



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

July 28, 2011

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

**SUBJECT: ST. LUCIE NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT
05000335/2011003, 05000389/2011003**

Dear Mr. Nazar:

On June 30, 2011, the U. S. 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 1, 2011, with Mr. Anderson and other members of your staff.

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

This report documents one self-revealing finding of very low safety significance (Green). The finding did not involve a violation of NRC requirements. If you disagree with the characterization of the 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, 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

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Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000335/2011003, 05000389/2011003
w/Attachment: Supplemental Information

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Letter to Mano Nazar from Daniel W. Rich dated July 28, 2011

SUBJECT: ST. LUCIE NUCLEAR PLANT - NRC INTEGRATED INSPECTION REPORT
05000335/2011003, 05000389/2011003

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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: 05000335/2011003, 05000389/2011003

Licensee: Florida Power & Light Company (FPL)

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

Location: 6351 South Ocean Drive
Jensen Beach, FL 34957

Dates: April 1 to June 30, 2011

Inspectors: S. Sanchez, Senior Resident Inspector (Acting)
N. Childs, Resident Inspector, Crystal River
T. Morrissey, Senior Resident Inspector, Crystal River
C. Fong, Construction Inspector
G. Wilson, Senior Project Engineer
S. Ninh, Senior Project Engineer

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

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SUMMARY OF FINDINGS

IR 05000335/2011-003, 05000389/2011-003; 04/01/2011 – 06/30/2011; St. Lucie Nuclear Plant, Units 1 & 2; Identification and Resolution of Problems.

The report covered a three month period of inspection by resident inspectors and region based inspectors. The significance of most findings is identified by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process" (SDP), and any related cross-cutting aspects were determined using IMC 305, 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," and Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Initiating Events

Green. A self-revealing finding of very low safety significance was identified following a rapid downpower and manual reactor trip of Unit 2 on May 16, 2011. Specifically, the licensee failed to comply with an approved design drawing during installation of a one-inch vent line which resulted in a fatigue failure of the vent line. No violations of NRC requirements were identified because the location of the vent line was downstream of the main steam isolation valve and was classified as non-safety related. The licensee entered the issue into the Corrective Action Program as Action Request (AR) 1651817.

The finding was more than minor because it resulted in a rapid downpower and manual reactor trip. The finding was associated with the Design Control attribute of the Initiating Events Cornerstone and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. Using NRC Inspection Manual Chapter 0609.04, Significance Determination Process (SDP) Phase 1 – Initial Screening and Characterization of Findings, Table 4a for the Initiating Events Cornerstone, the finding was determined to be of very low safety significance (Green) because it was a transient initiator but did not increase the likelihood that mitigation equipment would not be available. This finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current plant performance. Specifically, the performance deficiency occurred in 2005 or earlier. (Section 4OA2.2)

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). On April 4, Unit 1 was down powered to 90 percent RTP to remove the 1A2 waterbox from service for repairs. On April 9, Unit 1 returned to full RTP. On April 29, Unit 1 was down powered to approximately 92 percent power when the 1A2 circulating water (CW) pump exhibited increased vibrations. Unit 1 returned to full RTP on May 14 following repairs to the 1A2 CW pump. On May 30, Unit 1 was down powered to 90 percent RTP to remove the 1A2 waterbox from service due to increased sodium levels. On June 4, Unit 1 was returned to full RTP and operated at full power for the remainder of the inspection period.

Unit 2 began the period shutdown for refueling. On May 8, Unit 2 was synchronized to the electrical grid and on May 13 reached full RTP. On May 16, Unit 2 was shutdown due to an unisolable steam leak on a one inch main steam vent line. Unit 2 was returned to full RTP on May 20 following repairs to the main steam system. On June 6, Unit 2 automatically tripped during Reactor Protection System logic matrix testing. On June 7, Unit 2 was returned to full RTP and operated at full power for the remainder of the inspection period.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection

