

## Saint Lucie 1 2Q/2013 Plant Inspection Findings

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### Initiating Events

**Significance:** G Jun 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Inadequate MSIV Modification Installation and Test**

A self-revealing Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control was identified for the licensee's failure to specify adequate modification installation and testing criteria to ensure the Unit 1 modified main steam isolation valves (MSIVs) were installed in accordance with design requirements. Corrective actions completed included restoring both MSIVs to design requirements, revising MSIV maintenance procedures, verifying the acceptability of all post-modification requirements associated with engineering changes provided by the MSIV contractor, and providing training of this event to maintenance and engineering personal.

The performance deficiency was considered to be more than minor because it impacted the initiating events cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions and affected the cornerstone attribute of design control. Specifically the performance deficiency resulted in the inadvertent shutting of one MSIV and a plant trip. The performance deficiency also caused an increased probability of a loss of condenser heat sink due to a common cause failure of both MSIVs. The inspectors reviewed the finding in accordance with Inspection Manual Chapter 0609, Significance Determination Process, Attachment 4 and Appendix A and determined that the finding required a detailed risk evaluation by an NRC senior reactor analyst due to the increased probability of having a reactor trip with a loss of condenser heat sink. Using the NRC SPAR model, the analyst assumed a one year exposure period with no recovery credit. A loss of condenser heat sink was assumed with a probability of 1.0 though this would overestimate the risk significance because there was some probability the 1A MSIV would remain open during an event. The dominant sequence was a loss of condenser heat sink event where auxiliary feedwater and once-through steam generator cooling both fail. The risk was mitigated by the low probability of a common cause failure of both safety-related DC batteries. The analysis determined that the increase in risk due to the performance deficiency was a delta-core damage frequency (CDF) less than 1E-6/year, i.e., a Green finding of very low safety significance. Because the licensee failed to implement modification installation and test instructions that were adequate to ensure that the MSIVs could fully open, the finding was associated with the cross-cutting aspect of complete and accurate procedures in the resources component of the human performance area [H.2(c)].

Inspection Report# : [2013003](#) (*pdf*)

**Significance:** G Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Missing relay cover results in inadvertent emergency diesel generator actuation**

A self-revealing, non-cited violation (NCV) of 10 CFR 50 Appendix B Criterion XVI Corrective Action was identified for failure to promptly identify and correct a missing cover on a safety-related undervoltage relay. The licensee's failure to identify the missing relay cover on the 27X4 relay during the extent of condition review performed for condition report 406045 was a performance deficiency. Procedure PSL-01.05, Apparent Cause

Evaluation (ACE) Handbook Section 7.6, dated July 30, 2008, provided the guidance for the required extent of condition review. The licensee added signage on the electrical cabinet door warning of the relay hazard, additional actions to determine the extent of condition and replace the relay cover is planned.

The finding was determined to be more than minor because it affected the human performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, without the relay cover installed, the relay was more vulnerable to actuation as a result of unintentional contact and a loss of the 1B3 vital 4 kV electrical bus occurred which required an unnecessary start and loading of the 1B EDG. The finding screened as Green because none of the attributes in the Manual Chapter 0609 Appendix G Attachment 1 Shutdown Operations Significance Determination Process Phase 1 Operational Checklist 3 were adversely impacted. The primary contributor to this conclusion was the licensee's risk management controls which did not allow work in the train which was being relied upon for shutdown cooling. As a result, there was no loss of shutdown cooling for the event. There is no cross cutting aspect for the finding because the finding does not represent current licensee performance because the relay cover has been missing for several years. (Section 40A2.4)

Inspection Report# : [2012005](#) (*pdf*)

**Significance:**  Oct 12, 2012

Identified By: Self-Revealing

Item Type: FIN Finding

**Failure to Adequately Implement Design Changes Procedure**

A self-revealing finding with two examples was identified for the licensee's failure to adequately implement their design change process for post-modification testing (PMT). In the first example, the PMT procedure was not adequate for post-modification testing of the steam bypass control system (SBCS). In the second example, a PMT was not performed for the new turbine control system (TCS).

The licensee's failure to implement the requirements of design change procedure EN-AA-205-1100 in both examples was a performance deficiency. Both examples were more than minor because they were associated with the Initiating Events cornerstone attribute of design control and adversely affected the cornerstone objective in that both resulted in unplanned reactor trips. This finding was assessed using Inspection Manual Chapter 0609, Appendix A, "Significance Determination Process for Findings At-Power," Exhibit 1, "Initiating Events Screening Questions," and determined to be of very low safety significance (Green). The cause of the SBCS event was related to the cross-cutting aspect of the need to ensure work activities are planned by incorporating risk insights as described in the Work Control component of the Human Performance cross-cutting area [H.3(a)]. The cause of the TCS event was related to the cross-cutting aspect of the need to ensure supervisory and management oversight as described in the Work Practices component of the Human Performance cross-cutting area because station oversight allowed the new TCS to be put in service without the prescribed PMT being performed [H.4(c)].

