



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

July 29, 2009

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

SUBJECT: ST. LUCIE NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT
05000335/2009003, 05000389/2009003

Dear Mr. Nazar:

On June 30, 2009, 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 July 10, 2009, with Mr. Johnston and other members of your staff.

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

This report documents one NRC-identified finding and two self-revealing findings 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 are entered into your corrective action program, the NRC is treating the findings as non-cited violations (NCVs) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest any NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; 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 characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at St. Lucie. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

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

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Sincerely,

/RA/

Marvin D. Sykes, Chief
Reactor Projects Branch 3
Division of Reactor Projects

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

Enclosure: Inspection Report 05000335/2009003, 05000399/2009003
w/Attachment: Supplemental Information

cc w/encl: (See next page)

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Report to M. Nazar from Marvin Sykes dated July 29, 2009.

SUBJECT: ST. LUCIE NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT
05000335/2009003, 05000389/2009003

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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: 05000335/2009003, 05000389/2009003

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

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

Location: 6351 South Ocean Drive
Jensen Beach, FL 34957

Dates: April 1 to June 30, 2009

Inspectors: T. Hoeg, Senior Resident Inspector
S. Sanchez, Resident Inspector
R. Aiello, Senior Operations Engineer
G. Kuzo, Senior Health Physics Inspector
D. Forbes, Senior Health Physics Inspector
A. Nielsen, Health Physics Inspector
L. Lake, Senior Reactor Inspector
B. Collins, Reactor Inspector

Approved by: M. Sykes, Chief
Reactor Projects Branch 3
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000335/2009-003, 05000389/2009-003; 04/01/2009 - 06/30/2009; St. Lucie Nuclear Plant, Units 1 & 2; Maintenance Risk Assessment and Emergent Work Control, Identification and Resolution of Problems, Other Activities.

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

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

Green. A self-revealing Non-Cited Violation (NCV) of 10 CFR 50.54(i), Conditions of Licenses, for failure to have a fully qualified and active licensed operator at the control boards during reactivity manipulations. On June 7, 2008, the Shift Manager (SM) of record allowed an inactive licensed Senior Reactor Operator (SRO) to manipulate the controls that directly affected a reactor's power level / reactivity. The SM understood that the available licensed SRO was in an inactive status and decided that the inactive licensed SRO would conduct reactivity manipulations under the direct observation of an active reactor operator while the Unit Supervisor directed these activities. Since the inactive licensed SRO had not performed the functions of an SRO for a minimum of seven 8-hour shifts or five 12-hour shifts per calendar quarter, as required by 10 CFR 55.53(e), he was ineligible to perform or direct licensed activities. The issue was documented in the licensee's corrective action program as CRs 2008-19417 and 19830.

The finding was more than minor because it affected the Human Performance attribute of the Initiating Events cornerstone and allowing the inactive SRO to be involved in power changes/reactivity manipulations without having an active license could be reasonably viewed as a precursor to a significant event. Additionally, if left uncorrected, this deficiency has the potential to lead to a more significant safety concern. The finding was evaluated using the NRC Manual Chapter 0609, "Significance Determination Process," Appendix M, and was determined to be of very low safety significance because the finding did not involve any negative events as a result of SM being in an inactive status. No cross-cutting aspect associated with this finding was identified. (Section 4OA5.3)

Green. A self-revealing NCV of Technical Specification (TS) 6.8.1.a and Regulatory Guide (RG) 1.33 was identified for the licensee failing to implement a written procedure for general plant operations. The normal operating procedure 2-NOP-03.05, "Shutdown Cooling," was not implemented as written when drain valve V7207 was mistakenly closed by a non-licensed building operator when it was required to be open when placing the 'A' shutdown cooling train in service. Specifically, the closing

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of valve V7207 removed a required drain path for known valve seat leakage past containment spray boundary valve 2-MV-07-03 which resulted in unplanned adjacent intersystem leakage into the containment spray system from the reactor coolant system. This issue was entered in the licensee's corrective action program as CR 2009-15198.

The finding was more than minor because it affected the Configuration Control attribute of the Initiating Events cornerstone and the valve misposition could be reasonably viewed as a precursor to a significant event. Using the NRC Manual Chapter 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination Process," Checklist 3, the finding was determined to be of very low safety significance because Core Heat Removal, Inventory Control, Power Availability, Containment Control, and Reactivity Guidelines were all met. A contributing cause of the finding is related to the cross-cutting area of Human Performance, with a work practices component. Specifically, the operator failed to implement expected human error prevention techniques such as procedure place keeping and self-checking to ensure the valve was positioned properly. [H.4(a)]. (Section 40A2.2)

Cornerstone: Mitigating Systems

Green. The inspectors identified NCV of 10 CFR 50.65 (a)(4) when the licensee did not perform an adequate risk assessment which resulted in an underestimation of the associated risk while performing weekly Emergency Core Cooling System (ECCS) pump venting. On April 20, 2009, the inspectors were reviewing the Unit 2 control room chronological logs and noted that during the weekly High Pressure Safety Injection (HPSI) pump venting, the assessed risk using the Online Risk Monitor (OLRM) was recorded as green (low) instead of the required yellow (medium). During the venting evolution, the HPSI pump hand switch is taken to STOP rendering the pump incapable of performing its safety-related function to automatically inject water into the RCS, thereby requiring entry into the associated TS Action Statement and yellow OLRM risk determination. The issue was entered in the licensee's corrective action program as CR 2009-12037.

The finding was more than minor because it affected the Human Performance attribute of the Mitigating Systems cornerstone and using MC 0612, Appendix E, Example 7.e, because if the overall risk had been correctly assessed, it would have placed both units' into a higher risk category. The finding was evaluated in accordance with MC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process (SDP)," and determined to be of very low safety significance (Green), using Flowchart 1. This determination was based on the incremental core damage probability deficit being less than 1E-6 for the given condition of the HPSI pumps being out of service during the weekly pump venting. This finding has a crosscutting aspect in the area of human performance, component of work control because the licensee did not incorporate appropriate risk insights when planning maintenance that effects the OLRM value. [H.3(a)]. (Section 1R13).

B. Licensee Identified Violations

None.

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REPORT DETAILS

Summary of Plant Status:

Unit 1 began the period at full Rated Thermal Power (RTP) and operated at full power for the entire period. Unit 2 was tripped on April 1 due to an influx of algae in the intake canal. Unit 2 returned to full RTP on April 5 and operated at full power until April 26 when the unit was shutdown for a planned refueling outage. Unit 2 returned to full RTP on June 15 and operated at full power until June 19 when the unit was downpowered to approximately 15% due to high vibrations on the main turbine. Unit 2 returned to full RTP on June 21 and operated at full power for the remainder of the period.

1. REACTOR SAFETY

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

R01 Adverse Weather Protection

.1 Potential Adverse Weather Condition

a. Inspection Scope

On April 14, 2009, the inspectors reviewed the status of licensee actions in accordance with Administrative Procedure 005753, Severe Weather Preparations, when a tornado warning was issued for the area. 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. Condition reports (CRs) were checked to assure that the licensee was identifying and resolving weather related issues.

- Common Intake Canal
- Common Offsite Electrical Switchyard Area
- Unit 1 Component Cooling Water (CCW) Platform

b. Findings

No findings of significance were identified.

.2 Hurricane Season Preparations

a. Inspection Scope

During the week of June 1, 2009, the inspectors reviewed and verified the status of licensee actions taken in accordance with their procedural requirements prior to the onset of hurricane season, hot weather, and the high grid loading season. The

inspectors reviewed administrative procedures ADM-04.01, Hurricane Season Preparation, ADM-16.01, PSL Switchyard Access and Control, and off-normal procedure ONP-53.02, Low Switchyard Voltage. The inspectors performed site walkdowns of the below listed systems and/or areas to verify the licensee had made the required preparations. Condition reports (CRs) were checked to assure that the licensee was identifying and resolving weather related issues.

- Common Onsite Electrical Switchyard Areas
- Unit 1 Intake Cooling Water (ICW) Pump Area
- Unit 2 ICW Pump Area
- Common Radiological Controlled Area Outside the Reactor Auxiliary Building (RAB)

b. Findings

No findings of significance were identified.

R04 Equipment Alignment

Partial Equipment Walkdowns

a. Inspection Scope

The inspectors conducted three partial alignment verifications of the safety-related systems listed below. These inspections included reviews using 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 corrective action program (CAP).

- 2B ICW while 2A ICW OOS
- 2A ICW while 2A ICWOOS
- Unit 2 Spent Fuel Pool (SFP) Cooling While Reactor Core Fully Offloaded

b. Findings

No findings of significance were identified.

R05 Fire Protection

Fire Area Walkdowns

a. Inspection Scope

The inspectors toured the following five 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 the 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 CR database to verify that fire protection problems were being identified and appropriately resolved. The following areas were inspected:

- Unit 2 RAB 19.5' Elevation Pipe Penetration Room
- Unit 2 ICW Pump Building
- Unit 2 Condensate Storage Tank (CST) Building
- Unit 2 SFP Cooling Pumps Heat Exchanger Rooms
- Unit 2 Reactor Containment Building (RCB)

b. Findings

No findings of significance were identified.

R06 Flood Protection Measures

Internal Flooding

a. Inspection Scope

The inspectors conducted walkdowns of the following areas which included checks of building structure sumps to ensure that flood protection measures were in accordance with design specifications. The inspectors reviewed Updated Final Safety Analysis Report (UFSAR), Section 3.4, Water Level (Flood) Design and UFSAR Table 3.2-1, Design Classification of Systems, Structures, and Components (SSC). The inspectors also reviewed plant procedures that discussed the protection of areas containing safety-related equipment that may be affected by internal flooding. Specific plant attributes that were checked included structural integrity, sealing of penetrations, control of debris, and operability of sump pump systems.

- Unit 2 Emergency Core Cooling System (ECCS) Pump Room
- 2A Shutdown Cooling (SDC) Heat Exchanger Room
- 2B SDC Heat Exchanger Room

b.. Findings

No findings of significance were identified.