External Flooding Preparations

a. Inspection Scope

The inspectors performed walkdown inspections of Unit 1 and Unit 2 Reactor Auxiliary Buildings, including doors, flood protection barriers, penetrations, and the integrity of the perimeter structure. In addition, the inspectors walked down both units Emergency Diesel Generators (EDG) and Fuel Oil Tanks, Auxillary Feedwater (AFW) pump areas, and Component Cooling Water (CCW) pump areas. The inspectors also reviewed the applicable Updated Final Safety Analysis Report (UFSAR) sections, Technical Specifications, and other licensing basis documents regarding external flooding and flood protection, including specific plant design features to mitigate the maximum flood level. Corrective Action Program (CAP) documents and work orders (WO) related to actual flooding or water intrusion events over the past year were also reviewed by the inspectors to ensure that the licensee was identifying and resolving severe weather related issues that caused or could lead to external flooding of safety related equipment.

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b. Findings

No findings were identified.

1R04 Equipment Alignment.1 Partial Equipment Walkdownsa. 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 CAP.

- 1A EDG While 1B EDG Out of Service (OOS)
- 2A Emergency Core Cooling System (ECCS) While 2B ECCS OOS
- 1B/2B Startup Transformers (SUTs) While 1A/2A SUTs OOS

b. Findings

No findings were identified.

.2 Complete System Walkdowna. Inspection Scope

The inspectors conducted a detailed walkdown/review of the alignment and condition of the Unit 2 High Pressure Safety Injection (HPSI) system to verify its capability to meet its design basis function. The inspectors utilized licensee procedure 2-NOP-03.11, High Pressure Safety Injection Initial Alignment, and drawing 2998-G-078, Flow Diagram Safety Injection System Piping and Instrumentation Drawing, as well as other licensing and design documents to verify the system alignment was correct. During the walkdown, the inspectors verified, as appropriate, that: (1) valves were correctly positioned and did not exhibit leakage that would impact their function; (2) electrical power was available as required; (3) major portions of the system and components were correctly labeled, cooled, and ventilated; (4) hangers and supports were correctly installed and functional; (5) essential support systems were operational; (6) ancillary equipment or debris did not interfere with system performance; (7) tagging clearances were appropriate; and (8) valves were locked as required by the licensee's locked valve program. Pending design and equipment issues were reviewed to determine if the identified deficiencies significantly impacted

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the system's functions. Items included in this review were the operator workaround list, the temporary modification list, system health reports, system description, and outstanding maintenance work requests/work orders. In addition, the inspectors reviewed the licensee's CAP to ensure that the licensee was identifying and resolving equipment alignment problems.

b. Findings

No findings were identified.

1R05 Fire Protection

Fire Area Walkdowns

a. Inspection Scope

The inspectors toured the following four plant areas during this inspection period to evaluate conditions related to control of transient combustibles and ignition sources, the material condition and operational status of fire protection systems including fire barriers used to prevent fire damage or fire propagation. The inspectors reviewed these activities against provisions in 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 Action Request (AR) database to verify that fire protection problems were being identified and appropriately resolved. The following areas were inspected:

- Unit 1 A and B Switchgear Rooms
- Unit 1 Cable Spreading Room
- 1A EDG Room
- Unit 2 Shutdown Cooling (SDC) Heat Exchanger Rooms

b. Findings

No findings were identified.

1R06 Flood Protection Measures

a. Inspection Scope

The inspectors conducted walkdowns of the Unit 2 SDC Heat Exchanger Rooms, which included checks of building structure sumps to ensure that flood protection measures were in accordance with design specifications. The inspectors reviewed 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-

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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.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Training Program

Resident Inspector Quarterly Review

a. Inspection Scope

On June 8, 2011, the inspectors observed and assessed licensed operator actions during a simulated loss of CCW to the reactor coolant pumps (RCPs), subsequent manual reactor trip, and steam generator tube rupture training exercise. The inspectors also reviewed simulator physical fidelity and specifically evaluated the following attributes related to the operating crews' performance:

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

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed system performance data and associated CRs for the two systems listed below to verify that the licensee's maintenance efforts met the requirements of 10 CFR 50.65 (Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants) and licensee Administrative Procedure ADM-17-08, Implementation of 10 CFR 50.65, Maintenance Rule. The inspectors' efforts focused on maintenance rule scoping, characterization of maintenance problems and

failed components, risk significance, determination of a(1) and a(2) classification, corrective actions, and the appropriateness of established performance goals and monitoring criteria. The inspectors also interviewed responsible engineers and observed some of the corrective maintenance activities. The inspectors also attended applicable expert panel meetings and reviewed associated system health reports. The inspectors verified that equipment problems were being identified and entered into the licensee's CAP.

