unit 2 was entering Mode 2 when control room indications showed pressurizer safety valve (PSV) leakage, prompting the Operators to manually trip the reactor and reduce reactor coolant system pressure to stop the leakage. The licensee determined that PSV seat leakage resulted mainly from a combination of misalignment of the valve flange faces and the valve not achieving thermal stability due missing nozzle insulation. Corrective actions included replacement the affected PSV, revision of associated procedures, and reconfiguration of the PSV discharge piping. This finding constitutes a violation of very low safety significance and the enforcement aspects of this finding are discussed in Section 4OA2 of this report. This LER is closed.

.3 Unit 1 Unplanned Downpower to 80 Percent Reactor Power – July 13

a. Inspection Scope

On July 13, 2010, at 0046 hours, St. Lucie lost 1 of their 4 running Circulating Water Pumps (CWP). The 1A1 CWP breaker tripped on an overload condition from overheating and resultant fire in the motor windings. The operators initiated a rapid downpower to 80 percent reactor power to ensure adequate cooling of the turbine main condenser with just 3 of 4 CWPs operating. The inspector responded to the site following the event to obtain an understanding of plant status, equipment/personnel performance, and plant management decisions in making an informed evaluation of plant conditions. The inspector interviewed control room operators and plant operators to determine the extent of the fire in the pump motor. The inspector determined that the operators responded to the tripped pump and found smoke and light flames emitting from the pump motor vents. The inspector found the fire was extinguished in just a few minutes without the need to enter an Unusual Event emergency action level per licensee procedure EPIP-01, "Classification of Emergencies."

b. Findings

No findings were identified.

#### 4OA5 Other Activities

##### .1 Quarterly Resident Inspector Observations of Security Personnel and Activities

###### a. Inspection Scope

During the inspection period the inspectors conducted observations of security force personnel activities to ensure that the activities were consistent with the 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 inspectors' normal plant status reviews and inspection activities.

###### b. Findings

No findings were identified.

##### .2 (Closed) URI 05000335, 389/2009006-04: Inadequate Procedure for Restoration of Non-Essential CCW Flow Following a SIAS

###### a. Inspection Scope

Inspectors reviewed the licensee's evaluation to assess the impact on essential Component Cooling Water (CCW) flow if non-essential CCW was restored to allow cooling of the Reactor Coolant Pumps (RCPs) and the steam generator sample coolers.

###### b. Findings

Introduction: The inspectors identified a finding of very low safety significance (Green) involving a violation of Technical Specification 6.8.1, which requires that written procedures be established, implemented, and maintained covering the activities in NRC Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)", Appendix A, Section 6, for the licensee's failure to provide adequate procedures for restoration of non-essential CCW following a Safety Injection Actuation Signal (SIAS). Specifically, emergency operating procedure, 1-EOP-99, Appendix A, "Sampling Steam Generators" and Appendix J, "Restoration of CCW and CBO to the RCPs", Rev. 38, did not address the potential adverse impact on essential cooling flow required to mitigate a LOCA when the non-essential CCW was restored.

Description: Emergency Operating Procedure 1-EOP-99, Appendix A and J, step 2, directed the operator to restore non-essential CCW if the related isolation valve closed due to the SIAS. Additionally, an input to isolate non-essential CCW was provided by a low CCW surge tank level signal. The purpose of both signals was to assure adequate cooling flow was provided to essential loads for design basis accident conditions.

The station CCW flow balance procedure (1-NOP-14.02, Rev. 20, Appendix I) positioned system flow balance valves to establish cooling flow to the essential components based on assumptions in the LOCA Containment Analysis, JPN-PSL-SENP-93-001, Rev. 0. When establishing the essential cooling flow balance per this procedure, the non-

essential portion of the CCW system was isolated. Therefore, adequate essential cooling flow was assured only when the non-essential portion of the system was isolated. The EOP assured that CCW train separation was maintained when the non-essential header was restored but did not address that the essential cooling load flow would be diverted with the potential adverse impact on cooling capability for the essential components, primarily the containment coolers used in containment pressure control, the shutdown heat exchanger used for decay heat removal, and cooling for emergency core cooling system (ECCS) pumps. The team concluded that the procedure action to restore non-essential CCW flow after an SIAS signal adversely impacted the licensee's capability to assure adequate cooling of essential components following a LOCA induced SIAS. In particular, this concern applied to the circumstance of only one train of CCW being available during LOCA, assuming a single failure event resulted in the loss of the redundant train.