R07 Heat Sink Performance

a. Inspection Scope

During the week of April 27, 2009, the inspectors witnessed heat exchanger cleaning activities on the 2A CCW heat exchanger. The inspectors observed maintenance personnel perform heat exchanger tube cleaning and eddy current testing (ECT). The inspectors verified that activities were conducted in accordance with licensee procedure MPP-14.01, CCW Heat Exchanger Cleaning and Repair. The inspectors checked the monitoring and trending of heat exchanger performance data and

verified the operational readiness of the system should it be needed for accident mitigation. The inspectors walked down portions of the system for signs of degradation and to assess overall material condition. The inspectors verified that significant heat sink issues were entered into the CAP.

b. Findings

No findings of significance were identified.

R08 Inservice Inspection (ISI) Activities (IP 71111.08P, Unit 2)

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

a. Inspection Scope

During the week of May 11, 2009, the inspectors reviewed the implementation of the licensee's In-service Inspection (ISI) program for monitoring degradation of the reactor coolant system (RCS) boundary and risk significant piping boundaries. The inspectors' activities consisted of an on-site review of NDE and welding activities to evaluate compliance with the applicable edition of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPVC), Section XI (Code of record: 1998 Edition with 2000 Addenda), and to verify that indications and defects (if present) were appropriately evaluated and dispositioned in accordance with the requirements of the ASME Code, Section XI acceptance standards.

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

- UT examination of weld MS-79-1-SW-3, ASME Class 2, Main Steam System, 10-8 inch diameter reducer weld – Document Review.
- MT examination of weld MS-32-FW-1, ASME Class 2, Main Steam System, 34-inch diameter valve-to-pipe weld – Direct Observation.
- RT examination of welds 2002 and 2003 associated with Check Valve V3527 and associated adjacent piping, ASME Class 1, High Pressure Safety Injection (HPSI) System, 3-inch diameter welds – Direct Observation

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

- Welding Package for replacement of valve V3527 (HPSI Check Valve, ASME Class 1).

- Welding Package for replacement of Reactor Coolant Pump Seal Water piping (ASME Class 1).

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

Reactor Vessel Upper Head Penetration activities performed by the licensee during this outage did not fall under the scope of section 02.02 of the inspection procedure.

b. Findings

No findings of significance were identified.

.3 Boric Acid Corrosion Control (BACC) Inspection Activities

a. Inspection Scope

The inspectors reviewed the licensee's BACC program activities to ensure implementation with commitments made in response to NRC Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants," and applicable industry guidance documents. Specifically, the inspectors performed an on-site record review of procedures and the results of the licensee's containment walk-down inspections performed during the Unit 2 SL2-18 outage. The inspectors also interviewed the BACC program supervisor and conducted a walk-down of the reactor building to evaluate compliance with licensee's BACC program requirements and verify that degraded or non-conforming conditions, such as boric acid leaks identified during the containment walk-down, were properly identified and corrected in accordance with the licensee's BACC and corrective action programs.

The inspectors reviewed a sample of engineering evaluations completed for evidence of boric acid found on systems containing borated water to verify that the minimum design code required section thickness had been maintained for the affected components. The inspectors selected CR 2008-3080, Boric Acid Leak Evaluation, for review.

b. Findings

No findings of significance were identified.

.4 Steam Generator (SG) Tube Inspection Activities

a. Inspection Scope

The inspectors reviewed activities, plans, condition monitoring and operational assessments, the pre-outage degradation assessment, and procedures for the

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inspection and evaluation of the steam generator Inconel Alloy 690TT tubing for Unit 2 SGs A and B to determine if the activities were being conducted in accordance with Technical Specifications (TS) and applicable industry standards. Data gathering, analysis, and evaluation activities were reviewed.

The inspectors reviewed data results to verify the adequacy of the licensee's primary, secondary, and resolution analyses. The inspectors also reviewed video tapes for the secondary inspection of the steam drum and the top of the tube sheet for corrosion and foreign objects.

The inspectors reviewed equipment, data operators, and analyst certifications and qualifications, including medical exams.

The inspectors reviewed data for the following tubes:

SG B: R84C103, R84C101, R84C117, and R86C119

b. Findings

No findings of significance were identified.

.5 Identification and Resolution of Problems

a. Inspection Scope

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

b. Findings

No findings of significance were identified.

R11 Licensed Operator Requalification Training Program

Resident Inspector Quarterly Review

a. Inspection Scope

On June 30, 2009, the inspectors observed and assessed licensed operator actions during a simulated reactor coolant system (RCS) leak with a loss of offsite power and subsequent reactor trip training exercise. The exercise was performed in accordance with St. Lucie Plant Simulator Exercise Guide 0814019, Revision 14. The inspectors also reviewed simulator physical fidelity and specifically evaluated the following attributes related to the operating crews' performance:

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- 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 of significance were identified.

R12 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 CAP

- Unit 2 Low Pressure Safety Injection (LPSI) System
- Unit 2 125 Volt Direct Current (DC) System

b. Findings

No findings of significance were identified.

R13 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 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:

- 1C ICW Pump and Auxiliary Feedwater (AFW) System Flow Recorder OOS
- 2B SDC Heat Exchanger and 2B Emergency Diesel Generator (EDG) OOS
- Units 1 and 2 High Pressure Safety Injection (HPSI) Pump Venting
- 1B-ICW Header, 1C-ICW Pump, and ECCS Room Exhaust Fan HVE-9B OOS
- Unit 2 Entry Into Mode 3 - Yellow Risk Condition
- 1C ICW and 1A EDG OOS

b. Findings

Introduction: The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50.65 (a)(4) for failure to perform an adequate risk assessment which resulted in an underestimation of the associated risk during the weekly ECCS pump venting. Specifically, on April 5 and 19, 2009, the assessed risk for the venting of the HPSI pump was documented as green (low) instead of the usual yellow (medium).

Description: On April 20, 2009, the inspectors were reviewing the Unit 2 control room chronological logs and noted that during the weekly HPSI pump venting, the assessed risk was recorded as green (low) instead of the usual yellow (medium). The inspectors questioned the on-shift crew as to the reason for this change and were told that Operations Department Policy OPS-517, St. Lucie Specific Watchstanding Practices, had recently been revised. The inspectors then asked the Senior Reactor Operator to demonstrate taking a HPSI pump OOS using the OLRM and discovered that removing a HPSI pump from service changes the OLRM risk from green to yellow. The inspectors further discussed the issue with Operations management and learned that the change was a result of a previous CR (2009-1190) written by Engineering questioning the methodology Operations used to determine equipment functionality. As part of the corrective action to this CR, Operations incorporated basic Maintenance Rule Program guidance describing equipment functionality and availability associated with using the OLRM in Operations Night Orders. The inspectors determined that the Night Order incorrectly assumed that when performing HPSI pump venting, the OLRM remains green. During this evolution the HPSI pump hand switch is taken to STOP, which renders the pump incapable of performing its safety-related function to automatically inject water into the RCS, thereby requiring entry into the associated TS Action Statement.

Analysis: The inspectors determined that the licensee's failure to perform an adequate risk assessment prior to rendering Unit 1 and 2 HPSI pumps from being able to perform their safety related function during weekly pump venting was a performance deficiency. The finding was more than minor because it affected the Human Performance attribute of the Mitigating Systems cornerstone and using MC

0612, Appendix E, Example 7.e, because if the overall risk had been correctly assessed, it would have placed both units' into a higher risk category. The finding was evaluated in accordance with MC 0609, Appendix K, Maintenance Risk Assessment and Risk Management Significance Determination Process (SDP), and determined to be of very low safety significance (Green), using Flowchart 1. This determination was based on the incremental core damage probability deficit being less than 1E-6 for the given condition of the HPSI pumps being out of service during the weekly pump venting. This finding has a crosscutting aspect in the area of human performance and component of work control because the licensee did not incorporate appropriate risk insights when rendering HPSI pumps from automatically injecting into the RCS [H.3(a)].

Enforcement: 10 CFR 50.65 (a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," requires, in part, that, prior to performing maintenance activities, the licensee shall assess and manage the increase in risk that may result from the proposed maintenance activities. Contrary to the above, the licensee failed to perform an adequate risk assessment before performing weekly pump venting on Unit 1 and 2 HPSI pumps on April 5 and 19, 2009. Because the finding was of very low safety significance and has been entered into the licensee's CAP as CR 2009-12037, this violation is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy: NCV 05000335/389/2009003-01, Inadequate Risk Assessment When Performing Weekly HPSI Pump Venting.

R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following six 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.

- CR 2009-10579 Unit 1 CCW Pipe Hanger
- CR 2009-1453, Unit 1 RAB Main Supply Fan HVS-4B Low Flow Condition
- CR 2009-2747, 2A2 HPSI Header Loop Flow Instrumentation
- CR 2009-13781, Unit 2 Valve MV-21-2 Leaks by Seat
- CR 2009-13950, 2A LPSI Ten Second Air Vented
- CR 2009-15752, 2A HPSI Pump Pressure

b. Findings

No findings of significance were identified

R18 Plant Modificationsa. Inspection Scope

The inspectors reviewed the documentation for the following temporary system alteration (TSA) associated with Unit 1. The inspectors reviewed the 10 CFR 50.59 screening and evaluation, fire protection review, environmental review, As Low As Reasonably Achievable (ALARA) screening, and license renewal review, to verify that the modification had not affected system operability/availability. The inspectors reviewed all associated plant drawings and UFSAR documents impacted by this modification and discussed the changes with licensee personnel to verify that the installation was consistent with the modification documents. Additionally, the inspectors verified that problems associated with modifications were being identified and entered into the CAP.

- TSA 1-09-006, Defeat Containment Isolation Signal Radiation Monitor Channel 'D' From Initiating a Containment Evacuation Alarm

b. Findings

No findings of significance were identified.

