



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

June 10, 2009

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

**SUBJECT: ST. LUCIE NUCLEAR PLANT - NRC TRIENNIAL FIRE PROTECTION  
INSPECTION REPORT 05000335/2009007 AND 05000389/2009007 AND  
EXERCISE OF ENFORCEMENT DISCRETION**

Dear Mr. Nazar:

On February 13, 2009, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at your St. Lucie Nuclear Plant, Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on February 12, 2009, with Mr. G. Johnston and other members of your staff. Following completion of additional review in the Region II office, another exit meeting was held by telephone with Mr. E. Katzman, Licensing Manager, and other members of your staff on April 30, 2009, to provide an update on changes to the preliminary inspection findings.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the NRC's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. The scope of the inspection was reduced, in accordance with NRC Inspection Procedure 71111.05TTP, issued May 9, 2006, as a result of your ongoing project to convert the fire protection licensing basis to the performance based risk-informed methodology described in National Fire Protection Association Standard 805.

This report documents one NRC-identified finding of very low safety significance (Green). This finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because the finding was entered into your corrective action program, the NRC is treating the finding as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the NCV in this report, you should provide a response within 30 days of the date of this report, with the basis of 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 Nuclear Plant. 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 the inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC Resident Inspector at the St. Lucie Nuclear Plant. The information you provide will be considered in accordance with Inspection Manual chapter 0305.

The enclosed report also documents two noncompliances that were identified during the inspection. The NRC is not taking enforcement action for these noncompliances because they meet the criteria of NRC Enforcement Policy, Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48), and NRC Inspection Manual Chapter 0305, Violations in Specified Areas of Interest Qualifying for Enforcement Discretion.

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

Sincerely,

**/RA/**

Rebecca L. Nease, Chief  
Engineering Branch 2  
Division of Reactor Safety

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

Enclosure: Inspection Report 05000335/2009007 and 05000389/2009007  
w/Attachment: Supplemental Information

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Letter to Mano Nazar from Rebecca L. Nease dated June 10, 2009.

SUBJECT: Triennial Fire Protection Inspection Report 05000335/2009007 and  
05000389/2009007 w/Attachment: Supplemental Information

Distribution w/encl:  
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**(\*)- see previous page for concurrence**

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| SIGNATURE    | RA         | RA         | <b>RA</b> | RA        | RA           | RA        | RA        |
| NAME         | THOMAS     | STAPLES    | MILLER    | SUGGS     | MERRIWEATHER | WALKER    | NEASE     |
| DATE         | 05/14/2009 | 05/14/2009 | 4/29/09   | 05/8/2009 | 05/13/2009   | 05/9/2009 | 6/10/2009 |
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| DATE         | 5/21/2009 | 6/ /2009 | 6/ /2009 | 6/ /2009 | 6/ /2009 | 6/ /2009 | 6/ /2009 |
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**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos.: 50-335, 50-389

License Nos.: DPR-67, NPF-16

Report Nos.: 05000335/2009007 and 05000389/2009007

Licensee: Florida Power & Light Company (FPL)

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

Location: Jensen Beach, FL 34957

Dates: January 26-30, 2009 (Week 1)  
February 09-13, 2009 (Week 2)

Inspectors: N. Staples, Reactor Inspector (Lead Inspector)  
M. Thomas, Senior Reactor Inspector  
N. Merriweather, Senior Reactor Inspector  
L. Suggs, Reactor Inspector  
K. Miller, Reactor Inspector  
B. Melly, Contractor

Accompanying Personnel: G. Crespo, Senior Reactor Inspector – In Training

Approved by: Rebecca Nease, Chief  
Engineering Branch 2  
Division of Reactor Safety

Enclosure

## SUMMARY OF FINDINGS

IR 05000335/2009007, 05000389/2009007; 01/26-30/2009 and 02/09-13/2009; St. Lucie Nuclear Plant, Units 1 and 2; Triennial Fire Protection Inspection.

This report covers an announced two-week triennial fire protection inspection by five regional inspectors, one contractor, and one inspector trainee. A Green non-cited violation was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609 "Significance Determination Process". The cross-cutting aspect was determined using IMC 0305, Operating Reactor Assessment Program. Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG 1649, "Reactor Oversight Process" Revision 4, dated December 2006.

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

#### Cornerstone: Mitigating Systems

Green. The team identified two examples of a non-cited violation of St. Lucie's Unit 1 and Unit 2 Renewed Operating License Conditions 3.E for the licensee's failure to promptly correct conditions adverse to quality. The first example involved failure to take prompt corrective action for a noncompliance that was identified during the 2006 triennial fire protection inspection (Inspection Report 05000335, 389/2006010). Specifically, the licensee did not implement corrective actions to perform surveillance tests on the Unit 1 eight-hour battery powered portable emergency lights. The second example identified by the team during the 2009 inspection, involved four eight-hour battery powered fixed emergency lights that failed an annual surveillance test and were not repaired or replaced. The licensee initiated Condition Reports 2009-4010, -4056 and -4220 to implement corrective actions to address these issues.

The licensee's failure to correct the above conditions adverse to quality involving fire protection, as required, was a performance deficiency. The finding is more than minor because it is associated with the reactor safety, mitigating systems, cornerstone attribute of protection against external factors (i.e., fire) and it affects the objective of ensuring reliability and capability of systems that respond to initiating events. The team determined that this finding was of very low safety significance (Green) because the operators had a high likelihood of completing the task using flashlights. This performance deficiency is associated with the cross-cutting area: Human Performance, Work Control: H.3(b). The finding was directly related to the licensee not planning and coordinating work activities to support long-term equipment reliability and their maintenance scheduling was more reactive than preventive. (Section 1R05)

### B. Licensee Identified Violations

None

Enclosure

## REPORT DETAILS

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R05 Fire Protection

The purpose of this inspection was to review the St. Lucie Nuclear Plant (PSL) fire protection program (FPP) for selected risk-significant fire areas. The inspection was performed in accordance with the U.S. Nuclear Regulatory Commission (NRC) Inspection Procedure (IP) 71111.05TTP, "Fire Protection-NFPA 805 Transition Period (Triennial)," dated 05/09/2006, for a plant in transition to National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," 2001 Edition. This inspection fulfilled the baseline inspection program requirements for the triennial review of fire protection and post-fire safe shutdown program performance. The FPP was assessed against the requirements of 10 CFR Part 50.48(a) and (b) while the licensee is in the process of transitioning to NFPA 805 to implement the requirements of 10 CFR 50.48(c). The NRC reduced the scope of this inspection by not specifically targeting safe shutdown circuit configurations for inspection. Emphasis was placed on verification that procedures for post-fire safe shutdown (SSD) and the fire protection features provided for the selected fire areas met NRC requirements. The inspection was performed in accordance with the NRC Reactor Oversight Process (ROP), using a risk-informed approach for selecting the fire areas and attributes to be inspected. The selection of risk-significant fire areas to be evaluated during this inspection considered the licensee's Individual Plant Examination for External Events, information contained in FPP documents, results of prior NRC triennial inspections, and observations noted during in-plant tours. The fire areas (FA)/fire zones (FZ) chosen for review during this inspection were:

- Unit 2 FA F/FZ 42I, Main Control Room, Elevation 62 feet.
- Unit 2 FA A/FZ 37, Train A Switchgear, Elevation 43 feet.
- Unit 2 FA H/FZ 51E, Reactor Auxiliary Building Hallway, Elevation 19.5 feet.