Following the identification by the 2009 CDBI inspection team, the licensee initiated CR 2009-22623 to assess this issue. The immediate compensatory action was to issue a standing order to the operators related to Emergency Operating Procedure 1, 2-EOP-99 directing them to not restore the non-essential CCW when responding to a SIAS when only one CCW train was available. Additionally, the licensee initiated an evaluation to assess the impact on essential CCW flow if non-essential CCW was restored to allow cooling of the RCPs and the steam generator sample coolers. The licensee's evaluation concluded that the long-term containment pressure and temperature response was not affected by realignment of non-essential CCW. However, for Unit 2, the licensee's evaluation concluded that control room cooling was adversely affected by realignment of non-essential CCW due to limitations imposed on the Unit 2 control room air conditioning system.

Analysis: The licensee's failure to provide adequate procedures for restoration of non-essential CCW header following a SIAS is a performance deficiency. The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening", because it was associated with the procedure quality attribute of the mitigating systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and operability of the control room air conditioning system to perform its intended safety function during a design basis event. 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." The inspectors determined that the finding was of very low safety significance because it did not result in an actual loss of operability to the component. This finding was reviewed for cross-cutting aspects and none were identified.

Enforcement: Technical Specification 6.8.1 states that written procedures shall be established, implemented, and maintained covering the activities in NRC Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 2, Appendix A, Section 6. Contrary to the above, the licensee failed to provide adequate procedures for restoration of non-essential CCW header following a SIAS. Because the licensee entered the issue into their corrective action program as CR 2009-22623 and the finding is of very low safety significance (Green), this violation is being treated as an NCV, consistent with the NRC Enforcement Policy: NCV 05000335, 389/2010004-03, Inadequate Procedure for Restoration of Non-Essential CCW Flow Following a SIAS. Therefore, this URI 05000335, 389/2009006-04 is considered closed.

.3 (Closed) URI 05000335, 389/2009006-02: Adequacy of Performance Monitoring of the IA Compressor Emergency Cooling System.

During the 2009 NRC CDBI an unresolved item (URI) was identified related to the performance monitoring of the IA emergency cooling system. This failure to monitor the performance of the IA emergency cooling system was a performance deficiency. The system was identified to be in the scope of the maintenance rule (MR), 10 CFR 50.65(a)(1), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants", because it is included in the St. Lucie emergency operating procedures. The licensee immediately documented this issue in CR 2009-22766 and committed to testing per procedure 1-NOP-18.41, "Instrument Air System Operation". On December 9, 2009 the licensee conducted the load testing on the 1A and 1B instrument air compressors satisfactorily. The team reviewed the test results and determined that the results provided reasonable assurance that the IA emergency cooling system was capable of fulfilling its intended function. Therefore, this failure to comply with 10 CFR 50.65(a)(1), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants" constitutes a violation of minor significance that is not subject to enforcement action in accordance with the NRC's Enforcement Policy. Therefore, URI 05000335, 389/2009006-02 is considered closed.

4OA6 Meetings

Exit Meeting Summary

.1 Triennial Heat Sink Inspection

On July 16, the inspector presented the inspection results to Mr. Donald Cecchett and members of the St Lucie licensee staff. The inspector confirmed with the licensee that no proprietary information was discussed during the inspection.

.2 Modifications Inspection

On August 12, an interim exit with licensee management and staff was conducted, to discuss the results of this inspection. Proprietary information reviewed by the team as part of routine inspection activities was returned to the licensee in accordance with prescribed controls.

.3 Radiation Protection Inspection

On September 3, 2010, the inspectors discussed results of the onsite radiation protection inspection with Mr. R. Anderson, Site Vice President, and other responsible staff. The inspectors noted that proprietary information reviewed during the course of the inspection would not be included in the documented report. No findings of significance were identified.