R19 Post Maintenance Testinga. 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 procedure ADM-78.01, Post Maintenance Testing, were incorporated into test requirements. The inspectors reviewed the following WOs and/or work requests (WR):

- WO 31018639, 2A EDG Governor Replacement
- WO 31018403, 2B EDG Governor Replacement
- WO 38022806, Remove & Replace 2A LPSI Pump Motor
- WO 37027676, Unit 2 SDC Isolation Valve V3651 PMT
- WO 37023658, Replace Check Valve V21208 on 2B ICW Pump Discharge

b. Findings

No findings of significance were identified.

R20 Refueling and Other Outage Activities

.1 Unit 2 Forced Outage

a. Inspection Scope

On April 1, 2009, Unit 2 operators performed a rapid manual downpower and reactor plant shutdown when excess algae started to affect differential pressures across secondary plant equipment. The inspectors observed control room activities during the reactor plant downpower and reactor shutdown, and the reactor startup including synchronizing the turbine generator to the grid.

Monitoring and Shutdown Activities

The inspectors observed portions of the plant shutdown to hot standby to verify that operating restrictions and similar procedural requirements were followed. The inspectors observed control room operator communications, place keeping, and reviewed chronological log entries.

Monitoring of Heat up and Startup Activities

On April 3, 2009, the inspectors observed activities during the reactor restart to verify that reactor parameters were within safety limits and that the startup evolutions were performed in accordance with licensee procedure 2-GOP-302, Reactor Startup Mode 3 to Mode 2.

b. Findings

No findings of significance were identified.

.2 Unit 2 Refueling Outage SL2-18

a. Inspection Scope

Outage Planning, Control and Risk Assessment

During pre-outage planning, the inspectors reviewed the risk reduction methodology employed by the licensee for refuel outage (RFO) SL2-18, in particular the Risk Assessment Team (RAT) notebook. The inspectors also examined the licensee's implementation of shutdown safety assessments during SL2-18 in accordance with Administrative Procedure 0-AP-010526, Outage Risk Assessment and Control, to verify whether a defense in depth concept was in place to ensure safe operations and avoid unnecessary risk. Furthermore, the inspectors regularly monitored outage planning and control activities in the Outage Control Center (OCC), and interviewed responsible OCC management, during the outage to ensure system, structure, and component configurations and work scope were consistent with TS requirements, site procedures, and outage risk controls.

Monitoring of Shutdown Activities

The inspectors observed portions of the reactor plant shutdown and cooldown of Unit 2 beginning on April 26, 2009. The inspectors also monitored plant parameters and verified that shutdown activities were conducted in accordance with Technical Specifications and applicable operating procedures, such as: 2-GOP-123, Turbine Shutdown - Full Load to Zero Load; 2-GOP-203, Reactor Shutdown; 2-GOP-305, Reactor Plant Cooldown - Hot Standby To Cold Shutdown; and 2-NOP-03.05, Shutdown Cooling.

Outage Activities

The inspectors examined outage activities to verify that they were conducted in accordance with TS, licensee procedures, and the licensee's outage risk control plan. Some of the more significant inspection activities accomplished by the inspectors were as follows:

- Walked down selected safety-related equipment clearance orders
- Verified operability of RCS pressure, level, flow, and temperature instruments during various modes of operation
- Verified electrical systems availability and alignment
- Reviewed actions taken in preparation for Hurricane season
- Verified shutdown cooling system and spent fuel pool cooling system operation
- Evaluated implementation of reactivity controls
- Reviewed control of containment penetrations
- Examined foreign material exclusion (FME) controls put in place inside containment (e.g., around the refueling cavity, near sensitive equipment and RCS breaches) and around the spent fuel pool (SFP).

Refueling Activities and Containment Closure

The inspectors witnessed selected fuel handling operations being performed according to TS and applicable operating procedures from the main control room, refueling cavity inside containment, and the SFP. The inspectors also examined licensee activities to control and track the position of each fuel assembly. Furthermore, the inspectors evaluated the licensee's ability to close the containment equipment, personnel, and emergency hatches in a timely manner per procedure 2-MMP-68.02, Containment Closure.

Heatup, Mode Transition, and Reactor Startup Activities

The inspectors examined selected TS, license conditions, license commitments and verified administrative prerequisites were being met prior to mode changes. The inspectors also reviewed measured RCS leakage rates, and verified containment integrity was properly established. The inspectors performed a containment sump closeout inspection prior to plant heat up operations. The inspectors also conducted a containment walkdown on June 10, 2009, after the Unit 2 reactor plant had reached Mode 3 and was at normal operating pressure and temperature. The results of low power physics testing were discussed with Reactor Engineering and Operations

personnel to ensure that the core operating limit parameters were consistent with the design. The inspectors witnessed portions of the RCS heatup, reactor startup, and power ascension in accordance with the following plant procedures:

- Pre-operational Test Procedure (POP) 2-3200088
- Unit 2 Initial Criticality Following Refueling
- POP 0-3200092, Reactor Engineering Power Ascension Program
- 2-GOP-201, Reactor Plant Startup - Mode 2 to Mode 1
- 2-GOP-302, Reactor Plant Startup - Mode 3 to Mode 2
- 2-GOP-303, Reactor Plant Heatup - Mode 3 <1750 to Mode 3 >1750
- 2-GOP-403, Reactor Plant Heatup - Mode 4 to Mode 3
- 2-GOP-504, Reactor Plant Heatup - Mode 5 to Mode 4

Correction Action Program

The inspectors reviewed CRs generated during SL2-18 to evaluate the licensee's threshold for initiating CRs. The inspectors reviewed CRs to verify priorities, mode holds, and significance levels were assigned as required. Resolution and implementation of corrective actions of several CRs were also reviewed for completeness. The inspectors routinely reviewed the results of Quality Assurance (QA) daily surveillances of outage activities.

b. Findings

No findings of significance were identified.

R22 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) and one containment isolation valve (CIV) surveillance. The inspectors verified that surveillance issues were documented in the CAP.

- 2-OSP-59.01A, 2A EDG Monthly Test
- 1-3200020, Unit 1 Daily Calorimetric
- 1-OSP-52.01, Functional Test of Degraded Grid Voltage
- 2-OSP-69.14A, ESF 18 Month Surveillance for EDG Start on SIAS Without LOOP and 24 Hour Loaded Run – Train A
- 2-OSP-03.17, Stroke Testing of the Safety Injection Tank Discharge ISI Loop Check Valves (IST)
- 2-OSP-68.04, Purge Valve Leak Rate Test (CIV)

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

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

OS1 Access Control to Radiologically Significant Areas

a. Inspection Scope

Access Controls The inspectors evaluated licensee performance in controlling worker access to radiologically significant areas and monitoring jobs in-progress associated with the St Lucie Unit 2 Refueling Cycle 18 (SL2-18) outage. The inspectors directly observed implementation of administrative and physical radiological controls; reviewed and discussed general employee radiation worker (radworker) training; evaluated radworker and health physics technician (HPT) knowledge of and proficiency in implementing radiation protection requirements; and assessed worker exposures to radiation and radioactive material.

During facility tours, the inspectors directly observed postings and physical controls for radiation area, high radiation area (HRA), and potential airborne radioactivity area locations established within the Unit 2 (U2) reactor building (RB), Unit 1 (U1) and U2 auxiliary buildings, U1 spent fuel pool (SFP), radioactive waste (radwaste) processing and storage locations, Dry Storage Warehouse (DSW), and the Independent Spent Fuel Storage Installation (ISFSI) facility. The inspectors independently measured radiation dose rates or directly observed conduct of licensee radiation surveys for selected radiologically controlled area (RCA) locations and equipment. Results were compared to current licensee surveys and assessed against established postings and Radiation Work Permit (RWP) controls. Licensee key control and access barrier effectiveness were evaluated for selected U1 and U2 Locked High Radiation Area (LHRA) and Very High Radiation Area (VHRA) locations. Procedural guidance documents and their implementation for LHRA and VHRA controls were discussed with health physics (HP) supervisors. Controls and their implementation for storage of irradiated materials within the U1 SFP were reviewed and discussed in detail. Established radiological controls were evaluated for selected SL2-18 tasks including chemical crud burst and clean-up, fuel movement, under-vessel inspection, reactor vessel head lift, steam generator (S/G) eddy current test (ECT) activities, fuel transfer cart maintenance, reactor vessel disassembly, and temporary shielding installation. In addition, licensee controls for areas where dose rates could change significantly as a result of plant shutdown and refueling operations were reviewed and discussed. The inspectors also toured the ISFSI and observed radiological postings, and performed independent surveys to evaluate applicable controls.

For selected tasks, the inspectors attended pre-job briefings and reviewed RWP details to assess communication of radiological control requirements to workers. Occupational worker adherence to selected RWPs and HPT proficiency in providing job coverage were evaluated through direct observations and interviews with licensee staff. Electronic dosimeter (ED) alarm set points and worker stay times were

evaluated against licensee area radiation and/or independent survey results for U2 RB, the U1 and U2 auxiliary buildings, and radwaste and material storage or building locations.

The inspectors evaluated the effectiveness of radiation exposure controls, including air sampling, barrier integrity, engineering controls, and postings through a review of both internal and external exposure results. Worker exposure as measured by ED and by licensee evaluations of skin doses resulting from discrete radioactive particle or dispersed skin contamination events prior to and during current SL2-18 activities were reviewed. For HRA tasks involving significant dose rate gradients, e.g. fuel movement/inspection, vessel inspection, and S/G maintenance activities, the inspectors evaluated the use and placement of whole body and extremity dosimetry to monitor worker exposure. The inspectors also reviewed and discussed selected whole-body count analyses conducted during the current SL2-18 outage.

Radiation protection activities were evaluated against Updated Final Safety Analysis Report (UFSAR) Section 12 specifications; or requirements detailed in Technical Specifications (TS) Sections 6.8.1, 6.11, and 6.12; 10 Code of Federal Regulations (CFR) Parts 19 and 20; and approved licensee procedures. Records reviewed are listed in Sections 2OS1, 2OS2, 2PS2, 4OA1, and 4OA3 of the report Attachment.