Section 71111.05-05 of the IP specifies a minimum sample size of three fire areas. Inspection of the selected FAs/FZs fulfills the procedure completion criteria. The inspection team evaluated the Units 1 and 2 FPP against applicable requirements which included the fire protection program report contained in Appendix 9.5A of the Updated Final Safety Analysis Report (UFSAR); plant Technical Specifications (TS); Units 1 and 2 Renewed Operating License, Conditions 3.E; NRC safety evaluation reports (SERs); 10 CFR 50.48(a) and (b); and 10 CFR 50, Appendix R and NRC approved exemptions to Appendix R. The team also reviewed related documents that included the fire hazards analysis (FHA) and post-fire safe shutdown analysis (SSA). Specific documents reviewed by the team are listed in the Attachment.

Enclosure



.01 Post-Fire Safe Shutdown From Main Control Room (Normal Shutdown

a. Inspection Scope

Methodology

The team reviewed the licensee's FPP described in UFSAR Section 9.5 A; applicable sections of the licensee's Appendix R SSA, Fire Area Report (2998-B-048, St. Lucie Unit 2 Appendix "R" Safe Shutdown Analysis); plant fire response procedures; system flow diagrams; electrical control wiring diagrams; electrical cable routing lists; and other engineering supporting documents. The reviews were performed to verify that hot and cold shutdown could be achieved and maintained from the main control room (MCR), with and without the availability of offsite power, for postulated fires in FA A/FZ 37 and FA H/FZ 51E. The team performed plant walk-downs to verify that the plant configuration was consistent with that described in the fire hazards analysis and the SSA. The inspection activities focused on ensuring the adequacy of systems selected for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring instrumentation, and support system functions. The team reviewed the systems and components credited for use during this shutdown method to verify that they would remain free from fire damage.

Operational Implementation

The team reviewed the SSA, system flow diagrams, and the essential equipment list to select a sample of SSD components that were required to be operable for post-fire safe shutdown from the MCR for a postulated fire in FA A/FZ 37 and FA H/FZ 51E. The team verified this sample by reviewing the raceway and fire zone cable routing data for the cables associated with the selected SSD components to determine if the components (i.e., power and/or control circuits) could be potentially damaged and made inoperable by a fire in the fire areas selected.

The team reviewed the adequacy of procedures utilized for post-fire safe shutdown and performed a walk-through of procedure steps to ensure the implementation and human factors adequacy of the procedures. The team reviewed local operator manual actions to ensure that the actions could be implemented in accordance with plant procedures in the times necessary to support the SSD method for the applicable FA/FZ and to verify that those actions met the criteria in Enclosure 2 of NRC IP 71111.05TTP. The team also verified that the existing manual actions required for hot standby were specified in the licensee's SSA. The team reviewed and/or walked down applicable sections of the following off-normal operating procedures (ONPs) for FA A/FZ 37 and FA H/FZ 51E.

- 2-ONP-100.01, Response to Fire, Rev. 17C
- 2-ONP-100.01, Appendix 37 (FA A/FZ 37), Rev. 17C
- 2-ONP-100.01, Appendix 51E (FA H/FZ 51E), Rev. 17C

The team also reviewed licensee Condition Report (CR) 2006-20062, which was initiated to assess and track resolution of the operator manual action issue as part of the plant-wide risk evaluation during the transition to NFPA 805.

Enclosure

b. Findings

No findings of significance were identified.

.02 Protection of SSD Capabilities

a. Inspection Scope

Through a combination of design information review, licensing basis information review, and in-plant inspection, the team verified fire protection features used to protect safe shutdown cables and components to ensure they satisfy the separation and design requirements specified in the Branch Technical Position (BTP) Auxiliary and Power Conversion Systems Branch (APCSB) 9.5-1, Appendix A and 10CFR50, Appendix R, Section III.G.2 and III.G.3 and as implemented by the licensee in UFSAR Section 9.5A and the licensee's SSA. The team reviewed that portion of the SSA which listed the credited and fire-affected equipment for the three FAs selected. This review included an evaluation of the completeness and depth of the SSA in terms of the capacity and capability to achieve and maintain hot shutdown and transition to cold shutdown. The list of credited equipment in the SSA was compared to the SSD procedures. The team verified whether the SSD procedures included these actions. The team compared the SSA and the SSD procedure to ascertain that equipment specified in the procedure had been addressed in the analysis. In addition, the accuracy of the SSA with regard to determining the location of cables by fire area was inspected on a sample basis.

The team reviewed those portions of the UFSAR dealing with fire protection and safe shutdown. One objective of this review was to evaluate the completeness and depth of the analysis which determined the strategy for protecting the various system functions necessary to achieve and maintain hot standby, accomplish long term cool down and achieve cold shutdown following a severe fire.

b. Findings

No findings of significance were identified.

.03 Passive Fire Protection

a. Inspection Scope

The team inspected the material condition and fire rating of the boundaries for the selected FAs/FZs in accordance with the requirements of 10 CFR 50, Appendix R, Section III.G, and Appendix A of BTP APCS 9.5-1, to ensure that they were appropriate for the fire hazards in the area. The overall criterion applied to this element of the inspection procedure was that the passive fire barriers had the capability to contain fires for one hour or three hours as applicable. Fire barriers reviewed included reinforced concrete walls/floors/ceilings, masonry block walls, Thermo-Lag 330-1 walls, mechanical and electrical penetration seals, fire doors, and fire dampers. Fire doors were examined for attributes such as material condition, tightness, proper operation,

Underwriter's Laboratories label on door, frame, and latch, method of attachment to the wall, etc. Construction detail drawings were reviewed as necessary.

In cases where the qualification of a fire barrier depended on engineering evaluations by the licensee in lieu of testing, the team requested the licensee to provide those evaluations for review. Where applicable, the team examined installed barriers to compare the configuration of the barrier to the rated configuration. Construction details and fire endurance test data which established the ratings of these fire barriers were reviewed. Where applicable, fire model calculations were generated by the team using NRC recommended computer codes to evaluate the selected barrier's effectiveness to contain potential fires. The team reviewed the station internal and external penetration seal program and selected seals during plant walk-downs to verify that the penetration seal engineering designs could be traced back to qualified fire tests that support the penetration seals fire rating. The team reviewed the licensee's responses (dated June 9, 2006, September 20, 2006, and December 19, 2006) to Generic Letter 2006-03, Potentially Nonconforming HEMYC and MT Fire Barrier Configurations, to verify that compensatory measures were in place until resolution of the degraded fire barriers is accomplished during the licensee's transition process to NFPA 805.

b. Findings

Introduction: The team identified two examples of a noncompliance of St. Lucie Nuclear Plant, Units 1 and 2, Renewed Operating License Condition 3.E, for the licensee's failure to install a fire door with a 3-hour rating in the 3-hour fire barrier in accordance with the UFSAR and the code of record, NFPA-80, Fire Doors & Windows – 1973 Edition. The team also identified an example of a noncompliance of St. Lucie Nuclear Plant, Unit 2, Renewed Operating License Condition 3.E, for the licensee's failure to maintain a fire rated barrier between the control room and a kitchen area, which is contiguous to the control room, in accordance with the UFSAR and the code of record, NFPA-80, Fire Doors & Windows – 1973 Edition. During the review of the Unit 1 and Unit 2 door configurations, the team determined that the licensee did not meet one or more of the requirements specified in NFPA 80-1973, paragraphs 2-1.7.2.1, 2-1.7.2.4, 2-1.7.2.5, 2-1.7.7.1, and Table 2-1B.