.4 Resident Inspection

On October 14, 2010, the resident inspectors presented the inspection results to Mr. Anderson and other members of licensee management. 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.

#### 4OA7 Licensee Identified Violations

The following violations of very low safety significance (Green) or Severity Level IV were identified by the licensee and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy, for being dispositioned as a NCV.

- 10 CFR 50.73, Licensee Event Report System, requires, in part that holders of operating licenses shall submit a Licensee Event Report (LER) within 60 days after discovery of any event such as those described in sections (a)(2)(i)(B), operation prohibited by technical specifications (TS) and (a)(2)(v)(D), a condition that could have prevented the fulfillment a system safety function to mitigate the consequences of an accident. Contrary to this requirement, the licensee's discovery of the Unit 1 Shield Building Ventilation System not meeting TS and not being able to fulfill its safety function was not reported within 60 days. The licensee submitted LER 2010-004-00 on July 16, 2010, exceeding the within 60 day requirement. The inspectors reviewed the issue in accordance with Inspection Manual Chapter 0612 and the NRC Enforcement Manual and determined that traditional enforcement was applicable to the issue because the NRC's regulatory ability was affected. Specifically, the NRC relies on the licensee to identify and report conditions or events meeting the criteria specified in the regulations to perform its regulatory function. The finding was reviewed by NRC management and because the violation was determined to be of very low safety significance, was not repetitive or willful, and was entered into the CAP as condition report 2010-16023, this violation is being treated as a NCV consistent with the NRC Enforcement Policy.
- TS 3.0.3 requires that when a limiting condition of operation (LCO) is not met, except as provided in the associated action requirements, within 1 hour action shall be initiated to place the unit in a mode which the specification does not apply. Contrary to this, on July 9, 2007, both trains of shield building ventilation were not operable, and actions were not taken to place the unit in the required mode of operation. This was identified in the licensee's CAP as condition report 2010-9892 and Unit 1 LER 02010-004-00. The finding is of very low safety significance because it does not represent an open pathway in the physical integrity of the reactor containment.
- TS 6.12.1 requires, in part, that each area with radiation levels greater than 100 millirem per hour (mrem/hr) but less than 1000 mrem/hr measured at a distance of 30 cm to be barricaded and conspicuously posted as a high radiation area (HRA) and to be controlled by requiring issuance of Radiation Work Permit. Contrary to this, on August 11, 2010, a Radiation Protection Technician identified modifications to scaffolding in the Unit 2 Reactor Auxiliary Building Pipe Penetration Room which provided direct access to the overhead letdown line. Subsequent radiological surveys conducted on the top level of the scaffolding measured general area (30 cm from the letdown line) dose rates ranging from 110 - 140 mrem/hr. Access to the overhead area was not barricaded nor posted as a HRA. Immediate corrective actions taken upon discovery included providing appropriate postings and installation of a ladder lock device. This event is documented in CR 00572977. Although this event involved failure to maintain proper controls to a HRA, this finding is of very low safety significance because there was no evidence of unauthorized

worker entry into the actual HRA locations nor any unexpected radiation exposures to licensee personnel working near the specific HRA location.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

### Licensee personnel:

C. Ali, Licensing Engineer  
R. Anderson, Site Vice President  
P. Bailey, Environmental and Emergency Preparedness Specialist (Corporate)  
E. Belizar, Projects Manager  
D. Calabrese, Emergency Preparedness Manager  
D. Cecchett, Licensing Engineer  
O. Rodriguez, Systems Engineer  
B. Neff, Design Engineer  
R. Flores, Structural Engineer  
J. Connor, Systems and Component Engineering Manager  
J. Hamm, Site Engineering Director  
B. Hughes, Plant General Manager  
A. Day, Chemistry Manager  
M. Haskins, Maintenance Manager  
S. Duston, Training Manager  
K. Frehafer, Licensing Engineer  
J. Heinold, Chemistry Technical Supervisor  
R. Lingle, Operations Manager  
D. Huey, Work Control Manager  
T. Horton, Assistant Operations Manger  
J. Kramer, Site Safety Manager  
R. McDaniel, Fire Protection Supervisor  
C. Martin, Radiation Protection Manager  
M. Moore, Performance Improvement Department Manager  
R. Filapek, Design Engineering Manager  
M. Snyder, Site Quality Assurance Manager  
G. Swider, Engineering Manager - Programs  
T. Young, Security Manager