Problem Identification and Resolution Licensee Corrective Action Program (CAP) documents associated with access control to radiologically significant areas were reviewed and assessed. This included review of selected Condition Report (CR) Quality Assurance records related to radworker and HPT performance. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure PI-AA-204, Condition Identification and Screening Process, Revision (Rev.) 2. 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 2OS1, 2OS2, 2PS2, 4OA1, and 4OA3 of the report Attachment.

The inspectors completed 21 of the specified line-item samples detailed in Inspection Procedure (IP) 71121.01. In addition, the inspectors evaluated radiation protection activities detailed in IP 60855 for the licensee's ISFSI facility.

b. Findings

No findings of significance were identified.

OS2 As Low As Reasonably Achievable (ALARA) Planning and Controls

a. Inspection Scope

As Low As Reasonably Achievable (ALARA). The inspectors reviewed ALARA program guidance and its implementation for ongoing SL2-18 job tasks. The inspectors evaluated the accuracy of ALARA work planning and dose budgeting, observed implementation of ALARA initiatives and radiation controls for selected jobs in-progress, assessed the effectiveness of source-term reduction efforts, and reviewed historical dose information.

ALARA planning documents and procedural guidance were reviewed and projected exposure estimates were compared to actual dose expenditures for the following high dose jobs: S/G ECT, reactor coolant pump (RCP) seal line replacement, alloy 600 evaluation, and reactor vessel disassembly/ reassembly. The inspectors reviewed the integration of ALARA work plan requirements into specific job task RWPs. Differences between budgeted dose and actual exposure received were discussed with ALARA staff. Changes to dose budgets relative to changes in radiation source term and/or job scope were also discussed. The inspectors attended pre-job briefings and evaluated the communication of ALARA goals, RWP requirements, and industry lessons-learned to job crew personnel. The inspectors also attended an ALARA Review Board meeting and observed the interface between plant management and ALARA planning staff.

The inspectors made direct field or closed-circuit-video observations of outage job tasks involving fuel transfer cart maintenance, reactor vessel disassembly, temporary shielding installation, and S/G ECT activities. For the selected tasks, the inspectors evaluated radworker and HPT job performance (including use of low dose waiting areas); individual and collective dose expenditure versus percentage of job completion; surveys of the work areas; appropriateness of RWP requirements; and adequacy of implemented engineering controls. For selected high dose jobs, the inspectors interviewed radworkers and job sponsors regarding understanding of dose reduction initiatives and their current and expected accumulated doses at completion of the job tasks. The inspectors also reviewed in-progress and post-job reviews for selected high dose job tasks.

Implementation and effectiveness of selected program initiatives with respect to source-term reduction were evaluated. Chemistry program ALARA initiatives and their effect on U2 dose rates were reviewed and discussed with applicable staff. The inspectors evaluated the licensee's program for reduction of cobalt and reviewed the list of valves identified for cobalt mitigation. The effectiveness of temporary shielding installed for the current outage was assessed through review of shielding packages and pre-shielding versus post-shielding dose rate data.

Plant exposure history for calendar year (CY) 2006 through CY 2008 and data reported to the NRC pursuant to 10 CFR 20.2206 were reviewed, as were established goals for reducing collective exposure during the current SL2-18 refueling outage. The inspectors reviewed procedural guidance for dosimetry issuance and exposure tracking. The inspectors also examined dose records of declared pregnant workers to evaluate assignment of gestation dose. In addition, selected individual access records were reviewed for dose received during work in areas with high dose rates.

ALARA program activities and their implementation were reviewed against 10 CFR Part 20 and approved licensee procedures. In addition, licensee performance was evaluated against guidance contained in Regulatory Guide (RG) 8.8, Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations will be As Low As Reasonably Achievable and RG 8.13, Instruction Concerning Prenatal Radiation Exposure. Procedures and records reviewed within this inspection area are listed in Sections 2OS2 of the report Attachment.

Problem Identification and Resolution. The inspectors reviewed selected CRs in the area of exposure control. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure PI-AA-204, Condition Identification and Screening Process, Rev. 2. 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 Sections 2OS1 and 2OS2 of the report Attachment.

The inspectors completed 23 of the line-item samples described in IP 71121.02.

b. Findings

No findings of significance were identified.

PS2 Radioactive Material Processing and Transportation

a. Inspection Scope

Waste Processing and Characterization Selected liquid and solid radioactive waste (radwaste) processing system components were inspected for material condition and for configuration compliance with the UFSAR and Process Control Program (PCP) details. Inspected equipment included the waste hold-up and processing tanks; demineralizer systems; resin transfer piping; radwaste processing equipment; and abandoned waste processing equipment. The inspectors discussed component function, equipment operability, and changes to radwaste processing systems with licensee staff.

Radioactive waste disposal data for CY 2007 and CY 2008 were reviewed and discussed. Radionuclide characterizations from January 1, 2007, through March 1, 2009, for selected radioactive waste streams were reviewed and discussed with cognizant staff. Licensee guidance and processes for monitoring changes in waste stream isotopic mixtures were discussed with cognizant licensee representatives. For irradiated metal equipment, reactor water clean-up and condensate resins, spent filters, and dry active waste (DAW), the inspectors reviewed radionuclide determination analyses and evaluated determination of hard-to-detect nuclides. The subject reviews included evaluation of gamma spectroscopy data comparisons of licensee waste stream analyses with vendor laboratory data and verification of appropriate use of scaling factors for waste characterization.

Radwaste processing activities were reviewed for compliance with specifications detailed in UFSAR Section 11; and requirements specified in TS 6.8 and 6.13, 10 CFR Part 50.59 and the current licensee PCP and UFSAR details. Waste stream characterization analyses and selected waste shipment records were reviewed against regulations detailed in 10 CFR Part 20, 10 CFR Part 61, approved licensee procedures, and guidance provided in the Branch Technical Position (BTP) on Waste Classification and Waste Form. Reviewed documents are listed in Section 2PS2 of the report Attachment.

Transportation During the weeks of April 27, 2009, and May 11, 2009, the inspectors directly observed preparation activities for radioactive waste of low specific activity and radioactive material shipment of low specific activity material. The inspectors

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noted package bracing and conveyance placards, evaluated shipping paper documentation for adequacy and completeness, and interviewed the shipping technicians regarding knowledge of Department of Transportation (DOT) regulations. Dose rate and contamination survey data for the shipping packages and conveyance were verified and the results compared to DOT limits. In addition, training provided to individuals involved with the observed shipments was reviewed and evaluated.

In addition, five additional shipping records and supporting documents for radioactive material and radioactive waste shipments conducted during CY 2007 and CY 2008, and year-to-date 2009, were reviewed for consistency with licensee procedures and compliance with NRC and DOT regulations. The inspectors reviewed emergency response information, DOT shipping package classification, radiation survey results, and evaluated whether receiving licensees were authorized to accept the packages. Licensee procedures for use of Type B shipping casks were compared to recommended vendor protocols and Certificate of Compliance (CoC) requirements. In addition, use and preparation of Type A containers for selected shipments were evaluated.

Transportation program implementation was reviewed against regulations detailed in 10 CFR Parts 20 and 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 2PS2 of the report Attachment.

Problem Identification and Resolution. The inspectors reviewed and discussed with HP supervision selected CRs and audits associated with transportation and radioactive waste processing program activities. The inspectors evaluated the licensee's ability to identify, characterize, prioritize, and resolve the identified issues in accordance with procedure PI-AA-204, Condition Identification and Screening Process, Rev. 2.

The inspectors completed the six specified line-item samples detailed in IP 71122.02.

b. Findings

No findings of significance were identified.

4 OTHER ACTIVITIES

OA1 Performance Indicator Verification

a. Inspection Scope

The inspectors sampled licensee records to verify the accuracy of reported Performance Indicator (PI) data for the periods listed below. To verify the accuracy of the reported PI elements, the reviewed data were assessed against guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 5.

- .1 Barrier Integrity. The inspectors checked licensee submittals for the performance indicators (PIs) listed below for the period April 1, 2008, through March 31, 2009, to verify the accuracy of the PI data reported during that period. Performance indicator

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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, CRs, 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 RCS Leakage
 - Unit 2 RCS Leakage
 - Unit 1 RCS Activity
 - Unit 2 RCS Activity
- .2 Occupational Radiation Safety Cornerstone. The inspectors reviewed PI data collected from April 1, 2008, through December 31, 2008, for the Occupational Exposure Control Effectiveness PI. For the reviewed period, the inspectors assessed CAP records to determine whether HRA, VHRA, or unplanned exposures, resulting in TS or 10 CFR 20 non-conformances, had occurred during the review period. In addition, the inspectors reviewed selected personnel contamination event data, internal dose assessment results, and ED alarms for cumulative doses and/or dose rates exceeding established set-points. The reviewed documents relative to this PI are listed in Sections 2OS1, 2OS2, and 4OA1 of the report Attachment.
- .3 Public Radiation Safety Cornerstone. The inspectors reviewed the Radiological Control Effluent Release Occurrences PI results for the period of April 1, 2008, through December 31, 2008. For the assessment period, the inspectors reviewed cumulative and projected doses to the public, and verified compensatory sampling was conducted as required for out-of-service (OOS) effluent radiation monitors. The inspectors also reviewed licensee procedural guidance for collecting and documenting PI data. Documents reviewed are listed in Section 4OA1 of the report Attachment.

b. Findings

No findings of significance were identified.

OA2 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.

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b. Findings

No findings of significance were identified.

.2 Annual Sample: Leakage into the Containment Spray Ring from the 2A Shutdown Cooling Loop

a. Inspection Scope

The inspectors selected CR 2009-15198, "Leakage Into the Containment Spray Ring from the 2A Shutdown Cooling Loop," for a more in-depth review of the circumstances that led up to the event 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 and Observations

Introduction: A self-revealing Green Non-Cited Violation (NCV) of Technical Specification (TS) 6.8.1.a and Regulatory Guide (RG) 1.33 was identified for the licensee failing to implement a safety related procedure as written for general plant operations. The normal operating procedure 2-NOP-03.05, "Shutdown Cooling," was not implemented as written when drain valve V7207 was mistakenly closed by a non-licensed building operator when placing the 'A' shutdown cooling system train in-service. Specifically, drain valve V7207 was closed removing a required drain path for known valve seat leakage past containment spray boundary valve 2-MV-07-03 which resulted in unplanned adjacent intersystem leakage into the containment spray (CS) system.