Inspection Report# : [2012009](#) (*pdf*)

**Significance:**  Sep 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to implement procedure EN-AA-205, Design Change Packages**

A self-revealing, non-cited violation (NCV) of Technical Specification (TS) 6.8.1, was identified which requires written procedures be established, implemented, and maintained covering activities referenced in NRC Regulatory Guide 1.33, Revision 2, dated February 1978, including safety-related activities carried out during operation of the reactor plant. The licensee's safety-related design control procedure EN-AA-205, "Design Change Packages," was not implemented as written when a plant modification was performed on the reactor regulating system and steam bypass

control system that affected a safety-related maintenance procedure that was not revised to reflect the design change. The licensee entered this violation in their corrective action program as action request 1786565.

The licensee's failure to fully implement procedure EN-AA-205, "Design Change Packages," was a performance deficiency. The finding was determined to be more than minor because if left uncorrected, the deficiency could lead to a more significant safety concern. The inspectors evaluated the risk of this finding under the initiating events cornerstone using IMC 0609, "Significance Determination Process," Appendix G, "Shutdown Operations Significance Determination Process." The inspectors determined that the finding was of very low safety significance because it did not require a quantitative assessment as determined in Checklist 1. The finding involved a cross-cutting aspect of complete and accurate procedures in the resources component of the human performance area [H.2.(c)]. Specifically, the licensee failed to ensure that an adequate maintenance procedure was up to date to prevent an unexpected reactor plant temperature transient. (Section 40A2.4)

Inspection Report# : [2012004](#) (*pdf*)

## Mitigating Systems

**Significance:**  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Monitor SSCs under 10 CFR 50.65(a)(1)**

The inspectors identified a Green non-cited violation associated with the licensee's failure to follow the requirements of 10 CFR 50.65(a)(2), Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants. Corrective actions included the assignment of a fulltime maintenance rule coordinator to ensure the appropriate priority was assigned to maintenance rule activities, which included weekly meetings of the maintenance rule expert panel to allow evaluation of equipment failures.

The performance deficiency was more than minor because it involved degraded system performance which, if left uncorrected, could become a more significant safety concern. Specifically, not addressing equipment issues under the maintenance rule could impact the reliability and unavailability of those systems, structures, and components important to safety. Using Manual Chapter 0609.04, Significance Determination Process Initial Characterization of Findings, the finding was determined to affect the Mitigating Systems Cornerstone and screened as Green because none of the logic questions under the cornerstone applied. Because the licensee had failed to utilize the corrective action program to associate and trend maintenance rule implementation issues in the aggregate to identify programmatic and common cause problems, the finding was associated with a cross-cutting aspect in the corrective action program component of the problem identification and resolution area [P.1(b)].

Inspection Report# : [2013003](#) (*pdf*)

**Significance:**  May 13, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Demonstrate Feasibility of All OMAs Used as Compensatory Measures**

A Green NRC-identified non-cited violation of St. Lucie Unit 1 and Unit 2 operating license conditions 3.E was identified for the licensee's failure to comply with the requirements of the St. Lucie Fire Protection Program for verifying the feasibility of unapproved operator manual actions (OMAs). Specifically, the licensee's process for determining OMA feasibility did not include performing in-plant walkdowns to verify the feasibility of all the

unapproved OMAs that were entered in the corrective action program (CAP) in 2006 and designated as alternate compensatory measures during the transition to National Fire Protection Association (NFPA) Standard 805. The licensee entered this issue in their CAP as Action Request (AR) 01860866 and performed in-plant walkdowns to verify feasibility of the OMAs which had not been previously field verified.

Failure to comply with the requirements of the St. Lucie Fire Protection Program for verifying the feasibility of unapproved OMAs designated as compensatory measures is a performance deficiency. This finding was determined to be more than minor because it was associated with the reactor safety mitigating systems cornerstone attribute of protection against external events (i.e. fire), and it affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The licensee's process for determining OMA feasibility could have resulted in non-feasible OMA compensatory measures not being identified which had the potential to adversely affect SSD in the event of a fire. The finding was screened in accordance with NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process (SDP)," Attachment 4, "Initial Characterization of Findings," which determined that an IMC 0609 Appendix F, "Fire Protection Significance Determination Process," review was required as the finding affected fire protection safe shutdown. The inspectors evaluated this finding using the guidance in IMC 0609, Appendix F, Attachment 2, "Degradation Rating Guidance," and assigned a low degradation rating to this finding because the licensee verified that the OMAs were feasible through in-plant walkdowns. Therefore, this finding was determined to be of very low safety significance (Green). The cause of this finding was determined to have a cross-cutting aspect in the Corrective Action Program (CAP) component of the Problem Identification and Resolution area in that the licensee did not thoroughly evaluate the problem such that the resolution addressed extent of condition [P.1(c)].