### NRC personnel:

S. Ninh, Senior Project Engineer, Division of Reactor Projects

## LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

### Opened and Closed

05000389/2010004-01	NCV	Failure to Properly Identify and Correct a Condition Adverse to Quality (Section 1RO4.1)
05000389/2010004-02	NCV	Inadequate Procedure for Installation of PZ Safety Valves (Section 4OA2.2)
05000335, 389/2010004-03	NCV	Inadequate Procedure for Restoration of Non-Essential CCW Flow Following SIAS (Section 4OA5.2)

Closed

05000335, 389/2009006-04	URI	Inadequate Procedure for Restoration of Non-Essential CCW Flow Following SIAS (Section 1R21.3)
05000335, 389/2009006-02	URI	Adequacy of Performance Monitoring of the IAC Emergency Cooling System (Section 1R21.2.3)
05000335/2010-004-00	LER	Operation in a Condition Prohibited by Technical Specifications (TS) for the Shield Building Ventilation System (Section 4OA3.1)
05000389/2009-004-00	LER	Unit 2 Unplanned Manual Trip During Reactor Startup (Section 4OA3.2)

Discussed

NONE

## LIST OF DOCUMENTS REVIEWED

Section R07: Heat Sink Performance (HS) Activities

## Procedures

O-PMM-14.01, Component Cooling Water Heat Exchanger Clean/Repair, Rev 6, 2/9/10  
 O-GMM-12.01, High Pressure Hydro-blasting of Heat Exchanger Tubes and Associated Equipment, Rev 0, 12/15/08  
 O-NOP-14.02, Component Cooling Water System Operation, Rev 17A, 5/1/10  
 U1,2 CY-SL-104-1025, Chemistry Operating Procedure, Rev 0, 6/10/10  
 SL1-21, Unit 1B ICW Inspection, Aug 2007  
 SL2-18, Unit 2B ICW Inspection, June 2009  
 O-COP-05.04, Chemistry Department Surveillances and Parameters  
 1-ARP-01-S00, Control Room panels RTGB 106, Rev 16A, 6/14/10  
 P1-AA-205, Condition Evaluation and Corrective Action, Rev 8, 4/21/10  
 1-NOP-03.05, Shutdown Cooling, Rev 37, 5/1/10

## Corrective Action Documents

CR 2010-9275 Evaluation of SW Through Wall Leak Trend  
 CR 2010-1248, WO38011247 to Replace the 1ACCW Hx Hold Down Bolts Needs Civil Engg Review Given State of Corrosion, 2010  
 CR 2010-6247 TCV-14-4B, Temperature Control Valve for ICW Flow to CCW Hx, experienced an increase in stroke time during the last Surveillance, 2010  
 CR 2009-35113 Apparent Violation categorized as greater than green regarding CCW System Operability as a result of air intrusion, 2009  
 CR 98-1317, ICW Inlet Temperature, 1998  
 CR 02-2849, UHS barrier, 2002  
 CR 2009-19908, Develop Program to Inspect for macro-fouling of the St Lucie Unit 2 CCW Heat Exchangers during Future Inspections and Cleanings, 2009  
 CR 2009-8946, 2A1 Travelling Screen Gearbox Failure, 2009

CR 2010-3853, SL2-18 Intake Cooling Water (ICW) Outage Inspection Report - Submitted By PCA Engineering Inc., 2010

Others

System Health Reports for ICW, CCW, UHS, 1/10/2010-3/31/2010

Maintenance Rule A(1) Action Plans, 2008-2010

Calculation#PSL-ENG-SEMS-02-043, ICW Performance Curves, Rev 5, 7/10/2009

Calculation#PSL-ENG-SEMS-98-069, Water Hammer GL96-06, Rev 0, 10-26-98

Test Data Evaluation and Uncertainty Analysis for the CCW Heat Exchangers, , Proto-Power, 12- 2008