Description: On May 16, 2009, Unit 2 was in Mode 6 during a scheduled refueling outage with the 'A' shutdown cooling system in-service when reactor coolant system water leaked past containment spray system boundary valve 2-MV-07-03 and into the containment spray system and associated spray header. Valve 2-MV-07-03 is a Pacific® 12 inch gate valve with a SB-0 Limitorque® motor operator. It was estimated that almost two gallons per minute exited a single spray nozzle for about one hour before drain valve V7207 was opened to drain the CS piping. It was later determined after clean up and inspection that the leak from the CS header did not cause any damage or adverse conditions to other systems, structures, and components within the containment building.

St. Lucie Nuclear Plant is a Combustion Engineering design that uses the low pressure safety injection pumps for decay heat removal along with the shutdown cooling heat exchangers. The shutdown cooling flow path uses a portion of the containment spray system downstream of the shutdown cooling heat exchangers requiring the CS system header isolation valve 2-MV-07-3 to be closed per Normal Operating Procedure 2-NOP-03-05, "Shutdown Cooling." Valve 2-MV-07-3 is required to be closed to provide system boundary protection for shutdown cooling operations and prevent loss of reactor coolant inventory through intersystem leakage

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into the CS system. Valve 2-MV-07-03 has had known seat leakage since 1990 and repair attempts have failed to correct the leakage. As a result, the licensee's shutdown cooling procedure installs a hose on a downstream drain valve V7207 to direct leakage to the auxiliary building floor drains to prevent filling the CS headers with water and leaking down in the containment building while in shutdown cooling. Valve 2-MV-07-03 has no safety related function for seat leakage. The valve is normally open to provide a flow path for containment spray during accident conditions. The shutdown cooling pressure boundary function is considered a quality related function per the licensee's Design Basis Document DBD-CS-2. Prior repairs to valve 2-MV-07-03 have mainly consisted of lapping the valve seating surfaces and verifying valve disk to seat contact measurements. The repairs have been unsuccessful to date and the licensee plans to replace the valve during the next refueling outage scheduled for the Fall of 2010. The inspectors determined that the licensee has been ineffective at resolving a known deficiency with seat leakage past valve 2-MV-07-03 which was a contributing cause to the unplanned adjacent intersystem leakage into the containment spray (CS) system.

Analysis: The inspectors determined that the licensee's failure to comply with the shutdown cooling procedure was a performance deficiency. The finding was more than minor because it affected the Configuration Control attribute of the Initiating Events cornerstone and the valve misposition could be reasonably viewed as a precursor to a significant event. Using the NRC Manual Chapter 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance determination Process," Checklist 3, the finding was determined to be of very low safety significance because Core Heat Removal, Inventory Control, Power Availability, Containment Control, and Reactivity Guidelines were all met. The inspectors determined that a contributing cause of the finding is related to the cross-cutting area of Human Performance, with a work practices component. Specifically, the operator failed to implement an expected human error prevention techniques such as procedure place keeping and self-checking to ensure the valve was positioned properly. (H.4(a)).

Enforcement: TS 6.8.1.a requires that written procedures shall be established, implemented, and maintained covering the activities specified in Regulatory Guide (RG) 1.33, Revision 2, February 1978. RG 1.33, Appendix A, Item 2.j, requires cold shutdown operations to be implemented in accordance with applicable operating procedures. Contrary to this requirement, on May 16, 2009, the requirements of St. Lucie safety-related Normal Operating Procedure 2-NOP-03.05, "Shutdown Cooling," step 4.1.2.4, was not implemented to ensure drain valve V7207 is open. Because the failure to implement the subject procedure was of very low safety significance and has been entered in the licensee's corrective action program as CR 2009-15198, this violation is being treated as a Non-cited Violation, consistent with Section VI.A of the Enforcement Policy: NCV 05000389/2009003-02, Failure to Follow Procedure When Placing Shutdown Cooling In-service.

OA3 Event Follow-up.1 (Closed) LER 2009-003-00, Radioactive Ni-63 Source Not Located During Semi-Annual Source Inventory

On April 20, 2009, the licensee identified a failure to locate a generally licensed sealed source containing 15 millicuries (mCi) of nickel (Ni)-63. The initial identification of the missing source material was made on February 18, 2009, while conducting semiannual source inventory activities. The Ni-63 sealed source material was used in an explosive detector which was located at the onsite Nuclear Training Building (NTB). Additional searches of the NTB and interviews with staff involved with the subject equipment failed to locate the subject material and the licensee made the appropriate thirty day notification in accordance with 10 CFR 20.2201(b). The inspectors noted that licensee's apparent cause evaluation identified weakness in source controls for generally licensed sources used in on-site equipment and evaluated the extent of condition. Corrective actions included enhancements to administrative and physical controls for maintaining generally licensed sealed sources within onsite equipment to prevent recurrence.

The inspectors identified concerns with the licensee's follow-up actions to the apparent cause analysis. These included a lack of a thorough and timely evaluation of a pathway which could have resulted in the improper transfer of the material offsite areas and a lack of dose analyses for onsite and offsite personnel. The inspectors noted that the subject source material could have been placed into an industrial waste dumpster located at the NTB. This dumpster was identified in the licensee's apparent cause evaluation timeline which indicated that it was transported from the NTB to a commercial land disposal facility on February 17, 2009, one day prior to the discovery that the source material was missing on February 18, 2009. However, the licensee failed to contact the landfill operator until queried by the inspectors during the week of May 11, 2009. Further, the inspectors noted that the licensee's initial evaluations did not include calculations estimating potential doses to occupational workers or members of the public based on realistic exposure scenarios. Discussions between licensee representatives and the commercial land disposal facility staff on May 14, 2009, confirmed that the dumpster contents had been buried, but did not provide any additional information regarding the source material. Further, dose estimates based on direct exposure, inhalation, and ingestion scenarios were completed May 6, 2009, and verified that if occupational workers or members of the public were exposed to the missing source the doses received would be a small percentages of the allowable Federal limits.

This finding for failure to meet transfer/disposal requirements for generally licensed source material required by 10CFR 31.5 (8)(i) was evaluated under traditional enforcement criteria and was determined to constitute a violation of minor significance that is not subject to enforcement action in accordance with the Interim Enforcement Policy for Generally Licensed Devices Containing Byproduct Material (10CFR 31.5). The licensee documented the incident in CR 2009-5022. This LER is closed.

.2 Unit 2 Downpower Due to Turbine High Vibrations

a. Inspection Scope

On June 16, 2009, the inspectors observed licensee activities associated with a downpower to remove the main turbine generator from service due to an increase in vibrations. The inspectors discussed the downpower with operations, engineering, and licensee management personnel to gain an understanding of the event and assess followup actions. The inspectors reviewed operator actions taken in accordance with licensee procedures and reviewed unit and system indications to verify that actions and system responses were as expected. The inspectors discussed the repairs with the licensee's Failure Investigation Process team and assessed the team's actions to gather, review, and assess information leading up to and following the event. The inspectors also observed licensee activities to place the turbine back online and increase reactor power to full RTP.

b. Findings

No findings of significance were identified.

OA5 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 of significance were identified.

.2 NRC Temporary Instruction (TI) 2515/172, Reactor Coolant System Dissimilar Metal Butt Welds (DMBW's)

a. Inspection Scope

During the week of May 11, 2009, the inspectors reviewed the licensee's activities related to the inspection and mitigation of DMBW's in the Reactor Coolant System (RCS) to ensure that the licensee activities were consistent with the industry requirements established in the Materials Reliability Program (MRP) document MRP-

139, Primary System Piping Butt Weld Inspection and Evaluation Guidelines, Revision 1. This inspection was limited to review of MRP-139 activities performed after December 2008.

TI 2515/172 was performed in December 2008 as documented in Inspection Report 2008005. During that time a complete program review (per TI 2515/172 paragraph 03.05) was performed.

b. Findings and Observations

No findings of significance were identified.

MRP-139 Baseline Inspections

- 1) Have the baseline inspections been performed or are they scheduled to be performed in accordance with MRP-139 guidance?

Yes. The licensee has performed all required baseline inspections at the time of this review.

Visual exams of various unmitigated locations were performed during the SL2-18 outage in preparation for mitigation in upcoming outages, but no credited MRP-139 follow-on exams occurred since the baseline inspections had been performed. Based on the categorization of the welds in the program, no follow-on exams were required to have been completed at the time of the inspection.

Therefore, the licensee has met the MRP-139 deadlines for baseline examinations of all welds scoped into the MRP-139 program.

- 2) Is the licensee planning to take any deviations from MRP-139 requirements?

No, the licensee has not submitted any requests for deviation from MRP-139 requirements.

Volumetric Examinations

Sample not available.

Weld Overlays

Sample not available.

Mechanical Stress Improvement (Not Applicable)

Sample not available.

In-service Inspection Program

This reporting requirement was addressed previously in inspection report 2008005; no new information was noted during this inspection.

.3 Inactive Senior Reactor Operator at the Controls

a. Inspection Scope

During the week of June 7, 2008, the resident inspectors at the St. Lucie Nuclear Plant learned that a Senior Reactor Operator (SRO) with an inactive license (i.e., not current in watch standing) manipulated the controls of Unit 2 and added positive reactivity by withdrawing control rods as part of a surveillance test. An investigation followed.

b. Findings

Introduction: A Green self-revealing Non-Cited Violation (NCV) of 10 CFR 50.54(i), Conditions of Licenses, was identified for failure to have a fully qualified and active licensed operator at the control boards during reactivity manipulations.