Description: Example 1: The 8' wide by 7' height dual leaf fire doors were installed in an Appendix R 3-hour fire barrier wall separating both Unit 1 safety related Train A Switchgear Room from the safety related HVAC Equipment Room. The team identified that the Unit 1 "A" SWGR Fire Door RA48 had been field modified from the tested configuration to include a conductive hinge and an electric strike, voiding the Underwriter's Label. The licensee entered this noncompliance in the corrective action program as part of CR 2009-3454.

Example 2: The 8' wide by 7' height dual leaf fire doors were installed in an Appendix R 3-hour fire barrier wall separating both Unit 2 safety related Train A Switchgear Room from the safety related HVAC Equipment Room. The team identified the following four issues for the Unit 2 "A" SWGR Fire Door RA93: (1) Fire Door RA93 has a 1-1/2 hour B label; (2) Fire Door RA93 lockset was listed for a single fire door, not doors swinging in pairs; (3) The latch throw depth of approximately 9/16" was insufficient for this size door

Enclosure

assembly which requires a minimum of  $\frac{3}{4}$ " latch throw depth. (4) The bottom flush bolt (on the inactive leaf of Fire Door RA93) was inoperable and would not engage the associated floor strike. The licensee entered this noncompliance in the corrective action program as part of CR 2009-3454.

Example 3: The 3' wide by 7' height door assembly is installed penetrating a fire rated barrier wall separating the PSL Unit 2 Control Room from a kitchen area. The team identified that a "B" Label fire-rated door assembly (RA110) that separates the kitchen from the U2 main control room was found propped open by a licensee installed kick down holder. The licensee entered this issue in the corrective action program as CR 2009-4115.

Analysis: The licensee's failure to install a fire door in accordance with the approved UFSAR is a performance deficiency. This finding is more than minor because the installed fire doors degraded one of the fire protection defense in depth elements and affected the reactor safety Mitigating Systems cornerstone objective. Concerning Examples 1 and 2) the team characterized the finding as having very low safety significance because no potential damage targets in the exposed fire areas were unique from those in the exposing fire area, the door provides a minimum of 20 minutes fire endurance protection, the degraded barrier will not be subjected to direct flame impingement and there is no credible scenario by which a fire on one side of the barrier could propagate through both degraded fire doors to affect equipment in both fire areas. Concerning Example 3) the team characterized the finding as having very low safety significance because the postulated worst case cooking fire (one liter of burning cooking oil in a twelve inch diameter pan on the range top) would be of short duration (less than three minutes). Since the control room is continuously staffed, it was likely that one of the control room personnel would close the Fire Door (RA110) in the event of a kitchen area fire, containing the fire in the kitchen area.

Enforcement: St. Lucie Unit 1 and 2 License Conditions 3.E states, in part, that the licensee shall implement and maintain in effect all provisions of the approved FPP as described in the UFSAR, and supplemented by licensee submittals dated through February 21, 1985 for the facility; and as approved in the various NRC SERs and supplements. The approved FPP is maintained and documented in the St. Lucie UFSAR, Appendix 9.5A, FPP Report. PSL FSAR Appendix 9.5A, subsection 3.12.2, Design Basis, specifies that fire doors are designed and constructed in accordance with the requirements of NFPA 80. Per the code of record, NFPA-80 – 1973 Edition, Paragraph 2-1.7.2.1, specifies that only labeled locks and latches or labeled fire exit hardware (panic devices) meeting both life safety requirements and fire protection requirements shall be used. Paragraph 2-1.7.2.4 specifies that where the inactive leaf pairs of doors are not required for exit purposes, it shall be provided with labeled self-latching top and bottom bolts or labeled two-point latches. Paragraph 2-1.7.2.5 specifies that the throw of single point latch bolts shall not be less than the minimum shown on the fire door label. If the minimum throw is not shown or the door does not bear a label the minimum throw shall be as required in Table 2-1B. Table 2-1B, for hollow metal (flush) doors (doors in pairs), requires an active leaf minimum latch throw of  $\frac{3}{4}$ " with top and bottom bolts on the inactive leaf. Paragraph 2-1.7.7.1, specifies that self-closing doors are those which, when opened, return to the closed position. The door shall swing freely

Enclosure

and shall be equipped with a closing device to cause the door to close and latch each time it is opened. The closing mechanism shall not have a hold-open feature. Contrary to the above, on February 12, 2009, the team identified that the licensee failed to implement and maintain in effect all provisions of the approved fire protection program. Specifically, the inspectors determined that the licensee had failed to install Fire Doors RA48, RA93, and RA110 in accordance with the applicable requirements of NFPA-80, Fire Doors & Windows – 1973 Edition, Paragraphs 2-1.7.2.1, 2-1.7.2.4, 2-1.7.2.5, and 2-1.7.7.1.

Pursuant to the Commission's Enforcement Policy and NRC Manual Chapter 0305, under certain conditions fire protection findings at nuclear power plants that transition their licensing bases to 10 CFR 50.48(c) are eligible for enforcement and ROP discretion. The Enforcement Policy and ROP also state that the finding must not be evaluated as Red. On December 22, 2005, the licensee submitted a letter to the NRC stating its intent to transition to 10 CFR 50.48(c).

Because the licensee committed, prior to December 31, 2005, to adopt NFPA 805 and change their fire protection licensing bases to comply with 10 CFR 50.48(c), the NRC is exercising enforcement discretion for this issue in accordance with the NRC Enforcement Policy, Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48). Specifically, this issue would have been expected to be identified and addressed during the licensee's transition to NFPA 805, was entered into the licensee's corrective action program and will be corrected, was not likely to have been previously identified by routine licensee efforts, was not willful, and was not associated with a finding of high safety significance (Red).

#### .04 Active Fire Suppression

##### a. Inspection Scope

The team's review of active fire suppression included the fire detection systems, fire protection water supply system, automatic fire suppression systems and manual fire fighting fire hose and standpipe systems. The inspection of fire detection systems included a review and walk-down of the as-built configuration of the systems as compared to the applicable NFPA standard. In general, the acceptance criteria applied to active fire suppression systems were contained in applicable codes and standards listed in the Attachment as modified by the design basis documents.

The team inspected the material condition, and operational lineup of fire detection and fire suppression systems through in-plant observation of systems, design and testing of the sprinkler systems in reference to the applicable NFPA codes and standards. The team also reviewed the detection and suppression methods for the category of fire hazards in the selected FAs. Hydraulic calculations which demonstrated the fire pumps and piping had the capacity and capability to deliver proper flow and pressure were reviewed. The most recent flow and pressure test data were also reviewed. The locations of sprinkler heads were observed to check for obstructions. The redundancy of fire protection water sources and fire pumps to fulfill their fire protection function to provide adequate flow and pressure to hose stations and automatic suppression systems

Enclosure

were reviewed as compared to licensing basis requirements. In addition, the team performed inspections of smoke control equipment availability and condition, hose station locations, hose lengths, and nozzle types. Particular attention was given to location and capacity of hose stations and approach routes to the FAs. The hose stations in the selected FAs were reviewed to ensure that adequate reach and coverage could be provided. Also, the hydraulic calculation for the hose stations in the selected FAs were reviewed to ensure that adequate water supply and pressure could be provided to the hose nozzles that would be used to fight a fire in these FAs.