Inspection Report# : [2013007](#) (pdf)

**Significance:** G Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Ensure Reactor Auxiliary Building Penetrations were Adequately Flood Protected**

A Green NRC identified non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, was identified for the licensee's failure to ensure that all below grade Unit 1 and 2 reactor auxiliary building penetrations were adequately sealed as required by the licensee's design basis. The missing and degraded penetration seals were found during licensee inspections performed in response to a letter from the NRC to licensees, entitled Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated March 12, 2012 (ML12053A340). Corrective actions completed included restoring the degraded or missing seals to design basis requirements. The performance deficiency was determined to be more than minor because it affected the protection against external factors attribute of the mitigating system cornerstone, and affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events. Using Manual Chapter 0609.04, Initial Characterization of Findings, Table 2, dated June 19, 2012, the finding was determined to affect an external event mitigation system and affected the mitigating system cornerstone. Although the finding existed with the units at power and during shutdown conditions since original plant construction, the risk was assessed using Manual Chapter 0609 Appendix G, Attachment 1 Shutdown Operations Significance Determination Process Phase 1 Operational Checklists for both PWR's and BWR's dated May 25, 2004 using Checklists 1 through 4. Appendix G was utilized since both units would have been shutdown prior to the probable maximum hurricane (PMH) event and associated external flood. Due to the accuracy of weather forecasting, there would be several days for the licensee to prepare for a PMH. The inspectors reviewed the finding with the regional senior reactor analyst and determined that the licensee would have adequate time to ensure that the mitigating capability of core heat removal, inventory control, emergency AC power, containment control, or reactivity control systems would have been available prior to the PMH affecting the site. The finding screened as Green because none of the attributes in the checklists were adversely impacted. No cross cutting aspects were assigned to the finding. The finding does not represent current licensee performance because the degraded and missing penetration seals have existed since original construction of the plant.

Inspection Report# : [2013002](#) (pdf)

**Significance:** G Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Promptly Identify and Correct a Condition Adverse to Quality for Alignment of the Safety-Related Refueling Water Tank to a Non-Seismic Spent Fuel Pool Purification system**

A Green NRC identified non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for the failure to promptly identify and correct a condition adverse to quality (CAQ) involving alignment of the safety-related refueling water tank (RWT) to a non-seismic spent fuel pool (SFP) purification system. Corrective actions included implementing administrative actions to preclude this alignment when the RWT is required to be operable. The finding was more than minor because it affected the configuration control attribute of the mitigating systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically the alignment of the safety-related RWT to the non-seismic SFP purification system created a CAQ and rendered the RWT inoperable for greater than its allowed outage time. The inspectors evaluated the finding in accordance with NRC Inspection Manual Chapter 0609, Significant Determination Process, Attachment 4 and Appendix A and determined that the finding required a phase 3 evaluation by a senior reactor analyst. The analyst calculated the change in conditional core damage probability (CCDP) due to the postulated loss of the RWT during an event, multiplied by the frequency of a seismic event that could require the use of the RWT (e.g., loss of coolant accident) and applied an exposure time factor (4 days/7 days). The dominant sequence was a steam generator tube rupture which proceeds to core damage due to a lack of high or low pressure injection water supply. The risk was mitigated by the low probability of a seismic event. The analysis determined that the risk increase of the performance deficiency was an increase in large early release frequency less than 1E-7/year which is a GREEN finding of very low safety significance. The cause of the finding involved the cross-cutting area of problem identification and resolution, the component of corrective action program, and the aspect of complete and thorough evaluation, P.1(c); because the licensee failed to properly evaluate for operability the practice of aligning a seismically qualified RWT to a non-seismic purification system.