Description: On June 7, 2008, the Shift Manager (SM) of record allowed an inactive licensed SRO to manipulate the controls that directly affected a reactor's power level/reactivity. The SM understood that the available licensed SRO was in an inactive status and decided to allow the inactive licensed SRO to conduct reactivity manipulations under the direct observation of an active reactor operator, while the Unit Supervisor directed these activities. Since January 2006, the inactive licensed SRO had not performed the functions of an operator or senior operator for a minimum of seven 8-hour shifts or five 12-hour shifts per calendar quarter as required by 10 CFR 55.53 (e), Conditions of a License. Consequently, he was ineligible to perform or direct licensed activities.

The licensee documented the issue in CRs 2008-19417 and 2008-19830, identifying the inappropriateness of the main control room shift manning (i.e., use of an inactive SRO) and the need for night orders to restrict shift manning to active licensed operators. The NRC resident inspectors learned of the issue during a review of the two CRs and determined the licensee had failed to identify that the use of an inactive licensed SRO on the Unit 2 controls violated administrative procedure NAP-402, Conduct of Operations, and 10 CFR Part 55.53(e), Conditions of Licenses. In addition, the resident inspectors determined that there were missed opportunities by licensee staff to have identified this as a failure to meet the requirements. Facility management was not initially convinced that their procedures and the Code of Federal Regulations (CFR) had been violated. There appeared to be a lack of knowledge and attention to detail on the part of the licensed individuals and crew members involved in the decision to allow the inactive licensed SRO to perform reactivity manipulations.

Analysis: The licensee's failure to have an active licensed individual at the controls while manipulating the controls that directly affected a reactor's power level / reactivity was a performance deficiency. This was reasonably within the licensee's ability to foresee and prevent. The finding was more than minor because it affected

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the Human Performance attribute of the Initiating Events cornerstone and allowing the inactive SRO to be involved in power changes/reactivity manipulations without having an active license could be reasonably viewed as a precursor to a significant event. Additionally, if left uncorrected, this deficiency has the potential to lead to a more significant safety concern. The finding was evaluated using the significance determination process qualitative criteria (Appendix M), and was determined to be of very low safety significance because the finding did not involve any negative events as a result of SM being in an inactive status. No cross-cutting aspect associated with this finding was identified.

Enforcement: 10 CFR 55.53(e), Conditions of Licenses, states, in part, "If a licensee has not been actively performing the functions of an operator or senior operator, the licensee may not resume activities authorized by a license issued under this part except as permitted by paragraph (f) of this section". 10 CFR 50.54(i), Conditions of Licenses, states, in part, except as provided in 55.13 of this chapter, the licensee may not permit the manipulation of the controls of any facility by anyone who is not licensed operator or senior operator as provided in part 55 of this chapter.

Section 4.7, item 2 of the Attachment B of Florida Power and Light (FPL) Nuclear Administrative Procedure, NAP-402, Conduct of Operations, Rev. 5, states that only licensed operators are permitted to manipulate the controls that directly affect a reactor's power level or activity. The only allowed exception is for training of licensed operator candidates, who are currently enrolled and participating in a licensed operator training program. A licensed operator must directly supervise all actions of the individual training.

Contrary to the above, on June 7, 2008, the SM of record allowed an inactive licensed SRO to manipulate the controls that directly affected a reactor's power level/reactivity. The SM understood that the available licensed SRO was in an inactive status and still decided that the inactive licensed SRO would conduct reactivity manipulations under the direct observation of an active reactor operator while the Unit Supervisor directed these activities. Since the inactive licensed SRO had not performed the functions of an SRO for a minimum of seven 8-hour shifts or five 12-hour shifts per calendar quarter as required by 10 CFR 55.53(e), he was ineligible to perform or direct licensed activities. The finding was documented in the licensee's corrective action program as CRs 2008-19417 and 19830. Because this violation was of very low safety significance and was entered into the licensee's corrective action program, it is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 050000335, 389/2009003-03, Failure to Have a Fully Qualified and Active Licensed Operator at the Control Boards During Reactivity Manipulations.

OA6 Meetings

Exit Meeting Summary

Radiation Protection

On May 15, 2009, the inspectors discussed results of the onsite radiation protection inspection with Mr. Johnston, Site Vice President, and other responsible staff. The

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inspectors noted that proprietary information was reviewed during the course of the inspection but would not be included in the documented report. During a June 1, 2009, teleconference, the inspectors informed Mr. Moore, Radiation Protection Manager, the lost Ni-63 source event would be characterized as a finding of minor significance in the report and that LER 05000335, 389-003, would be considered closed.

Resident Inspection

The resident inspectors presented the inspection results to Mr. Johnston and other members of licensee management on July 10, 2009. 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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

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KEY POINTS OF CONTACT

Licensee personnel:

C. Ali, Licensing Engineer
E. Belizar, Projects Manager
G. Boyers, Steam Generator Program Manager
D. Calabrese, Emergency Preparedness Supervisor
D. Cecchett, Licensing Engineer
J. Connor, Engineering Manager - Programs
T. Cosgrove, Site Engineering Director
C. Costanzo, Plant General Manager
T. Coste, ISI Coordinator
A. Day, Chemistry Manager
M. Delowery, Maintenance Manager
A. Dong, Instrumentation and Controls Maintenance Supervisor
S. Duston, Training Manager
R. Filipek, Engineering Manager - Performance Indicators
K. Frehafer, Licensing Engineer
R. Gil, Component Support & Inspection Manager
D. Hanley, Maintenance Programs Supervisor
J. Heinold, Chemistry Technical Supervisor
W. Heise, Eddy Current Level III
M. Hicks, Operations Manager
D. Huey, Work Control Manager
G. Johnston, Site Vice President
B. Kelly, System Engineer
J. Klauck, Assistant Operations Manger
J. Kramer, Site Safety Manager
D. Lanyi, Assistant Operations Manager (Acting)
R. McDaniel, Fire Protection Supervisor
M. Moore, Radiation Protection Manager
B. Mouring, Radiation Protection Supervisor
B. Neff, System Engineer
D. Nowakowski, FPL Corporate NDE LIII
P. Paradis, Fix-It-Now Team Supervisor
E. Parr, Nuclear Materials Manager
T. Patterson, Performance Improvement Department Manager
J. Porter, Design Engineering Manager
W. Raasch, System Engineer
M. Seidler, Security Manager (Acting)
M. Snyder, Site Quality Assurance Manager
N. Sorensen, Business Operations Manager
G. Swider, Systems and Component Engineering Manager
R. Walker, Emergency Preparedness

NRC personnel:

M. Sykes, Chief, Branch 3, Division of Reactor Projects
S. Ninh, Senior Project Engineer, Division of Reactor Projects

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

NONE

Opened and Closed

05000335, 389/2009003-01	NCV	Inadequate Risk Assessment When Performing Weekly Pump Venting (1R13)
05000389/2009003-02	NCV	Failure to Follow Procedure When Placing Shutdown Cooling In-service (4OA2.2)
05000335/2009003-03	NCV	Failure to Have a Fully Qualified and Active Licensed Operator at the Control Boards During Reactivity Manipulations (4OA5.3)

Discussed

2515/172	TI	Reactor Coolant System Dissimilar Metal Butt Welds (4OA5.2)
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LIST OF DOCUMENTS REVIEWED

Procedures

54-ISI-24-31, AREVA Written Practice for Personnel Qualification in Eddy Current Examination, dated July 8, 2008
ADM-29.03, Boric Acid Corrosion Control Program, Rev. 6C
ENG-CST-2.3, Steam Generator Integrity Program Administration, Rev. 19
ENG-CSI-2.2, Component, Support & Inspection Planning and Reporting Results of Steam Generator Tubing Examinations, Rev. 31
NDE 2.2, Magnetic Particle Examination, Rev. 13
NDE 5.2, Ultrasonic Examination of Ferritic Piping Welds, Rev. 14
NDE 5.4, Ultrasonic Examination of Austenitic Piping Welds, Rev. 18
NDE 6.3, Radiographic Examination General Requirements, Rev. 0

Calculations

CR 2008-3080, Pressure Boundary Leakage on 3/4" 2B1 RCP Seal Line, dated 01/29/2008

Corrective Action Documents

CR 2007-41188, Boric Acid Found in A1 Cold Leg and A Hot Leg Penetrations, dated 12/13/2007
CR 2008-3905, Incorrect Filler Material Issued for Repair of RC-183, dated 02/02/2008
CR 2008-4085, Unsatisfactory QC Inspection for 2A2 Reactor Coolant Pump Controlled Bleed-Off Line, dated 02/05/2008
CR 2008-6470, Section XI Repair/Replacement Final Documentation Review Bypassed, dated 02/25/2008
CR 2008-12396, V2489 Almost Encased in Dry Boric Acid, dated 04/27/2009

CR 2008-18977, Boric Acid Found in Seal Stud Area of 2A2 & 2B1 Reactor Coolant Pumps, dated 06/05/2008
 CR 2009-13826, Loose Bolting on SG B Secondary Side Feedwater Inspection Covers, dated 05/06/2009
 CR 2009-13844, 1/4" Spherical Foreign Object in Secondary Side of SG B, dated 05/06/2009
 CR 2009-14509, Loose Bolting on SG A Secondary Side Feedwater Inspection Covers, dated 05/10/2009
 CR 2009-14652, Number and Severity of SG Wear Indications Exceed AREVA Projections, dated 05/11/2009