The team reviewed and walked-down operational aspects of the fire detection system such as the location of panels and alarms. The team compared the detector layout drawings against actual detector field locations and then reviewed those locations against NFPA Code 72E, Automatic Fire Detectors, spacing and placement requirements. The testing and maintenance program and its implementation for the fire detection system were also reviewed. The team also reviewed the pre-action sprinkler system in Reactor Auxiliary Building (RAB) Hallway. This consisted of reviewing the system layout drawings against the field installation. In addition, the hydraulic calculation was reviewed against the field installed configuration to ensure that the calculation bounded the installed configuration. The team also reviewed fire brigade staffing, training, fire brigade response strategy, pre-fire planning, fitness for duty of brigade members, fire brigade equipment lockers, and fire brigade staging areas. The team performed inspections of personal protective equipment and emergency lighting. The team also reviewed fire drill reports to assess the readiness of the fire brigade to respond to any and all fires that may occur. The team supplemented the documentation reviews by discussions with persons responsible for fire brigade performance.

b. Findings

No findings of significance were identified.

.05 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team evaluated whether the automatic fixed sprinkler systems or manual fire fighting activities could adversely affect the credited SSD equipment, inhibit access to alternate shutdown equipment, and/or adversely affect the local operator actions required for SSD in the selected fire areas. With regard to the fixed automatic sprinkler system in the Unit 2 RAB Hallway (FA H/FZ 51E), the team considered consequences of a pipe break and inadvertent system actuation. The team also checked that sprinkler system water would either be contained in the fire affected area or be safely drained off. The team also addressed the possibility that a fire in one FA could lead to activation of an automatic suppression system in another FA through the migration of smoke or hot gases, and thereby adversely affect SSD. This portion of the inspection was carried out through a combination of walk-downs, drawing review, and records review.

b. Findings

No findings of significance were identified.

.06 Post-Fire Safe Shutdown From Outside the Main Control Room (Alternative Shutdown)

a. Inspection Scope

Methodology

The team reviewed the licensee's ability to implement an alternative shutdown strategy for a postulated fire in the MCR (FA F/FZ 42I). The team reviewed the licensee's FPP described in UFSAR Appendix 9.5A; applicable sections of the SSA; ONPs; system flow diagrams; electrical Control Wiring Drawings (CWDs); and other supporting documents. The reviews focused on ensuring that the required functions for post-fire SSD and the corresponding equipment necessary to perform those functions were included in the procedures. These inspection activities focused on ensuring the adequacy of systems selected for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring instrumentation, and support system functions.

The team reviewed the systems and components credited for use during this shutdown method to verify that they would remain free from fire damage. The review included assessing whether hot and cold shutdown from outside the MCR could be implemented, and that transfer of control from the MCR to the hot shutdown control panel (HSCP) could be accomplished. This review also included verification that shutdown from outside the MCR could be performed both with and without the availability of offsite power. Plant walk-downs were performed to verify that the plant configuration was consistent with that described in the SSA.

Operational Implementation

The team selected a sample of SSD components referenced in 2-ONP-100.02, Control Room Inaccessibility, to determine if their electrical circuits could potentially be damaged by a fire in the MCR. Cable routing data and CWDs were reviewed for each of the selected SSD components. For those specific SSD components that had associated cables routed through the selected FA, the team reviewed the CWDs to determine if those components and associated circuits were designed to be electrically isolated from fire damage such that they could be restored once the controls were transferred from the MCR to the HSCP. The team also reviewed cable routing data for a sample of process monitoring instrument channels with indicators located on the HSCP to verify that they would be unaffected by a fire in the selected FA. In addition to the above, the team reviewed surveillance test records of the most recent functional testing performed on the transfer switches and circuits used to transfer electrical controls from the MCR to the HSCP. The completed test procedures and test records were reviewed to ensure that adequate tests were performed to verify the functionality of the alternative shutdown capability. The components and documents reviewed are listed in the Attachment. The team reviewed training lesson plans and job performance measures for licensed and non-licensed operators to verify that the training reinforced the shutdown

Enclosure

methodology in the SSA and ONPs for the selected FZ. The team also reviewed shift turnover logs and shift manning to verify that personnel required for SSD using the alternative shutdown systems and procedures were available on-site, exclusive of those assigned as fire brigade members. In addition to the above, the team reviewed procedure 2-ONP-100.02 and performed a walk-through of procedure steps to ensure the implementation and human factors adequacy of the procedure. The team also reviewed selected operator manual actions to verify that the operators could reasonably be expected to perform the specific actions within the time required to maintain plant parameters within specified limits. Time critical actions reviewed included: electrical power distribution alignment, establishing control at the HSCP, establishing reactor coolant makeup, and establishing decay heat removal.

b. Findings

Introduction: The team identified a noncompliance of very low safety significance of St. Lucie Unit 2 Technical Specification 6.8.1.a, for inadequate procedural guidance related to the use of procedure 2-ONP-100.02, Control Room Inaccessibility. Specifically, the procedure did not identify that personnel fall protection safety equipment and additional keys were required for performance of certain operator manual actions to support operation from the HSCP during post-fire SSD conditions.

Description: The team walked-down procedure 2-ONP-100.02 with licensee operations personnel. This procedure would be utilized to safely shut down the plant from the HSCP in the event of a fire in the MCR (FA F/FZ 42I) that rendered the MCR uninhabitable. Appendix B of the procedure directed operators to perform actions to support operation from the HSCP. During the walk-down of procedure 2-ONP-100.02, Appendix B, the team identified several deficiencies in the procedure guidance. The first deficiency involved Appendix B, steps 7 and 8, which directed local closure of main feedwater isolation valves HCV-09-1A and HCV-09-2A. To accomplish these steps, personnel fall protection safety equipment would be required. Appendix B did not identify that fall protection equipment was needed, nor did it identify that a key was needed to unlock the padlock to access the locker where the fall protection equipment was stored. The team observed that in order to accomplish these steps, personnel fall protection safety equipment would be needed, in accordance with the requirements of licensee procedure ADM-04.02, Industrial Safety Program. The second deficiency involved Appendix B, step 13, which directed local closure of valve MV-09-14, (2B to 2A AFW Pump Disch Cross-Tie). Local operation of this valve required use of a key. Appendix B did not identify that a key was required to operate valve MV-09-14 locally. The third deficiency involved Appendix B, step 13, which directed manual valves V09136 (2B AFW Pump to 2B S/G FW Isol) and V09158 (2C AFW Pump to 2B S/G FW Isol) to be locked closed. The team observed during the procedure walk-down that these manual valves were padlocked open, consistent with the system flow diagrams. Appendix B did not identify that a key was required to locally reposition these padlocked open manual valves. The team noted that these deficiencies could potentially delay operator actions required to bring the plant to SSD conditions at the HSCP. The team discussed these deficiencies with licensee personnel who initiated CRs 2009-2590 and -2592 and took actions to place the additional keys in the MCR that were required by the procedure. Also, procedure changes were processed to provide guidance to identify the

Enclosure



need for fall protection equipment and keys to perform SSD actions. The team concluded that given these procedure deficiencies, and, based on their experience and training, it was likely plant operators would be able to take the appropriate actions within the time required to ensure post-fire SSD conditions.

Analysis: The failure to include necessary information in procedure 2-ONP-100.02 for performance of certain operator manual actions to support operation from the HSCP during post-fire SSD conditions is a performance deficiency. This noncompliance is considered to be more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone and it affected the cornerstone objective of protection against external events such as fire. The team assessed the noncompliance using IMC 0609, Appendix F, Fire Protection Significance Determination Process. This noncompliance was determined to be of very low safety significance (Green) using Appendix F of the SDP, because it did not adversely affect components credited for reactivity control, reactor coolant makeup, reactor heat removal, and support systems functions. The team considered this noncompliance to be low degradation because, based on their experience and training, it was likely plant operators would have been able to take the appropriate actions within the time required to ensure post-fire SSD conditions.