Walkdown Inspection Report for Zone 33, 2/5/10

Walkdown Inspection Report for Zone 12, 2/09

Walkdown Inspection report for Zone 42, 1/11/10

Work Order#38020055 01 CCW Heat Exchanger Clean/Inspect/ECT Testing, 4-5-2010

Work Order# 38027485 01 Intake canal UHS Sec 12 Embankment Fill

Work Order#36025794 07 Intake Canal AIA Bridge Bank Repairs

Work Order#32020429 Perform Corrective Actions, CR 2-2849

Dwg#2998-G-083, Sh 1,2, Flow Diagram of CCW System

Dwg#2998-G-058, Site Plan

Dwg#8770-G-712, Sh 1,2 , Emergency Water Cooling System Barrier Wall-Plan

Dwg#2998-G-089, Sh 1A, 2, 18, Flow Diagram – Turbine Cooling Water System

Dwg#8770-G-083, Sh 1,1A, 2, 18, Flow Diagram-Component Cooling Water System

Dwg#2998-G-082, 2, Steam Generator Blowdown Cooling System

IST Valve Evaluation Sheet, ADM-29.02, Rev 8, 8/17/09

DBD-ICW-1,2, Intake Cooling Water System Unit 1,2, Rev 3

DBD-SDC-1, Design basis for SDC, Rev 4

8770-2016 R4, Inspection Manual Cover Sheet, 1-13-06

Eddy Current Examination Final Results, Unit 1A SDS, Nov 14, 2005

ECT Personnel Certifications, SL1-22, SL2-18

Spec-M-081, CCW Heat Exchanger Tube Integrity Inspection, Rev 0, June 2002

SPEC-M-023, ICW System Inspection and Repair

LTR-OA-09-73, Westinghouse letter on CCW Flowrates Used in Containment Analysis for St Lucie, 9-2-2009

### Section 1R17: Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications

#### Modifications

MEP 07-090, HPSI Pump Seal Modification

MEP 06-189, PSL Unit 2 Reactor Breaker Trip Replacement

EP 05-129, Steam Generator 2A/2B Supports Modification

MEP 08-013, Steam Generator 2A/2B Feedwater and Main Steam Piping Mods

ARP 07-028, Quality Safety Parameter Display System

MEP 08-116, Refueling Water Tank Vortex Breaker Installation

MEP 09-115, Unit 1 EDG Day Tank Level Switch Replacement

MEP 07-094, Ultimate Heat Sink

ARP 10-066, Addition of Manual Isolation Valves to the Air Supply For The 2B Air Receiver Tanks

EP 04-059, Feedwater Control Replacement – Phase 2

Basis Documents

Technical Specifications, Current  
Updated Final Safety Analysis, Current

Procedures

ENG-QI 2.1, 10CFR50.59 Applicability/Screening/Evaluation, Revision 11  
ENG-QI 1.0, Design Control, Revision 27  
ENG-QI 1.1, Engineering Package (EP), Revision 26  
ENG-QI 1.2, Minor Engineering Package (MEP), Revision 23  
ENG-QI 1.14, maintenance Support Package (MSP), Revision 7  
ENG-QI 2.0, Engineering Evaluations, Revision 15  
ENG-QI 1.5, Calculations, Revision 11  
ENG-QI 1.7, Design Input/Verification, Revision 12  
ENG-QI 1.8, Design/Operability Reference Guide, Revision 27  
ENG-QI 4.2, Procurement Engineering Control, Revision 17

Evaluations

MEP 06187, 2C AFW Pump Overspeed Trip Circuit Modification, Revision 0, Unit 2  
PC/M 08130, PSL Unit 2 480 Volt Load Centers 2A1, 2B1 & 2AB K-Line Circuit Breaker Replacement, Revision 0  
PC/M 07028, QSPDS Power Supply Terminal Board, Revision 0  
Procurement Engineering Package FPLP-91-G055, Technical Evaluation Form, Revision 1  
1-SMI-70.01, Surveillance Maintenance Procedure, Revision 0 (1-1400176)  
MSP 05173, Re-powerPDIS-25-2A/2B room dedicated fuses, Revision 0  
PC/M 06189, Reactor Trip Circuit Breaker, Revision 0