Other

51-9103689-000, AREVA St. Lucie Unit 2 EOC17 ECT Inspection Plan, dated 3/19/09
 CSI-NDE-08-046, St. Lucie Unit 2 Examination Inspection Plan, Rev. 1, February 2009
 CSI-NDE-00-07, St. Lucie Unit 1 and 2 Steam Generator Secondary Side Integrity Plan, dated July 21, 2008
 AREVA Secondary Side Visual Inspection Plan for Florida Power and Light St. Lucie Unit 2 RFO 18, dated 3/27/09
 AES 09017042-1-1, Aptech Degradation Assessment for St. Lucie Unit 2 Steam Generators for End-of-Cycle 17 (Spring 2009 Outage), Rev. 0, January 2009
 Certificate of Conformance for Ultragel II for Lot Number 06225G, dated 10-12-07
 Certification for UT Transducer 00X6D9, dated 2/13/03
 Certification for UT Transducer 00YVW0, dated 9/16/2003
 Certification for UT Transducer 00YPJ6, dated 8/27/2003
 FPL Magnetic Particle Examination Report for MS-4102-2721 IA / MS-32-FW-1 / MS-32-FW-1-LS, dated 5/13/2009
 FPL Radiographic Report for Weld No. 2002, WO# 36012833 01, dated 5/10/2009
 FPL Radiographic Report for Weld No. 2003, WO# 36012833 01, dated 5/10/2009
 FPL Temperature Indicator Calibration Form, dated 3/16/09
 FPL Ultrasonic Report for Weld No. MS079-1-SW-3, dated 5-9-09
 NDE Certification Records for MT Exam (Billingsley), various dates
 NDE Certification Records for MT Exam (Langston), various dates
 NDE Certification Records for RT Exam (Council), various dates
 NDE Certification Record for UT Exam (Taylor), various dates
 NDE Certification Record for UT Exam (Hassel), various dates
 WO# 36012833 01, Replacement of Secondary Check Valve for HPSI hot leg Injection Loop 2B SDC Feed, V3527
 WO# 39002949 03, RC-226, Replacement of RCP 2A2 Lower Seal Pipe
 WPS 089004, Welder Performance Qualification Record (Guardiola), dated 09/10/08
 WPS 089004, Welder Performance Qualification Record (Crager), dated 10/1/08
 WPS 089004, Welder Performance Qualification Record (Tyler), dated 04/08/09
 WPS 089004, Welder Performance Qualification Record (Thornton), dated 04/24/09
 WPS 43, Weld Procedure Specification, Rev. 11 and supporting Performance Qualification Records (8.8-3, 8.8-4, N140, N334, N335)

Condition Reports

2009-09753	2009-11255	2009-12696	2009-13977	2009-15204
2009-10012	2009-11421	2009-12795	2009-14161	2009-15401
2009-10015	2009-11437	2009-13369	2009-14329	2009-15403
2009-10261	2009-11668	2009-13395	2009-14342	2009-15435
2009-10378	2009-11688	2009-13570	2009-14364	2009-16267
2009-10575	2009-11816	2009-13637	2009-14453	2009-16333
2009-10579	2009-11820	2009-13864	2009-14872	2009-16349
2009-10665	2009-11852	2009-13876	2009-14884	2009-16323
2009-10683	2009-11867	2009-13940	2009-14928	2009-16325
2009-10693	2009-12037	2009-13946	2009-15057	2009-16349
2009-10729	2009-12043	2009-13950	2009-15138	2009-16367
2009-10736	2009-12135	2009-13959	2009-15185	2009-16377
2009-10752	2009-12649	2009-13962	2009-15198	2009-16434
2009-16489	2009-16847	2009-16974	2009-17063	2009-17572
2009-16548	2009-16930	2009-17023	2009-17069	2009-18628
			2009-17569	2009-18789

Section 2OS1: Access Controls to Radiologically Significant AreasProcedures, Manuals, and Guidance Documents

Radiation Protection Plan, Rev. 0

ADM-05.02, HP Controls Of Spent Fuel Pool NON-SNM, Rev. 3

HPP-1, Preparing Radiation Permits, Rev. 31

HPP-3, High Radiation Areas, Rev. 26A

HPP-20, Area Radiation And Contamination Surveys, Rev. 28

HPP-23, Health Physics Activities In The Reactor Containment Building During Shutdown,
Rev. 24AHPP-39, Response Protocols For Whole Body Counting And Personnel Contamination
Monitoring, Rev. 6

HP-55, Portable Shielding, Rev. 19

HP-74, Access Control Using Alarming Dosimeters, Rev. 8

2-OSP-100.12, Schedule Of Periodic Tests, Checks And Calibrations Week 12, Rev. 12

Records and Data ReviewedSA2008-22343, Assessment Of The INPO High Radiation Area And Locked High Radiation
Area Controls Checklist, 09/03-12/2009

SA 2008-36897, Nuclear Self Assessment, 02/09-19/09

Personnel Contamination Report Listings, 01/01/08 – 05/11/09

Unit 1 and Unit 2 Fuel Pool Inventory Data Sheets 05/13/09

Occupational Cornerstone Performance Indicator Data for 2008 and 2009

U1 and U2 Locked High Radiation Area, Very High Radiation Area Surveillances, 05/12/09

Personnel Contamination Event, #59, 11/11/08

Personnel Contamination Event #13, 05/09/09

Personnel Contamination Event #4, 04/11/09

Radiation Work Permit (RWP) Number (No.) 09-2501, Inspection Walkdowns

RWP No. 09-3431, Keyway and Beneath The Reactor vessel Activities

RWP No. 09-3001, Reactor Disassembly/Reassembly Activities And Support

RWP No. 09-3006, Reactor Head Remove/Install

RWP No. 09-3318, Decon Activities/Shielding
 RWP No. 09-3424, Scaffold And Insulation Support
 RWP No. 09-3425, Alloy 600 Cold Leg Activities
 RWP No. 09-3427, Pressurizer Walkdowns And Inspections
 Survey No. 091-1925, Reactor Containment Building 18 Ft., 04/29/09
 Survey No. 091-1823, Reactor Containment Building 18 Ft. and 23Ft., 04/27/09
 Survey No. 091-1562, Independent Fuel Storage Installation, 04/20/09
 Survey No. 091-2035, 62 FT, 04/30/09
 Survey No. TSP-09-008, Letdown Cubicle 18 Ft., 05/05/09
 Survey No. 091-2357, Keyway And Under Vessel, 05/05/09
 Survey No. 092-0170, Air Sample Data Sheet, 05/02/09
 Technical Basis Document HP-1000-050609, Dose Calculation from Inadvertent Exposure to
 a
 15 mCi Ni-63 Source, 05/06/2009
 Survey No. 091-1951, Sealand City, North of Dry Storage Warehouse, 04/29/09
 Survey No. 091-1521, Monthly Pre-Conc. Filters, BAMT & PPS, Condens. RCVR PPS., HU
 Drain & Circ. PPS – Elevation (EL) -.5 ft (')
 Survey No. 091-1882, Shutdown heat exchangers – EL -.5'
 Survey No. 081-1388, Cask Vehicle Survey, 04/24/08
 Survey No. 082-1463, Cask Vehicle Survey, 04/30/08

CAP Documents

PI-AA-204, Condition And Screening Process, Rev. 2
 PI-AA-205, Condition Evaluation And Corrective Action, Rev.1
 Condition Report Number (CR) 2008-36217, Personnel Contamination Event Review
 CR 2008-37499, Personnel Contamination Event And Human Performance Review
 CR 2008-37675, Radiation Protection Issues Noted At Unit 2 Spent Fuel Pool
 CR 2008-35476, EPD Dose Rate Alarm
 CR 2008-31515, Contaminated Tool Found In Clean Area In RCA
 CR 2008-30443, Procedure Change To Track Non-Fuel Items in Spent Fuel Pool
 CR 2008-18570, Personnel Contamination Event
 CR 2008-18606, Personnel Contamination Event
 CR 2008-20434, Personnel Contamination Event
 CR 2009-03286, False Accumulated EPD Alarm
 CR 2009-05022, Radioactive Ni-63 Source Not Located During Semi- Annual Source
 Inventory
 CR 2009-05028, Portal Monitor Compliance
 CR 2009-07168, LHRA Lock Not Secured On Cask
 CR 2009-09625, Individual Alarmed Portal Monitor And Proceeded Through Turnstile
 CR 2009-12493, Industry Operating Experience (OE) with spent fuel pool streaming
 CR 2009-14730, Radioactive Source Calculations

Section: 2OS ALARA

Procedures, Manuals, and Guidance Documents

St. Lucie Nuclear Plant 5-Year ALARA Plan 2009-2013
 HPP-1, Preparing Radiation Work Permits, Rev. 30A
 HPP-30, Personnel Monitoring, Rev. 44
 HP-55, Portable Shielding, Rev. 19
 ADM-05.01, ALARA Program, Rev. 13A
 ADM-05.04, Cobalt Reduction Program, Rev. 0E

PI-AA-204, Condition Identification and Screening Process, Rev. 2

Records and Data

SL2-17 Refueling Outage ALARA Report, 2/14/08
 U2 S/G Bowl Average Dose Rates, 1998 - 2009
 SL2-18 Crudburst and Cleanup, Co-58 Activity in RCS
 U1 and U2 Radiological Hot Spot Log
 Declared Pregnant Worker Dosimetry Records, April 2007 – May 2009
 ALARA Plan SL2-18 Alloy 600 Walk-downs, Inspections, and Profilometry, Rev. 0
 ALARA Plan for the SL2-18 Reactor Coolant Pump Seal Injection Lines Replacement, 4/26/09
 SL2-18 Radiation Protection Plan, Reactor Head Lift/Set, Rev. 0
 Pre-Job ALARA Review Form, RWP 09-3006, Detension/Tension Head Studs, 4/24/09
 Pre-Job ALARA Review Form, RWP 09-3441, Eddy Current Testing, 4/24/09
 Pre-Job ALARA Review Form, RWP 09-3403, RCP Seal Lines Remove/Replace, 4/24/09
 Pre-Job ALARA Review Form, RWP 09-3425, Alloy 600: Profilometry and Walkdowns, 4/27/09
 Pre-Job ALARA Review Form, RWP 09-3001, Reactor Disassembly/Reassembly, 4/24/09
 Pre-Job ALARA Review Form, RWP 09-3022, Fuel Transfer Flange, 4/24/09
 TEDE-ALARA Evaluation, RWP 09-3441, Eddy Current Testing, 5/7/09
 TEDE-ALARA Evaluation, RWP 09-3322, Transfer Cart Work, 4/25/09
 ALARA Job In Progress Review, RWP 09-3403, RCP Seal Line Replacement, 5/10/09
 ALARA Job In Progress Review, RWP 09-3441, S/G ECT, 5/12/09
 ALARA Review Board Meeting, Presentation Slides, 5/4/09 and 5/12/09
 Temporary Shielding Placement 09-008, 23' El. Letdown Valve Cubicle
 Temporary Shielding Placement 09-030, General Work Area – All Elevations to Support Seal Line Replacement
 RWP 09-3006, Detension/Tension Head Studs, Rev. 00
 RWP 09-3441, Eddy Current Testing, Rev. 01
 RWP 09-3403, RCP Seal Lines Remove/Replace, Rev. 00
 RWP 09-3425, Alloy 600: Profilometry and Walkdowns, Rev. 00
 RWP 09-3001, Reactor Disassembly/Reassembly, Rev. 00
 RWP 09-3322, Transfer Cart Work, Rev. 00
 RWP 09-3008, Reactor Head Removal/ Replacement, Rev. 00
 RWP 09-3022, Fuel Transfer Flange, Rev. 00
 Radiological Survey, U2 A S/G Platform, 5/11/09 – 2215 hrs.
 Radiological Survey, U2 A S/G Platform, 5/12/09 – 0815 hrs.
 Radiological Survey, U2 B S/G Platform, 5/12/09 – 2040 hrs.
 Radiological Survey, U2 RCB Reactor Cavity, 12/3/07 – 0900 hrs.
 Radiological Survey, U2 RCB Lower Level, 4/29/09 – 0830 hrs.
 Radiological Survey, U2 Lower Cavity, 4/27/09 – 2200 hrs.
 SL2-18 Daily ALARA Reports, 4/27/09 – 5/1/09 and 5/11/09 – 5/15/09
 Work Order 38027193, Move trashed tri-nuke motor out of U1 SFP area