Enforcement: Technical Specification 6.8.1.a. requires that written procedures shall be established, implemented, and maintained covering the activities in Appendix A of Regulatory Guide 1.33, Revision 2, dated February 1978. Regulatory Guide 1.33, Appendix A, Section 6.v., requires procedures for combating emergencies such as plant fires. Procedure 2-ONP-100.02, Control Room Inaccessibility, Rev. 22, provided instructions for placing St. Lucie Unit 2 in a safe condition if operations could not be performed from the MCR due to a fire in the MCR.

Contrary to the above, on February 12, 2009, the team identified that procedure 2-ONP-100.02, Control Room Inaccessibility, provided inadequate guidance. Specifically, the procedure did not identify that personnel fall protection safety equipment and additional keys were required for performance of certain operator manual actions to support operation from the HSCP during post-fire SSD conditions. The licensee initiated CRs 2009-2590 and 2009-2592 to address this issue.

Pursuant to the Commission's Enforcement Policy and NRC Manual Chapter 0305, under certain conditions fire protection findings at nuclear power plants that transition their licensing bases to 10 CFR 50.48(c) are eligible for enforcement and ROP discretion. The Enforcement Policy and ROP also state that the finding must not be evaluated as Red. On December 22, 2005, the licensee submitted a letter to the NRC stating its intent to transition to 10 CFR 50.48(c).

Because the licensee committed, prior to December 31, 2005, to adopt NFPA 805 and change their fire protection licensing bases to comply with 10 CFR 50.48(c), the NRC is exercising enforcement discretion for this issue in accordance with the NRC Enforcement Policy, Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48). Specifically, it was likely this issue would

Enclosure

have been identified and addressed during the licensee's transition to NFPA 805, it was entered into the licensee's corrective action program and will be corrected, was not likely to have been previously identified by routine licensee efforts, was not willful, and was not associated with a finding of high safety significance.

.07 Circuit Analyses

a. Inspection Scope

In accordance with IP 71111.05TTP, this segment is suspended for plants in transition because a more detailed review of cable routing and circuit analysis will be conducted as part of the fire protection program transition to NFPA 805. However, to support this inspection a limited scope review of a select sample of SSD components was conducted to verify that the existing fire response procedures were adequate for a postulated fire in any of the selected FAs. The cables examined were based upon a list of SSD components selected by the team. The team reviewed the electrical CWDs and identified the cables associated with the SSD components and examined in detail the cable routing and potential for fire damage and the effects on the circuit. The specific components reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.08 Communications

a. Inspection Scope

The team reviewed the plant communications systems that would be relied upon to support fire event notification and fire brigade fire fighting activities to verify their availability at different locations, for fire event notification, and fire brigade fire fighting activities. The team reviewed both fixed and portable communication systems to evaluate the capability of each system to support plant personnel in the performance of local operator manual actions to achieve and maintain SSD conditions. Both fixed and portable communication systems were also reviewed for the impact of fire damage in the selected fire areas/zones. During this review, the team considered the effects of ambient noise levels, the clarity of reception, the availability at designated locations, reliability ensured through periodic testing, and that batteries were maintained sufficiently charged. The team conducted the inspection of communications through a combination of in-plant observations, drawing and records review, and interviews.

The team reviewed the radio battery usage ratings for the radios stored and maintained on charging stations for operator use while performing the SSD procedure. The team also reviewed preventative maintenance and surveillance test records to verify that the communication equipment was being properly maintained. The team also reviewed selected fire brigade drill evaluation/critique reports to assess proper operation and effectiveness of the fire brigade command post portable radio communications during fire drills and identify any history of operational or performance problems with radio communications during fire drills. The team compared statements made by operations

personnel regarding which communication system they would use with commitments in the UFSAR concerning communications for post-fire SSD.

b. Findings

No findings of significance were identified.

.09 Emergency Lighting

a. Inspection Scope

The team reviewed the 8-hour emergency lighting system to verify that it was in accordance with 10 CFR 50.48; Renewed Operating License Condition 3.E for Unit 1 and Unit 2; NRC SERs; and the UFSAR. The team reviewed maintenance and design aspects of the emergency lighting units (ELUs) required by 10 CFR 50, Appendix R, Section III.J. The portable eight-hour battery-powered emergency lights are credited in the licensee FPP for use during the performance of operator manual actions in outdoor areas, and for access and egress routes. This review also included examination of whether backup ELUs were provided for the primary and secondary fire emergency equipment storage locker locations and dress-out areas in support of fire brigade operations should power fail during a fire emergency.

The team performed plant walk-downs of selected areas for local manual operator actions identified in the post-fire SSD procedures to observe the placement, alignment and coverage area of fixed eight-hour battery pack emergency lights throughout the FAs. The team also performed walk-downs to evaluate the fixed ELUs adequacy for illuminating access and egress pathways and any equipment requiring local operation and/or instrumentation monitoring for post fire safe shutdown for the selected FAs/FZs. The team also observed whether emergency exit lighting was provided for personnel evacuation pathways to the outside exits as identified in the NFPA 101, Life Safety Code, and the Occupational Safety and Health Administration Part 1910, Occupational Safety and Health Standards.

Preventive maintenance procedures and completed surveillance tests were reviewed to ensure adequate surveillance testing and periodic battery replacements were in place to ensure reliable operation of the fixed and portable emergency lights. The team also reviewed the system health reports and discussed the maintenance rule status of the emergency lighting systems. The team reviewed test records for the past year of periodic maintenance functional tests, as well as the annual capacity tests, to confirm that the batteries were being properly maintained and had the capacity to supply eight hours of lighting. The team reviewed the maintenance work requests and work order records that had been initiated for the identified test failures to verify that the deficiencies were properly corrected. The manufacturer's information and vendor manuals for the fixed and portable 8-hour battery pack ELUs were reviewed to verify that the battery power supplies were rated with at least an 8-hour capacity as described in UFSAR Section 9.5A. The team reviewed the availability of the portable eight-hour battery powered emergency lights located in storage lockers throughout the plant.

b. Findings

Introduction: The NRC identified two examples of a Green non-cited violation (NCV) of St. Lucie Unit 1 and Unit 2 Renewed Operating License Conditions 3.E for the licensee's failure to promptly correct conditions adverse to quality. The first example involved failure to take prompt corrective action for a noncompliance that was identified during the 2006 TFPI (IR 05000335, 389/2006010). Specifically, the licensee did not implement corrective actions to perform surveillance tests on the Unit 1 eight-hour battery powered portable emergency lights. The licensee entered this issue into their corrective action program; however no corrective actions were implemented to resolve this issue. The second example involved four eight-hour battery powered fixed emergency lights that failed an annual eight-hour discharge surveillance test and were not repaired or replaced.

Description: The licensee's FPP (UFSAR Appendix 9.5A) credits the use of fixed and portable eight-hour battery-powered ELUs during the performance of post-fire SSD procedures. Section 7.5 of Appendix 9.5A discussed the inspection and testing requirements of the FPP and listed emergency lighting as being subjected to periodic inspections and/or testing.

Example One: In October of 2006, during the 2006 TFPI, NRC inspectors identified that the licensee failed to perform surveillance tests on the Unit 1 eight-hour battery-powered portable ELUs. The licensee entered this issue into their corrective action program as CR 2006-29459. During the 2009 TFPI, NRC inspectors requested to review corrective actions for CR 2006-29459 and the completed eight-hour discharge test procedures for the portable eight-hour ELUs. The licensee provided CR-2006-29459, which included an engineering evaluation determining that an eight-hour annual discharge test is required on all portable ELUs. The licensee concluded that they did not have a surveillance test procedure for the portable ELUs. The licensee further stated that a battery discharge test had not been performed to demonstrate the eight-hour battery capability of the portable emergency lights because the corrective actions from CR 2006-29459 had been closed in the CR program without an action to develop a test procedure. The licensee initiated CRs 2009-4010 and -4056 to implement corrective actions for not testing the lights and further address this issue.