Section 2RS06: Liquid and Gaseous EffluentsProcedures and Guidance Documents

Chemistry Operating Procedure (C) – 200, Offsite Dose Calculation Manual, Revision (Rev.) 32  
0-COP-65.02, Effluent Grab Sampling, Rev. 17  
0-COP-01.06, Processing Gaseous Waste, Rev. 10.B  
Normal Operating Procedure (NOP)-1-0510020, Oxygenated Waste System, Rev. 25  
1-NOP-06.01, Controlled Liquid Release to the Circulating Water Discharge, Rev. 17

Records and Data Reviewed

Vendor cross-check analysis results dated 11/13/2009 for the following counting geometries:  
50 mm AA glass fiber particulate filter, Face-loaded charcoal cartridge, 1 liter marinelli beaker, 16 ml cocktail vial,  
0-COP-01.05, Processing Aerated Liquid Wastes, Appendix F, Preparing of Quarterly Composite Samples and Liquid Spike Samples, Worksheet 1, Fe-55, Sr-89., and Sr-90 data results, 01/15/10  
Cross Check Results, Gross Alpha, Tritium, Gross Beta, 11/13/2009  
Combined Annual Radioactive Effluent Release Report for the Period January 1, 2008, through December 31, 2008,  
Combined Annual Radioactive Effluent Release Report for the Period January 1, 2009, through December 31, 2009

Gas Permit G-10-265, Release Data, including Completed Attachment A, 0-COP-65.02, Sampling From Unit 1 Eberline Skids, and Completed Appendix E, Sampling, Analyzing and Processing Continuous Release Vent Pathways, Plant Vent 1, and Fuel Handling Building 1, 08/31/2010s

Gas Permit G-09-178-B, 2B Gas Decay Tank, 06/25/2009

Unit 2 Main Plant Ventilation System (2-HVE-10A/10B) Filter Testing Surveillance (OSP-25.04) Data Results, April 2009

Unit 1 ECCS Ventilation System (HVE-9A/9B) Filter Testing Surveillance Data (OSP-25.04) Data

Results, March 2010

Unit 2 ECCS Ventilation System (HVE-9A/9B) Filter Testing Surveillance Data (OSP-25.04) Data

Results, April 2009

#### Corrective Action Program (CAP) Documents

St. Lucie Nuclear Oversight Report (PSL)-10-018, Radiation Protection Program, 06/28/2010

St. Lucie Nuclear Oversight Report (PSL)-10-020, Radioactive Waste Control, 06/28/2010

Condition Report Number (CR) 2009-18487, Unplanned release of the 2B Gas Decay Tank (GDT)

Action Request (AR) 005777441, Potential error in RAB 2-HVE-10 fan flow value acceptance criteria

#### Section 2RS07: Radiological Environmental Monitoring Program (REMP)

##### Procedures and Guidance Documents

C-200, Offsite Dose Calculation Manual (ODCM), Rev.32

State of Florida, Department of Health, Bureau of Radiation Control, Procedures:

Sampling Procedure (SP) 1, Collection of Air Particulates and Radioiodines, Rev. 10

SP 4, Collection of Surface Water, Rev. 5

SP 5, Collection of Broadleaf Vegetation, Rev. 2

SP 12, Annual Land Use Census, Rev. 2

SP 13, Collection of Drinking and Ground Water, Rev. 4

State of Florida, Department of Health Nuclear Power Surveillance Program Quality Procedures:

Quality Procedure A, Radiological Environmental Monitor Program, Rev. 3

Quality Procedure C, Intralaboratory Quality Control, Rev. 0

Quality Procedure D, Interlaboratory Quality Control, Rev. 0

Technical Memorandum 2, Lower limit of Detection for Analyses, Rev. 5

1400055, I&CMP: Environmental Data Acquisition Semi-Annual Calibration, 42A

0-OSP-57.01, Meteorological Data System Daily Channel Check, Rev. 1A

0-SMI-57.01, Meteorological Data System Semi-Annual Calibration, Rev. 0

EPG-02, Emergency response facility and equipment surveillance St. Lucie Plant, Rev. 7