- U1 Risk Significant Heating, Ventilation, and Air Conditioning (HVAC)
- U2 Risk Significant HVAC

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors completed in-office reviews, plant walkdowns, and control room inspections of the licensee's risk assessment of four emergent or planned maintenance activities. The inspectors verified the licensee's risk assessment and risk management activities using the requirements of 10 CFR 50.65(a)(4); the recommendations of Nuclear Management and Resource Council 93-01, Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, Revision 3; and licensee procedure ADM-17.16, Implementation of the Configuration Risk Management Program. The inspectors also reviewed the effectiveness of the licensee's contingency actions to mitigate increased risk resulting from the degraded equipment. The inspectors interviewed responsible Senior Reactor Operators on-shift, verified actual system configurations, and specifically evaluated results from the online risk monitor (OLRM) for the combinations of out of service (OOS) risk significant systems, structures, and components (SSCs) listed below:

- 2B Low Pressure Safety Injection Pump (LPSI), 2B HPSI Pump, 2B Containment Spray Pump, and 1B EDG OOS
- 2C Instrument Air Compressor (IAC), 2BECCS, and 2B CCW Pump OOS
- 1A/B Containment IACs, 1A Charging Pump, 1A LPSI and HPSI Pumps OOS
- 1A/B Containment Instrument Air Compressors (IACs), 1B EDG, 1B HPSI Pump OOS

b. Findings

No findings were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following five action requests (ARs) 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.

- AR 1645134, Unit 2 Power Operated Relief Valve Solenoid Failed Seat Leakage Test
- AR 1647041, 2C AFW Pump Trip and Throttle Valve Not Resetting
- AR 1638666, Unit 2 Pressurizer Heater Breaker Trip
- AR 1654920, Unit 2 Pressurizer Heater Failure
- AR 1637942, Unit 2 Solenoid Valve failed to close during testing

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

For the six post maintenance tests (PMTs) listed below, the inspectors reviewed the test procedures and either witnessed the testing and/or reviewed test records to determine whether the scope of testing adequately verified that the work performed was correctly completed and demonstrated that the affected equipment was functional and operable. The inspectors verified that the requirements of licensee procedure ADM-78.01, Post Maintenance Testing, were incorporated into test requirements. The inspectors reviewed the following work orders (WO) and/or work requests (WR):

- WO 40076944, 1A EDG Fan Bearing Lubrication
- WO 38011347, Replace Sealflex Connection on Valve 2-MV-07-1B
- WO 39021854, 2B HPSI Pump Discharge Valve V3654 Operator Maintenance
- WO 40006142, Unit 2 Emergency Response Data and Display System Replacement
- WO 40080917, Troubleshoot and Repair 1A Charging Pump Abnormal Knocking Noise
- WO 40076312, 2B CCW Pump Motor Replacement

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities

.1 Unit 2 Refueling Outage

a. Inspection Scope

Outage Planning, Control and Risk Assessment

During daily outage planning activities by the licensee, the inspectors reviewed the risk reduction methodology employed by the licensee during various refueling outage (RFO) SL2-19 meetings including Outage Control Center (OCC) morning meetings, Operations Daily Team Meetings, and Schedule Performance Update Meetings. The inspectors examined the licensee implementation of shutdown safety assessments during SL2-19 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. In addition, the inspectors regularly monitored outage planning and control activities in the OCC, and interviewed responsible OCC management, during the outage to ensure SSC configurations and work scope were consistent with TS requirements, site procedures, and outage risk controls.