Example Two: On February 9, 2009, NRC inspectors reviewed the 2008 completed eight-hour discharge surveillance tests for the fixed eight-hour ELUs. The inspectors identified that four fixed emergency lights (EL-2-004, EL-2-19-002, EL-2-39-001, and EL-2-20-003) had failed the surveillance test on December 31, 2007, and corrective actions to repair or replace the failures had not been implemented.

On February 12, 2009, the team reviewed the licensee's 2008 fourth quarter system health reports and other maintenance documents for the 120V/208V electrical system, which included the fixed Appendix R emergency lighting units. There were approximately 100 ELUs for each operating unit. Inspectors reviewed adverse trend CR 2008-3563 which identified 13 open work orders for emergency lighting deficiencies on Unit 1 and 26 open work orders for lighting deficiencies on Unit 2. These deficiencies included the four fixed emergency lights (EL-2-004, EL-2-19-002, EL 2-39-001, and EL

Enclosure

2-20-003) that had failed the surveillance test on December 31, 2007. The fixed Appendix R eight-hour ELUs were within the scope of the licensee's

Maintenance Rule program because these units are relied upon and used in plant emergency operating procedures. The licensee's Maintenance Rule program adopted the industry goal of having less than 10% deficient but has not established performance criteria. The licensee's failure to implement corrective actions on both occasions was attributed to deficiencies in the maintenance program. The four failed fixed ELUs remained in their degraded condition for over 13 months and maintenance personnel had not repaired or replaced the units. The licensee developed a corrective action plan to provide a preventive maintenance procedure to perform an annual eight-hour discharge test for the portable emergency lights; however maintenance personnel closed the action with a statement that the procedure will not be revised and no further action was performed. This is contrary to the licensee's corrective action program and accepted maintenance practices. Inspectors determined that the cause of the finding was directly related to the licensee not planning and coordinating work activities to support long-term equipment reliability and their maintenance scheduling was more reactive than preventive. The licensee initiated CRs 2009-4220 and 2009-6720 to address this issue.

Analysis: The inspectors determined that the licensee's failure to promptly correct a condition adverse to quality on two occasions was a performance deficiency because the licensee is required to comply with Unit 2 Renewed Operating License Conditions 3.E and it was within the licensee's ability to foresee and correct. The finding is more than minor because it is associated with the reactor safety, mitigating systems, cornerstone attribute of protection against external factors (i.e., fire) and it affects the objective of ensuring reliability and capability of systems that respond to initiating events. The inspectors determined that this finding was of very low safety significance, Green, because the degradation of safe shutdown functions was low and the operators were likely to complete the task using flashlights.

The cause of the finding was evaluated against IMC 0305 "Operating Reactor Assessment Program and determined to have a cross-cutting aspect in the area of Human Performance. The licensee's failure to implement corrective actions on both occasions was attributed to deficiencies in the maintenance program. In the first example, the licensee developed a corrective action plan to provide a preventive maintenance procedure to perform an annual eight hour discharge test for the portable emergency lights; however maintenance personnel closed the action with a statement that the procedure would not be revised and no further action was performed. In the second example, the four failed fixed ELUs remained in their degraded condition for over 13 months and maintenance had not repaired or replaced the units. The finding was directly related to the Work Control aspect of the Human Performance Cross-Cutting Area in that the licensee did not plan and coordinate work activities to support long-term equipment reliability and their maintenance scheduling was more reactive than preventive. (H.3 (b)).

Enforcement: St. Lucie Units 1 and 2 Renewed Operating License Conditions 3.E requires that the licensee implement and maintain in effect all provisions of the approved FPP as described in the UFSAR, and as approved by various NRC SERs. The

Enclosure

approved FPP is maintained and documented in the UFSAR, Appendix 9.5A. Section 8.0 of Appendix 9.5A, Quality Assurance Program, states, in part, that the QA Program is discussed in section 17.2 of the UFSAR, which was revised and approved by the NRC. UFSAR Section 17.2 states, "FPL Quality Assurance Topical Report (QATR), describes the methods and establishes quality assurance program and administrative control requirements." FPL QATR, Revision 3 states, "In establishing requirements for corrective actions, FPL commits to compliance with NQA-1, 1994, Basic Requirements 15 and 16 and Supplement 15S-1." NQA-1 Basic Requirement 16, Corrective Action, states, "conditions adverse to quality shall be identified promptly and corrected as soon as practical."

Contrary to the above, as of February 12, 2009, the licensee failed to promptly identify and correct conditions adverse to quality for the two examples as indicated below:

- Since October of 2006, the licensee failed to implement corrective actions to adequately test eight-hour battery powered portable emergency lights identified in IR 05000335, 389/2006010, as required.
- Since December 31, 2007, the licensee failed to implement corrective actions to repair or replace four fixed emergency lights that had failed the eight-hour discharge surveillance test, as required (EL-2-004, EL-2-19-002, EL 2-39-001, and EL 2-20-003).

The licensee initiated CRs 2009-4010, -4056, -4220, and -6720 to implement corrective actions. Because this finding was of very low safety significance (Green), and was entered into the licensee's corrective action program, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy and is identified as NCV 05000335, 389/2009007-01, Failure to Correct Conditions Adverse to Quality.

.10 Cold Shutdown Repairs

a. Inspection Scope

The team reviewed the licensee's cold shutdown repairs that were addressed in the FPP procedures. Based on this review, the team confirmed that procedures and equipment for achieving and maintaining post-fire hot shutdown did not rely on cold shutdown repairs.

b. Findings

No findings of significance were identified.

.11 Compensatory Measures

a. Inspection Scope

Enclosure

The team reviewed the administrative controls for out-of-service, degraded, and/or inoperable fire protection features (e.g., detection and suppression systems and equipment, passive fire barriers, or pumps, valves or electrical devices providing SSD functions or capabilities). The team reviewed selected items on the fire protection impairment log and compared them with the FAs/FZs selected for inspection. The compensatory measures that had been established in these areas/zones were compared to those specified for the applicable fire protection feature to verify that the risk associated with removing the fire protection feature from service was properly assessed and adequate compensatory measures were implemented in accordance with the approved FPP. Additionally, the team reviewed the licensee's short term compensatory measures (e.g., the hourly fire watch established for the degraded Fire Door RA93 in the "A" SWGR Room) to verify that they were adequate to compensate for a degraded function or feature until appropriate corrective actions could be taken, and that the licensee was effective in returning the equipment to service in a reasonable period of time.

b. Findings

No findings of significance were identified.

**4. OTHER ACTIVITIES**

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The team reviewed selected CRs related to the St. Lucie FPP to verify that items related to fire protection and SSD were appropriately entered into the licensee's corrective action program in accordance with the licensee's quality assurance program and procedural requirements. This review was conducted to assess the frequency of fire incidents and effectiveness of the fire prevention program and any maintenance-related or material condition problems related to fire incidents.