##### Records and Data Reviewed

Meteorological Tower Instrument Semi-annual Calibration 12/07/06

Meteorological Tower Instrument Semi-annual Calibration 06/29/07

Meteorological Tower Instrument Semi-annual Calibration 06/10/08

Meteorological Tower Instrument Semi-annual Calibration 05/08/09

Meteorological Tower Instrument Semi-annual Calibration 11/21/09

Meteorological Tower Instrument Semi-annual Calibration 06/02/10

0-OSP-57.01, Meteorological Data System Daily Channel Check- Data Sheets (01/01/10-01/30/10), Revision 1  
 2008 Annual Radiological Environmental Operating Report  
 2009 Annual Radiological Environmental Operating Report  
 Meteorological Data Percent Recovery 2009  
 Meteorological Data Percent Recovery First Quarter 2010  
 Meteorological Data Percent Recovery Second Quarter 2010  
 PSL-10-018 St. Lucie Nuclear Oversight Report: Radiation Protection Program 06/28/10  
 PSL-10-020 St. Lucie Nuclear Oversight Report: Radioactive Waste Control 06/28/10  
 Sample form 1, Environmental Surveillance – Air Sample Data, End date 9/1/10  
 State of Florida Department of Health Environmental Radiation control Nuclear Power Plant  
 10 CFR50.75(g)

#### CAP Documents

Surveillance Program Semi-Annual Self-Assessment Self-Assessment (SA) REMP SA-0808, 08/08; REMP SA-0309, 03/09; REMP SA-0909, 1/09-6/09; REMP SA-0310, 7/09-12/09  
 CR 2010-1773, 10 meter wind speed on Meteorological recorder has failed low,  
 CR 2010-2352, Waste Gas Decay Tanks has been suspended because met tower does not currently have an operable 57.9 meter temperature indicator,  
 CR 2010-5359, Gaseous radwaste process monitor out of service,

#### Section 2RS08: Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

#### Procedures and Guidance Documents

HP-40, Shipment of Radioactive Material, Rev. 58  
 HP-47, Classification of Radioactive Waste Material for Land Disposal, Rev. 28C  
 HP-49, Dewatering Radioactive Bead Resins, Rev. 13  
 HP-49A, Transfer of Radioactive Bead Resins, Rev. 22B  
 HP-48, Activity Determinations for Radioactive Material Shipments, Rev 6D  
 FO-OP-023-161192, Bead Resin/Activated Carbon Dewatering Procedure for Energy Solutions 14-215 or Smaller Liners at St. Lucie, Rev 2  
 St Lucie Radiation Protection Department Night Order No. 2009-008, Subject: Resin Sampling Technique, Dated March 13, 2009  
 Administrative Procedure No. 0520025, Process Control Program, Rev. 13C

#### Records and Data Reviewed

ADM-25.02, NRC Performance Indicators”, Appendix O, “Occupational Exposure Control Effectiveness Data Sheet 1 (Quarterly PI Verification) for the Period January 1, 2009, through June 30, 2010  
 FPL-PSL Shipment # 09-125, Radioactive Material Shipment Record, 12/17/2009  
 FPL-PSL Shipment # 08-62, Radioactive Material Shipment Record, 04/11/2008  
 PSL Gamma Isotopic Analysis, Sample Number: 090-115, DAW Smears for Part 61 Analysis, 05/21/2009  
 Areva NP Inc. 10 CFR Part 50/61 Analysis Report” for DAW Smears 090-115, 08/19/2009

#### CAP Documents

PSL Nuclear Assurance Quality Report, QRNO 09-0010, Radioactive Material Shipping, 2/23/2009  
 CR 2009-3955, Radioactive Waste Shipment Receipt Exceeds 20 Days  
 CR 2009-3984, Discrepancies in Radioactive Material Shipping Documentation

CR 2009-14731, 1B/1C WIX Leakage

Section 71151: Performance Indicator (PI) Verification

Procedures and Guidance Documents

HPP-30, Personnel Monitoring

Administrative Procedure 0005737, Health Physics Department Training Program, Rev. 28

Records and Data Reviewed

Radiation Work Permit (RWP) 09-2013, Fuel Pool Purification Filter, '2B' CVCS Filter, Rev. 02