Monitoring of Shutdown Activities

The inspectors performed walk downs of important systems and components used for decay heat removal from the reactor core and the spent fuel pool during the shutdown period including the intake cooling water system, component cooling water system, and spent fuel pool cooling system.

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
- Verified shutdown cooling system and spent fuel pool cooling system operation
- Evaluated implementation of reactivity controls

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- 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)

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 April 6, 2011, after 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 the RFO 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 were identified.

.2 Unit 2 Forced Outage

a. Inspection Scope

On May 16, 2011, Unit 2 operators performed a rapid manual downpower and reactor plant shutdown when a one inch vent line on a main steam pipe failed. The inspector responded to the site and observed control room activities following the plant downpower and reactor shutdown.

Monitoring and Shutdown Activities

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

Monitoring of Startup Activities

On May 17, 2011, the inspector 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 procedures 2-GOP-302, Reactor Startup Mode 3 to Mode 2, and 2-GOP-201, Reactor Plant Startup - Mode 2 to Mode 1.

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors either reviewed or witnessed the following four surveillance tests to verify that the tests met the TS, the UFSAR, the licensee's procedural requirements, and demonstrated the systems were capable of performing their intended safety functions and their operational readiness. In addition, the inspectors evaluated the effect of the testing activities on the plant to ensure that conditions were adequately addressed by the licensee staff and that after completion of the testing activities, equipment was returned to the positions/status required for the system to perform its safety function. The tests reviewed included one in-service test (IST) surveillance. The inspectors verified that surveillance issues were documented in the CAP.

- 2-OSP-09.01C, 2C AFW Pump Code Run
- 1-OSP-59.01B, 1B EDG Code Run
- 1-OSP-02.01A, 1A Charging Pump Code Run
- 1-OP-00101255A, Surveillance Data Sheet 8A for Valve MV-07-1A. (IST)

b. Findings

No findings were identified.

4. OTHER ACTIVITIES4OA1 Performance Indicator VerificationBarrier Integritya. Inspection Scope

The inspectors checked licensee submittals for the performance indicators (PIs) listed below for the period April 1, 2010, through March 31, 2011, to verify the accuracy of the PI data reported during that period. Performance indicator definitions and guidance contained in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, and licensee procedures ADM-25.02, NRC Performance Indicators, and NAP-206, NRC Performance Indicators, were used to check the reporting for each data element. The inspectors checked operator logs, plant status reports, condition reports, system health reports, and PI data sheets to verify that the licensee had identified the required data, as applicable. The inspectors interviewed licensee personnel associated with performance indicator data collection, evaluation, and distribution.

- Unit 1 Reactor Coolant System (RCS) Leakage
- Unit 2 RCS Leakage
- Unit 1 RCS Activity
- Unit 2 RCS Activity

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems.1 Daily Reviewa. 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 were identified.

.2 Annual Sample: Unit 2 Shutdown Due to Steam Leak

a. Inspection Scope

The inspectors selected AR1651817, Unit 2 Forced Offline Due to Steam Leak, for a more in-depth review of the circumstances that led up to the condition and the corrective actions that followed.

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

b. Findings and Observations

Introduction: A Green self-revealing finding (FIN) was identified for failure to comply with an approved design drawing during installation of a one-inch main steam system vent line which resulted in a fatigue failure and steam leak requiring a rapid downpower and manual reactor trip. No violations of NRC requirements were identified because the location of the vent line was downstream of the main steam isolation valves (MSIVs) and was classified as non-safety related.

Discussion: On May 15, 2011, a steam leak occurred on a one-inch vent line off the twenty- inch main steam (MS) line MS-16 (moisture separator reheater 2A and 2B MS Supply Header) in the Unit 2 Turbine Building. On May 16, 2011, the leak degraded until the one-inch line completely failed. The vent line failure required a rapid down power from 100% to 25% power followed by a manual reactor trip.

The inspectors reviewed the licensee's investigation of the failed vent line, and agreed with the determination that the configuration did not comply with approved design drawing 8770-12952, Generic Sketches for Safety Relief Vents and Drains. The one-inch schedule 80 pipe was longer than allowed by the design drawing without adequate pipe supports creating stresses due to vibration. It was determined that the vent line was worked on several years ago when the vent valve was replaced per Work Order (WO) 33001089. It was noted that WO 33001089 contained instructions identifying a note which stated, "This valve configuration falls under the scope of generic drains and vents design drawing 8770-12952."