The team reviewed recent independent licensee audits for thoroughness, completeness and conformance to requirements. The team also reviewed other CAP documents, including completed corrective actions documented in selected WRs and operating experience program documents to verify that industry-identified fire protection issues potentially or actually affecting St. Lucie were appropriately entered into, and resolved by, the CAP process. Items included in the OEP effectiveness review were NRC Information Notices, industry or vendor-generated reports of defects and non-compliances submitted pursuant to 10 CFR 21, and vendor information letters. Additionally, the team reviewed a sample of other issues discussed in system health reports. The team evaluated the effectiveness of the corrective actions for the identified issues. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

Enclosure

#### 4OA3 Event Follow-up

##### a. Inspection Scope

The status of Licensee Event Report (LER) 2006-005-00 was reviewed during this inspection. This LER involved the internal conduit penetration seals that are not bounded by fire testing and the lack of regular inspection of the seals condition. To resolve the issues identified in this LER, the licensee performed a comprehensive field walk-down to document the as-built configuration/condition of the seals and had a fire test conducted to determine the performance of various seal configurations. The fire test demonstrated the viability of the stations penetration seal designs. This has enabled the station to reduce the number of seals that need to be upgraded to those that are not bounded by test configuration and/or seals that are in a degraded condition. At the time of the inspection, field work to upgrade/repair seals had not been performed and the work still in the planning stages. During the inspection, the inspectors reviewed a sample of internal conduit penetration seals to determine the comprehensiveness of the licensee's plan to resolve this issue. At the conclusion of the walk-down it was determined that the licensee's resolution plan was thorough and comprehensive. This LER will remain open pending resolution during NFPA 805 transition.

##### b. Findings

No findings of significance were identified.

#### 4OA6 Meetings, Including Exit

On February 12, 2009, the lead inspector presented the inspection results to Mr. G.L. Johnston, Site Vice President, St. Lucie Nuclear Plant, and other members of St. Lucie staff. The licensee acknowledged the findings. Proprietary information is not included in this report. Following completion of additional review in the Region II office, another exit meeting was held by telephone with Mr. Katzman, Licensing Manager, and other members of the St. Lucie staff on April 30, 2009, to provide an update on changes to the preliminary inspection findings. The licensee acknowledged the findings.



## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee Personnel:

E. Armando, Site Quality Manager  
P. Barnes, Mechanical Supervisor, Design Engineering  
D. Cecchett, Licensing Engineer  
R. Conrad, Fire Protection Engineer, Design Engineering  
J. Connor, Engineering Manager – Programs  
T. Cosgrove, Site Engineering Director  
C. Costanzo, Plant General Manager  
M. Delowery, Maintenance Manager  
R. Dorst, Fire Protection  
K. Frehafer, Licensing Engineer  
D. Fuca, Quality Supervisor  
M. Hicks, Operations Manager  
D. Huey, Acting Work Control Manager  
G. Johnston, Site Vice President  
E. Katzman, Licensing Manager  
R. McDaniel, Fire Protection Supervisor  
L. Neely, Work Control Manager  
W. Parks, Operations Manager  
T. Patterson, Performance Improvement Manager  
J. Porter, Design Engineering Manager  
V. Rubano, Engineering Fire Protection Chief Engineer  
S. Short, Electrical Supervisor, Design Engineering  
G. Swidder, System Engineering Manager  
B. Tremayne, Senior Reactor Operator  
M. Verbeck, Training Supervisor

#### NRC Personnel

R. Croteau, Deputy Division Director, Division of Reactor Safety, RII  
T. Hoeg, Senior Resident Inspector, St. Lucie Nuclear Plant  
S. Sanchez, Resident Inspector, St. Lucie Nuclear Plant  
S. Walker, Fire Protection Team Leader, RII  
G. Crespo, Senior Reactor Inspector-In Training

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened

None

### Opened and Closed

05000335, 389/2009007-01 NCV Failure to Correct Conditions Adverse to Quality (Section 1R05.09)

### Discussed

05000335, 389/2006005-00 LER Internal Conduit Penetration Seals Outside Appendix R Design Basis

### Closed

None

**LIST OF FIRE BARRIER FEATURES INSPECTED**  
**(Refer Report Section 1RO5.02- Passive Fire Barriers)**

Fire Door Identification

Description

|               |                          |
|---------------|--------------------------|
| Door RA 110   | FA: F/FZ: 42I MCR U2     |
| Door RA 93    | FA: A/FZ: 37 "A" SWGR U2 |
| Door RA 48    | FA: A/FZ: 60 "A" SWGR U1 |
| Door RSDRA 91 | FA: A/FZ: 37 "A" SWGR U2 |
| Door RSDRA 47 | FA: A/FZ: 60 "A" SWGR U1 |

Fire Damper Identification

FDPR-25-120  
FDPR-25-122  
FDPR-25-123  
FDPR-25-132  
FDPR-25-13  
FDPR-25-110  
FDPR-25-107

Fire Barrier Penetration Seal Identification

|               |                  |
|---------------|------------------|
| C5/SL-31      | L5/SL-1          |
| C5/SL-32      | L5/SL-2          |
| C5/SL-33      | L5/SL-3          |
| C5/SL-34      | L5/SL-4          |
| C5/SL-35      | L5/SL-5          |
| 11561M-3 (C5) | L5/SL-6          |
| 11558A-3 (C5) | L5/SL-7          |
| L5/SL-11      | L5/SL-18         |
| L5/SL-12      | L5/SL-19         |
| L5/SL-13      | L5/SL-20         |
| L5/SL-14      | L5/SL-21         |
| C5/SL-36      |                  |
| C5/SL-37      | 15013G-3(C5)     |
| C5/SL-38      | 15003J-3(SA)(L5) |
|               | 10176U-2(C5)     |

**THE FOLLOWING SSD PROCEDURES WERE REVIEWED AND WALKED THROUGH  
(Refer Report Section 1R05.05 – Operational Implementation etc.)**

**LIST OF COMPONENTS REVIEWED**

SSD Components Examined for Cable Routing - Sections 1R05.01 / Section 1R05.06

Valves

MV-09-9, AFWP 2A Discharge to SG 2A  
1-SE-09-2, AFWP 2A Discharge to SG 2A  
V-1474, Pressurizer PORV  
V-1475, Pressurizer PORV  
MV-08-18A, SG 2A Atmospheric Steam Dump

Pump Motors

AFW Pump 2A  
ICW Pump 2A

Pressurizer Heaters

Pressurizer Heater Transformer 2A3  
Pressurizer Heater Transformer 2B3

Instruments

LI-1105, Pressurizer Level  
PT-1108, Pressurizer Pressure  
LT-9012, SG 2A Level  
TI-1125-1, RC Loop Temperature  
PIC-08-1A1, SG 2A ATM STM Dump  
PT-1105/1106, Pressurizer Pressure Low Range  
PT-1103/1104, Pressurizer Pressure Low Range