RWP 09-3806, Unir 2 RCB 62 foot ('), 45', 23', 18' (oil collection tank area); Anomaly / Leak Inspection, Rev. 00

RWP 10-0003, Mechanical Maintenance: Entry into RCA / RAB for Routine Work and Training, Rev. 03

Radiation Survey Plant St. Lucie (PSL)-M-2010081208, HPS-239 U2 Pipe Pen Room, 19.5 foot (' ) elevation

Personnel Contamination Monitor – Portal Monitor ALARM Logs, 4/12/2010 through 04/29/2010

Sentinel Report EPD Alarm Logs, January 1, 2009, – August 1, 2010

PSLSA37 Data Base, Liquid and Gas Status Summary Reports, Site Data, June 2010

PSLSA37 Data Base, Gas Summary Reports, Unit 1 and Unit 2, Year-to-Date data

CAP Documents

CR 2010-12230, Signature requirements for HRA keys are not being performed in accordance with HPP-3

CR 2010-8928, Contaminated clothing (shoe sole) while working in contaminated area.

CR 2010-9487, PCE- 500 cpm DRP on deconner's left boot.

2009-7168, RCA Yard Filter Cask Lock Not Properly Secured

2009-34892, Elevated Dose Rates on Volume Control Tank Inlet During Two Charging Pump Operation

CR 2009-31834, High radiation area bolt worn down.

CR 2009-15461, Dose rate alarm

Action Request (AR) Number (No.) 00572977, Radiological posting deficiency U2 RAB pipe penetration room,

AR 577561, Failure to document EPD alarms

Nuclear Policy Procedure NP-910, Plant Readiness for Operations

St. Lucie Nuclear Oversight Report PSL-09-064, Fire Protection Audit

St. Lucie Daily Quality Summaries

Health Physics Procedure HPP-4, Scheduling of Health Physics Activities

Operations Department Policy OPS-119, Standing Orders/Night Orders

St. Lucie Radiation Protection Department Night Order, 2009-023

Condition Reports

2010-011942	2010-569387	2010-572977	2010-576291	2010-576810
2010-014497	2010-569450	2010-573756	2010-577608	2010-578077
2010-000100	2010-569976	2010-573757	2010-582053	2010-582433
2010-000030	2010-570021	2010-573900	2010-582075	2010-582559
2010-000064	2010-570314	2010-574442	2010-582121	2010-582569
2010-566133	2010-570334	2010-574508	2010-582140	2010-582738
2010-565939	2010-570445	2010-574203	2010-582207	2010-582850

2010-565948	2010-570497	2010-574214	2010-582307	2010-583040
2010-566450	2010-570628	2010-574976	2010-582347	2010-583061
2010-566703	2010-570935	2010-574940	2010-582406	2010-583104
2010-566818	2010-571280	2010-574726	2010-582412	2010-583183
2010-566897	2010-571390	2010-575150	2010-576305	2010-583192
2010-568161	2010-571371	2010-575015	2010-576036	2010-583199
2010-568366	2010-572211	2010-575721	2010-576148	2010-583247
2010-568392	2010-572216	2010-575593	2010-576216	2010-583338
2010-568640	2010-571918	2010-576305	2010-576366	2010-583411
2010-569454	2010-572738	2010-576231	2010-576787	2010-583426

### LIST OF ACRONYMS

ANSI/ANS	American National Standards Institute/American Nuclear Society
AREOR	Annual Radiological Environmental Operating Report
ARERR	Annual Radiological Effluent Release Report
CAP	Corrective Action Program
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
ECCS	Emergency Core Cooling System
ESF	Engineered Safety Feature
IP	Inspection Procedure
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
OS	Occupational Radiation Safety
PI	Performance Indicator
PS	Public Radiation Safety
QC	quality control
REMP	Radiological Environmental Monitoring Program
RG	Regulatory Guide
Rev.	revision
RS	Radiation Safety
TLD	thermoluminescent dosimeter
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
WO	Work Order
CRDM	Control Rod Drive Mechanism
TS	Technical Specifications
IST	Inservice Testing
NAP	Nuclear Administrative Procedure