Following the shutdown on May 16, the failed vent line was replaced with a pipe nipple and cap in accordance with approved design change package EC-272461. The licensee attributed the failure of the vent line to fatigue due to vibration and the

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cantilevered design of the vent line, which was not in compliance with the design drawing.

Analysis: The inspectors determined that the failure to comply with the approved design drawing during fabrication installation of the one-inch vent line, resulting in failure of the vent line, subsequent rapid downpower, and finally a manual reactor trip, was a performance deficiency. Specifically, the installed one-inch schedule 80 vent line piping was longer than allowed by approved design drawing 8770-12952 without adequate pipe supports. The finding was more than minor because it resulted in a rapid downpower and manual reactor trip. The finding was associated with the Design Control attribute of the Initiating Events Cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as at power operations. Using NRC Manual Chapter 0609.04, Significance Determination Process - Phase 1 screening, the finding was determined to be of very low safety significance (Green) because it was a transient initiator, but did not increase the likelihood that mitigation equipment would not be available. This finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current performance since it occurred several years ago.

Enforcement: No violation of NRC regulatory requirements occurred. The inspectors determined that the finding did not represent a noncompliance because the performance deficiency involved non-safety related equipment. This finding was determined to be of very low safety significance (Green) and was entered into the licensee's CAP as AR 1651817. This finding is identified as FIN 05000389/2011003-01, Failure to Comply with Design Drawing Results in Main Steam Vent Line Failure and Subsequent Transient.

.3 Semi-Annual Trend Review: Multiple Missed Technical Specification Surveillances

a. Inspection Scope

As required by Inspection Procedure 71152, Identification and Resolution of Problems, the inspectors reviewed the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors selected AR 1607123 for trending due to multiple ARs written within a short period that identified missed TS surveillances. The inspectors' review was focused on the extent of condition review as well as the apparent cause evaluations that the licensee performed. None of the missed surveillances, once performed, resulted in inoperable equipment. The inspectors also considered the results of daily inspector AR item screening discussed in Section 4OA2.1 above, plant status reviews, plant tours, document reviews, and licensee trending efforts. The inspectors' review nominally considered the six month period of January through June 2011. Corrective actions associated with a sample of the issues identified in the licensee's CAP were reviewed for adequacy. The failures to perform required surveillances constitute a violation of minor significance that is not subject to enforcement action in accordance with the NRC's Enforcement Policy.

Enclosure

b. Findings and Observations

No findings were identified.

O4A3 Event Follow-up

.1 (Closed) LER 05000389/2010-001-00, Control Room Habitability Impacted by General Atomics Model RM-80 Radiation Monitoring System Firmware Anomaly

a. Inspection Scope

On June 30, 2009, the licensee notified General Atomics (GA) of an anomaly regarding the Model RM-80 radiation monitoring system which was identified during the performance of response time testing of Unit 2 control room outside air intake (CROAI) radiation monitors. GA confirmed that a defect existed in the RM-80 firmware, and the licensee determined the defect could result in radiological consequences from a Steam Generator Tube Rupture (SGTR) accident potentially exceeding those analyzed in the UFSAR. GA issued a Part 21 notice for this issue.

The licensee determined that during a SGTR, concurrent with a Loss of Offsite Power (LOOP) event, the RM-80 firmware anomaly would result in a failure to start the associated emergency filtration fans during the EDG loading sequence. This would result in isolation of the control room without any filtered recirculation flow. Based on an assumed quality of unfiltered in-leakage into the control room, delayed manual initiation of the emergency filtration fans, and re-quantifying the control room dose, it was concluded that the radiological consequences for such a SGTR accident would exceed the 10 CFR 50.67 limit of 5 rem TEDE, exceeding USFAR Section 15.6.3 results.