Fans

2HVS-5A, Electrical Equipment Room Supply Fan

## LIST OF DOCUMENTS REVIEWED

### List of CRs Generated During this Inspection

- CR 2006-26459, There is No 8 Hour Test Data Available for Portable Handheld Lights
- CR 2006-28784, Missed Non-Tech Spec Surveillance on Unit 1
- CR 2006-29158, Clarify Requirements for Testing Sound Powered Phones
- CR 2006-29744, Inadequate Updating of PSL-ENG-SEES-98-039, Rev. 3, "Evaluation of the St. Lucie Plant 10CFR, Appendix R 8-Hour Batter-Packed Emergency Lighting Requirements"
- CR 2006-35505, No Data to Prove the Portable Emergency Lights Have Been Tested
- CR 2007-8751, Unit 2 Sound Powered Phone Deficiencies
- CR 2008-21225, Sound Powered Phone Jack Does Not Work
- CR 2009-2254, Procedure 2-ONP-100.01, Response to Fire Appendix 37 "A" Switchgear Room indicates that both Pressurizer level instruments LI-1110X and LI-1110Y are not protected for use in fire zone 37 (A switchgear room) and reliability cannot be assured.
- CR 2009-2260, During the review for the triennial fire protection inspection a discrepancy has been discovered between the information in the Unit 2 safe shutdown analysis and the response to fire procedure 2-ONP-100.01 Appendix 37.
- CR 2009-2263, Procedure 2-GOP-305 step 6.23.2 A and B doesn't indicate that there are 4 fuses to install on pressurizer low range pressure indicators.
- CR 2009-2385, Procedure 2-ONP-100.02 Enhancements
- CR 2009-2405, During a walk-down with the NRC for cables associated with LI-1110Y it was discovered that cable 20090E does not enter fire zone 37 as listed in CARS cable by fire zone report.
- CR 2009-2586, Procedure 2-ONP-100.02 Appendices A, B, C, D validation times after procedure revision per CR 2008-23665
- CR 2009-2590, Procedure 2-ONP-100.02 Appendix B enhancements identified
- CR 2009-2592, Fall protection issue identified during 2-ONP-100.02 walk-down
- CR 2009-3754, Drawing Errors Identified
- CR 2009-3843, Typographical Errors identified in PSL-FPER-05-048
- CR 2009-4027, Sprinkler system 2F Hydraulics Documents not Identified or Reviewed
- CR 2009-4010, The portable emergency lights have not been 8-hour discharge tested on an annual basis as was required by CR 2006-35505.
- CR 2009-4055, Time critical testing of operator manual actions not consistently applied to both Units' JPMs for 2-ONP-100.02 Appendices A, B, C, D
- CR 2009-4056, CR 2006-35505 Action #2 was closed without taking any action, changing the CR evaluation or providing a link to any additional actions.
- CR 2009-4115, Kitchen Door in MCR found to be not in Accordance with SER Oct. 1981
- CR 2009-4220, Failed to provide fixed 8 hr. emergency lights in accordance with SL2 UFSAR App. 9.5A Section 3.7.2
- CR 2009-6720, Assess Appendix R E-Light Performance Criteria for Maintenance Rule.

### CRs Reviewed During Inspection

- CR 2006-20062, NRC Regulatory Issue Summary: Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions
- 2007-31402, Aux Spray Valve SE-02-4 Failed Stroke Time
- CR 2008-23665, Time critical actions of 1-ONP-100.02 Cannot Be Completed in Time
- CR 2008-26101, Cable Spreading Room Fire Dampers 25-117, 25-118 and 25-119 Failed to Close following Halon System Discharge during Tropical Storm Fay, August 19, 2008.
- CR 2008-29442, Fire Pump 1A Breaker Trip, Fire Pump 1B Auto Start and Fire System Hydraulic Pressure Surge, September 23, 2008

Procedures

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 EPIP-01, Classification of Emergencies, Rev. 16  
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 JPM 0821001, Perform RCO "A" Actions IAW CRI ONP, App A-Unit 2 HSCP, Rev. 14  
 JPM 0821091, Perform US Actions During CRI-Unit 2, Cable Spreading Room, A/B Switchgear Rooms, HSCP-Unit 2, Rev. 16  
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 2-0120034, Reactor Coolant Pump Operation, Rev. 35  
 2-ONP-02.03, Charging and Letdown, Rev. 15B  
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 2-ONP-100.02, Control Room Inaccessibility, Rev. 22  
 2-OSP-100.15, Remote Shutdown Monitoring Monthly Channel Check, Rev. 11  
 2-ADM-03.01G, Unit 2 Power Distribution Breaker List AC Power Panels, 120 VAC Regulated Vital AC Bus 2A-1, Rev. 0  
 2-OSP-61.01, Control Room Telephone Communication Checks, Rev. 1C  
 2-OSP-61.02, Sound Powered Phone Communication Test, Rev. 0

Completed Surveillance Test Procedures and Test Records

2-OSP-61.02, Sound Powered Phone Communication Test, Rev. 0, Completed 06/27/2008  
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Work Orders (WO)

WO 36027455-01, Sound Powered Phone System Perform PM  
 WO 37024006-01, U2 E-Lights Annual Discharge (4<sup>th</sup> Quarter)  
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 WO 38015559-01, Neither Sound Powered Phone Ckt 1 or 2 Works  
 WO 38018289-01, U2 Appendix Emergency Light Monthly PM  
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### Flow Drawings

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2998-G-078, Sheet 120, Flow Diagram Chemical & Volume Control System, Rev. 18

2998-G-078, Sheet 121A, Flow Diagram Chemical & Volume Control System, Rev. 31

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2998-G-080, Sheet 1A, Flow Diagram Condensate System, Rev. 46

2998-G-080, Sheet 1B, Flow Diagram Condensate System, Rev. 47

2998-G-080, Sheet 2A, Flow Diagram Feedwater & Condensate System, Rev. 43

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#### Completed Surveillance or Test

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#### Miscellaneous

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 Unit 1 System Health Report 10/01/2008 – 12/31/2008, System 48, 120V/208V Electrical System  
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#### Licensing Basis Documents

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 SLS2, UFSAR Chapter 9.5A Fire Protection Program Report, Amendment 18, January 2008  
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Technical Specifications 3.3.3.5.a and b, Remote Shutdown System Instrumentation Limiting Conditions for operation

Technical Specifications 4.3.3.5.1 and 2, Remote Shutdown System Surveillance Requirements

Technical Specification Table 3.3-9, List of Remote Shutdown System Instrumentation

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#### Applicable Codes and Standards

NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems, 1973 Edition

NFPA 13, Standard for the Installation of Sprinkler Systems, 1973 Edition

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NFPA 72A, Standard for the Installation, Maintenance, and Use of Proprietary Protection Signaling Systems, 1972 Edition

NFPA 80, Fire Doors & Windows, 1973 Edition

NFPA 101, Life Safety Code

#### Technical Manuals and Vendor Information

Streamlight LiteBox® Rechargeable Lantern, Rev 1

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## LIST OF ACRONYMS AND ABBREVIATIONS

|       |   |
|-------|---|
| ANSI  | American National Standards Institute                   |
| APCSB | Auxiliary and Power Conversion Systems Branch           |
| BTP   | Branch Technical Position                               |
| CAP   | Corrective Action Program                               |
| CFR   | Code of Federal Regulations                             |
| CR    | Condition Report (a corrective action program document) |
| CWDs  | Control Wiring Diagrams                                 |
| ELU   | Emergency Lighting Unit                                 |
| ERFBS | Electrical raceway Fire Barrier                         |
| FA    | Fire Area   |
| FHA   | Fire Hazards Analysis                                   |
| FZ    | Fire Zone   |
| FPP   | Fire Protection Program                                 |
| HSCP  | Hot Shutdown Control Panel                              |
| IR    | Inspection Report                                       |
| IP    | Inspection Procedure                                    |
| LER   | Licensee Event Report                                   |
| MCR   | Main Control Room                                       |
| NFPA  | National Fire Protection Association                    |
| NRC   | Nuclear Regulatory Commission                           |
| NUREG | An explanatory document published by the NRC            |
| OSHA  | Occupational Safety and Health Administration           |
| PSL   | Plant St. Lucie   |
| RAB   | Reactor Auxiliary Building                              |
| Rev.  | Revision  |
| ROP   | Reactor Oversight Process                               |
| SDP   | Significance Determination Process                      |
| SER   | Safety Evaluation Report                                |
| SSA   | Safe Shutdown Analysis                                  |
| SSD   | Safe Shutdown   |
| TS    | Technical Specification                                 |
| UFSAR | Updated Final Safety Analysis Report                    |