CAP Documents

SA 2008-1300, RP Self-Assessment
 CR 2009-12985, Deficiencies in connecting bubblehood hoses
 CR 2009-12740, Poor radworker practices observed in containment
 CR 2008-09702, Inaccurate dose estimate for work on U1 MV-03-1B
 CR 2008-20831, Improvements can be made to pre-job briefings

CR 2008-37542, Extra dose expended to check LHRA controls near reactor vessel penetrations

CR 2008-37339, Trashed motor providing unnecessary dose to workers in area

CR 2008-11012, Weaknesses in ALARA program identified during self-assessment

Section: 2PS2 Radioactive Material Processing and Transportation

Procedures, Manuals, and Guidance Documents

HP-40, Shipment of Radioactive Material, Revision (Rev. 47)

HP-47, Classification of Radioactive Waste Material for Land Disposal, Rev. 28B

HP-48, Activity Determinations for Radioactive Material Shipments, Rev. 6D

St. Lucie Plant Lesson Plan 2302298Ro, Health Physics Hazardous Material Transportation; Shipping and Receiving of Radioactive Material, 12/20/2007

St Lucie Plant Lesson Plan 2302298R0, Hazardous Material Transportation; Shipping and Receiving of Radioactive Material, 12/20/2007

Records and Data Reviewed

Work Order (W/O) No. 36014107, CR 06-11522 Corrosion/Replace Ion Exchanger 1B Change Authorization Request (CAR) 06-27-10, Isolate and Abandon in place various systems

as recommended in an engineering study

(CAR) 06-27-20, Isolate and Abandon in place various systems as recommended in an engineering study

CAR 08-039, Replace Waste Ion Exchangers 1B & 1C

Plant St. Lucie Low Level Radioactive Waste Interim/Buffer Storage Update, May 2009

Part 61 Analysis Results for the following waste streams: U2 CVCS Filters, 070-359

(11/06/07) &

060-040 (01/12/06); U1 CVCS Filter 070-377 (11/09/07); U1 Cavity Tri-Nuke, 070-354

(11/01/07) & 060-075 (02/22/06); U2 Tri-Nuke Filters, 080-011 (01/14/08) & 080-041

(01/12/06); U1 SFP Tri-Nuke Filter, 070-358 (11/06/07); U1 SFP Puri-Filter Smear, 070-

362

(11/06/07); U1 SFP Filter, 050-113 (03/03/05); U2 B/A Pre-concentrator Smear, 070-353

(11/06/07); U1 B/A Pre-concentrator Smear, 070-042 (03/23/07) & 050-109 (07/22/04);

DAW,

070-363 (11/06/07) & 060-151 (05/12/06); Blowdown Resin, 060-283, 09/25/06; U2 SRT

080-

059 (04/09/08) & 070-356 (11/06/07); U1 SRT, 080-068 (04/23/08) & 070-18 (03/02/07);

U1

SFP Resin, 070-43 (03/28/07); U1 IX Resin, 050-325 (12/01/05); U1 CVCS Resin 070-041

(03/28/07); 1A CVCS Resin, 050-323 (12/01/05); and 1C CVCS Resin 050322 (12/01/05)

Evaluation of PSL Unit 1 Waste Filter Data and Recommendations, 08/25/08, (Radwaste File)

Evaluation of PSL Unit 2 Spent Resin Tank (SRT) Waste Stream Data and Recommendations,

08/22/08 (Radwaste File)

Evaluation of PSL Unit 1 Spent Resin Tank (SRT) Waste Stream Data and Recommendations,

08/21/08

Evaluation of PSL Unit 2 Spent Resin Tank (SRT) Waste Stream Data and Recommendations,

03/27/08 (Radwaste File)

Evaluation of PSL Dry Active Waste Stream Data and Recommendations, 03/10/08
(Radwaste File)

Evaluation of PSL Dry Active Waste Stream Data and Recommendations, 05/11/07
(Radwaste File)

Evaluation of PSL Steam Generator Blowdown Resin Waste Stream Data and Recommendations, 01/25/07 (Radwaste File)

Shipment Number 09-51, Radioactive material, low specific activity, (LSA II), 7, UN3321, Fissile Excepted, 05/13/09

Shipment Number 09-39, Radioactive material, low specific activity, (LSA II), 7, UN3321, Fissile Excepted, 04/30/09

Shipment Number 08-117, Radioactive material, low specific activity, (LSA II), 7, UN3321, Fissile Excepted, 10/17/08

Shipment No. 08-77, Radioactive material, Type A package, 7, UN2915, Fissile Excepted, 05/12/08

Shipment No. 08-74, Radioactive material, low specific activity, (LSA II), 7, UN3321, Fissile Excepted, RQ-Radionuclides, 05/06/08

Shipment No. 08-69, Radioactive material, low specific activity, (LSA II), 7, UN3321, Fissile Excepted, RQ-Radionuclides, 04/30/08

Shipment No. 08-23, Radioactive material, Type A package, 7, UN2915, Fissile Excepted, 01/29/08

CAP Documents

Condition Report Number (CR) 2006-11522, Boric acid through wall leak on 1B Waste Ion Exchanger

CR 2006-11523, Boric acid through wall leak on 1C Waste Ion Exchanger

CR 2008-4356, Failure to properly load DAW Sea/Land Container

CR 2008-4891, Scheduled shipment of depleted filters delayed due to vendor backlog at their site

CR 2008-8140, Software error notification from WMG Inc., dated 02/29/2008 concerning a calculation error when performing 'on the fly' characterizations on RADMAN

CR 2008-13118, Resin transfer delayed due to vendor supplied dewatering system Malfunction

CR 2008-14899, Liner of depleted filters was transferred from plant ground shield to shipping cask with radiation exposure greater than 50% over planned exposure for transfer and cask closure.

CR 2008-23712, Track and trend CR to document changes to schedule to segregate Class A and Class B/C resin for shipment or storage on site.

CR 2008-26391, WMG's FILTRK Software not classified as safety related SQA Level A

CR 2009-3955, Three radioactive waste shipments identified that were greater than 20 days before receipt at their destination with no radioactive material trace justification submitted to the NRC

CR 2009-3984 Discrepancies in radioactive material shipping documentation packages for radioactive material shipments 08-79, 09-73, and 08-37

CR 2009-4099, Weakness in radioactive material shipping program

CR 2009-4102, EPRI guidance for tritium determination in radioactive waste shipments is not being followed

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

Section: 4OA1 Performance Indicator Verification

Procedures

ADM-25.02, NRC Performance Indicators, Rev. 21

NAP-206, NRC Performance Indicators, Rev. 6

Records and Data Reviewed

HPP 30.17, Exposure Investigations Calendar Year (CY) 2008

HPP 30.17, Exposure Investigations CY 2009

Internal Assessment Data Reports 01/01/08-04/01/09

LCOTR Log Radiation Monitoring Data, 01/01/08-04/01/09

2008 Annual Radioactive Effluent Release Report, 02/23/09

LIST OF ACRONYMS

ANSI	American National Standards Institute
ARM	area radiation monitor
CAM	continuous airborne monitor
CAP	Corrective Action Program
CCW	component cooling water
CFR	Code of Federal Regulations
CHRM	containment high range monitor
CIS	containment isolation signal
CR	condition report
CY	calendar year
DRD	direct reading dosimeter
DAW	dry active waste
DRP	discrete radioactive particle
ECCS	Emergency Core Cooling System
HEPA	high efficiency particulate air
HPT	health physics technician
HRA	high radiation area
I&C	instrumentation and controls
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
LHRA	locked-high radiation area
mrem	millirem
NCR	Nuclear Condition Report
ODCM	Offsite Dose Calculation Manual
OS	Occupation Radiation Safety
PCM	personnel contamination monitor
PI	Performance Indicator
PIG	particulate, iodine and gas monitor
PS	Public Radiation Safety
PM	portal monitor
PSL	Plant St. Lucie
QC	quality control
RAB	reactor auxiliary building
radwaste	radioactive waste
RB	reactor building
RCA	radiologically controlled area
REMP	Radiological Environmental Monitoring Program
RG	Regulatory Guide
RM	radiation monitor
RWP	radiation work permit
SCBA	self-contained breathing apparatus
SFP	spent fuel pool
TLD	thermoluminescent dosimeter
TMI	Three Mile Island
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
VHRA	very high radiation area
WBC	whole-body counter
WO	work order