Corrective actions included correction of the firmware error by GA, updating of CROAI installed firmware and successful testing of all four CROAI radiation monitoring channels, and an extent of condition review that determined no immediate operability concerns for the other safety-related or TS radiation monitors. The LER was reviewed by the inspectors and no performance deficiency was identified. The licensee documented this issue in condition reports 2009-18803 and 2009-25259. This LER is closed.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period the inspectors conducted observations of security force personnel activities to ensure that the activities were consistent with the licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status reviews and inspection activities.

b. Findings

No findings were identified.

.2 (Closed) NRC Temporary Instruction 2515/183, "Followup to the Fukushima Daiichi Nuclear Station Fuel Damage Event"

a. Inspection Scope

The inspectors assessed the activities and actions taken by the licensee to assess its readiness to respond to an event similar to the Fukushima Daiichi nuclear plant fuel damage event. This included: (1) an assessment of the licensee's capability to mitigate conditions that may result from beyond design basis events, with a particular emphasis on strategies related to the spent fuel pool, as required by NRC Security Order Section B.5.b issued February 25, 2002, as committed to in severe accident management guidelines, and as required by 10 CFR 50.54(hh); (2) an assessment of the licensee's capability to mitigate station blackout (SBO) conditions, as required by 10 CFR 50.63 and station design bases; (3) an assessment of the licensee's capability to mitigate internal and external flooding events, as required by station design bases; and (4) an assessment of the thoroughness of the walkdowns and inspections of important equipment needed to mitigate fire and flood events, which were performed by the licensee to identify any potential loss of function of this equipment during seismic events possible for the site.

b. Findings

Inspection Report 05000335, 389/2011009,(ML111330160) documented detailed results of this inspection activity. Following issuance of the report, the inspectors conducted detailed follow-up on selected issues. No findings were identified during this follow-up inspection.

Enclosure

.3 (Closed) NRC Temporary Instruction 2515/184, "Availability and Readiness Inspection of Severe Accident Management Guidelines (SAMGs)"

On May 27, 2011, the inspectors completed a review of the licensee's severe accident management guidelines (SAMGs), implemented as a voluntary industry initiative in the 1990's, to determine: (1) whether the SAMGs were available and updated, (2) whether the licensee had procedures and processes in place to control and update its SAMGs, (3) the nature and extent of the licensee's training of personnel on the use of SAMGs, and (4) licensee personnel's familiarity with SAMG implementation.

The results of this review were provided to the NRC task force chartered by the Executive Director for Operations to conduct a near-term evaluation of the need for agency actions following the Fukushima Daiichi fuel damage event in Japan. Plant-specific results for the St. Lucie Plant were provided as an Enclosure to a memorandum to the Chief, Reactor Inspection Branch, Division of Inspection and Regional Support, dated June 02, 2011.

4OA6 Meetings

Exit Meeting Summary

Resident Inspection

The resident inspectors presented the inspection results to Mr. Anderson and other members of licensee management on July 1, 2011. 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

Enclosure

KEY POINTS OF CONTACT

Licensee personnel:

R. Anderson, Site Vice President
E. Belizar, Projects Manager
M. Bladdek, Assistant Operations Manager
E. Burgos, Chemistry Manager
D. Calabrese, Emergency Preparedness Manager
D. Cecchetti, Licensing Engineer
J. Connor, Component Engineering Manager
D. Deboer, Operations Manager
S. Duston, Training Manager
K. Frehafer, Licensing Engineer
R. Filipek, Design Engineering Manager
J. Hamm, Engineering Manager
D. Hanley, Maintenance Programs Supervisor
M. Haskins, Maintenance Manager
M. Hicks, Site Excellence Manager
T. Horton, Assistant Operations Manager
D. Huey, Work Control Manager
B. Hughes, Plant General Manager
E. Katzman, Licensing Manager
J. Kramer, Site Safety Manager
R. Lingle, Equipment Reliability Manager
R. McDaniel, Fire Protection Supervisor
C. Martin, Radiation Protection Manager
K. Mooring, ALARA Supervisor, RP
J. Owens, Performance Improvement Department
B. Robinson, Supervisor – Technical, RP
M. Snyder, Site Quality Assurance Manager
G. Swider, Engineering Programs Manager
T. Young, Security Manager

NRC personnel:

D. Rich, Chief, Branch 3, Division of Reactor Projects

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000389/2011003-01	FIN	Failure to Comply with Design Drawing Results in Main Steam Vent Line Failure and Subsequent Transient
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Closed

05000335,389/2515/183	TI	Follow-up to the Fukushima Daiichi Nuclear Station Fuel Damage Event (Section 4A05.2)
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05000335,389/2515/184	TI	Availability and Readiness Inspection of Severe Accident Management Guidelines (SAMGs) (Section 4A05.3)
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05000389/2010-001-00	LER	Control Room Habitability Impacted by General Atomics Model RM-80 Radiation Monitoring System Firmware Anomaly
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Discussed

NONE

LIST OF DOCUMENTS REVIEWED

Nuclear Policy Procedure NP-910, Plant Readiness for Operations
 St. Lucie Nuclear Oversight Report PSL-09-064, Fire Protection Audit
 St. Lucie Daily Quality Summaries
 Health Physics Procedure HPP-4, Scheduling of Health Physics Activities
 Operations Department Policy OPS-119, Standing Orders/Night Orders
 St. Lucie Radiation Protection Department Night Order, 2009-023
 EC-272479, Delete Secondary Root Valve V08179 and Install Welded Cap
 EC-272461, Deletion of Vent Valves V08275 and V08276 and Installation of a Cap
 Drawing 8770-12952, Generic Sketches for SR Vents and Drains, Rev 0
 Work Order 33001089-01, Replace V08275 and V08276
 Work Order 40085695-04, Steam Leak from Main Steam Line MS-16
 Work Order 40085695-05, Repair Steam Leak by Implementing EC 272461
 FPL Nuclear Fleet Procedure PI-SL-204, Condition Identification and Screening Process, Rev 6
 FPL Nuclear Fleet Procedure PI-SL-205, Condition Evaluation and Corrective Action, Rev 3
 ST. Lucie Plant Instrument & Control Maintenance Procedure 1400190, I&C Department Surveillance/Testing Schedule, Rev 40

Action Requests

1607123	1623084	1652395	1650668	1659278
1613608	1623085	1645979	1650718	1660127
1613097	1638412	1646118	1652188	1660149
1643182	1617657	1646434	1652395	1660230
1647413	1616028	1647109	1652413	1661151
581040	1618796	1648435	1653663	1651817
1607136	1634902	1648571	1653567	1651749
1643397	1634898	1648574	1654262	1661805
1622947	1623637	1649673	1654328	1664032
1623082	1653567	1649817	1657802	1664166
1643584	1650831	1649819	1657818	1665157
1626083	1624013	1650093	1657915	1665559
				1665566

LIST OF ACRONYMS

CAP	Corrective Action Program
CCW	Component Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
ECCS	Emergency Core Cooling System
IP	Inspection Procedure
NRC	U.S. Nuclear Regulatory Commission
UFSAR	Updated Final Safety Analysis Report
WO	Work Order
CRDM	Control Rod Drive Mechanism
TS	Technical Specifications
IST	Inservice Testing
NAP	Nuclear Administrative Procedure
AFW	Auxiliary Feedwater
RTP	Rated Thermal Power
CW	Circulating Water
EDG	Emergency Diesel Generator
OOS	Out of Service
SUT	Startup Transformer
HPSI	High Pressure Safety Injection
LPSI	Low Pressure Safety Injection
SDC	Shutdown Cooling
SSC	Systems, Structures, and Components
RCP	Reactor Coolant Pump
HVAC	Heating, Ventilation, and Cooling
OLRM	Online Risk Monitor
IAC	Instrument Air Compressor
AR	Action Request
PMT	Post Maintenance Test
WR	Work Request
RFO	Refueling Outage
OCC	Outage Control Center
SFP	Spent Fuel Pool
FME	Foreign Material Exclusion
RCS	Reactor Coolant System
PI	Performance Indicator
FIN	Finding
MS	Main Steam