Inspection Report# : [2013002](#) (pdf)

**Significance:** G Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to follow seismic restraining procedures on ladders located near safety-related equipment**

An NRC identified non-cited violation (NCV) of Technical Specification 6.8.1, was identified which requires that written procedures be established, implemented, and maintained covering activities referenced in NRC Regulatory Guide 1.33, Revision 2, dated February 1978. The licensee's procedures for seismic restraint of ladders: MA-AA-100-1008, Station Housekeeping and Material Control; QI-13-PSL, Housekeeping and Cleanliness Controls Methods St. Lucie Plant; ADM-04.02, Industrial Safety Program; and ADM-27.11, Scaffold Control, were not implemented as written on ladders that were installed near safety-related equipment. The inspectors identified four examples of ladders not seismically restrained in accordance with the licensee's procedures. During the licensee's extent of condition review, 24 additional examples of ladders not in compliance with procedure requirements were identified. The licensee's repeated failure to comply with procedures to seismically restrain ladders was a performance deficiency. Immediate corrective actions included completing a site-wide walkdown of the safety-related systems to identify and bring into procedural compliance any ladders that were not seismically restrained. The licensee entered this violation into the corrective action program as action request 1829233.

The performance deficiency was determined to have more than minor significance because if left uncorrected, the failure to comply with station procedures to ensure adequate restraining of seismically controlled ladders, could lead to a more significant safety concern. Specifically, seismically unrestrained ladders could impact safety-related

equipment during a design basis seismic event. The inspectors evaluated the risk of this finding using Manual Chapter 0609 Appendix A, Significance Determination Process for Findings At-Power, Exhibit 2- Mitigating Systems Screening questions. The inspectors determined that the finding was of very low safety significance because it did not require a quantitative assessment as determined in Exhibit 2. The finding involved the cross-cutting area of human performance, in the component of resources and the aspect of complete and accurate procedures (H.2.c) in that, the licensee failed to ensure complete, accurate, and up-to-date procedures were available for licensee personnel to ensure ladders were restrained to prevent seismic interaction with safety-related systems during a design basis seismic event. (Section 40A2.2)

Inspection Report# : [2012005](#) (*pdf*)

**Significance:** G Dec 18, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Procedure for Severe Weather Mitigation**

The team identified a non-cited violation of Technical Specification 6.8, "Procedures and Programs," for an inadequate technical specification required procedure to combat a loss of feedwater or feedwater system failure. Abnormal operating procedure 1-AOP-09.02, "Auxiliary Feedwater," Attachment 5, "Supplying Unit 1 AFW Pumps from the Unit 2 CST," could not be performed as written with respect to ensuring the availability of the Auxiliary Feedwater (AFW) pumps. The licensee promptly issued a standing night order to ensure that the AFW pumps would remain available and initiated action requests 1816711 and 1826000. The licensee has subsequently modified the procedure to rectify the issue.

The licensee's failure to provide an adequate procedure to mitigate a design basis event was a performance deficiency. The performance deficiency affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, procedure 1-AOP-09.02, secured all suction sources to the AFW pumps without ensuring that the motor driven auxiliary feedwater (MDAFW) pumps would not auto start if an auxiliary feedwater actuation signal was received. The performance deficiency was determined to have more than minor safety significance because if left uncorrected, the failure of the MDAFW pumps could lead to a more significant safety concern as a result of the plant not being able to sustain short-term decay heat removal under specific conditions. The procedure steps created a condition that could have resulted in the inoperability of both MDAFW pumps. In accordance with NRC Inspection Manual Chapter 0609.04, "Initial Screening and Characterization of Findings," the team determined that a detailed risk evaluation was required because the finding screened as potentially risk-significant due to a severe weather initiating event. A bounding Significance Determination Process Phase 3 analysis was performed by a regional senior risk analyst which determined the performance deficiency was a Green finding of very low safety significance. The inspectors determined that no cross cutting aspect was applicable to this performance deficiency because this finding was not indicative of current licensee performance.

Inspection Report# : [2012008](#) (*pdf*)

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## **Barrier Integrity**

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## **Emergency Preparedness**

## Occupational Radiation Safety

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### Public Radiation Safety

**Significance:**  Sep 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **Failure to ship radioactive material in accordance with DOT regulations**

A self-revealing, Green non-cited violation (NCV) of 10 CFR 71.5 was identified for the licensee's failure to ship radioactive material in accordance with Department of Transportation (DOT) requirements as specified in 49 CFR Parts 171-180. Specifically, upon receipt at its destination, a radioactive shipment classified as an "excepted package for limited quantities" was found to have external surface package dose rates exceeding the limit of 0.5 millirem per hour (mrem/h) as specified in 49 CFR 173.421(a)(2). The package recipient identified a maximum dose rate of 3.95 mrem/h on the exterior surface of the package and notified the licensee of the discrepancy. The licensee entered the event into their corrective action program as Action Request (AR)-01628106.

The performance deficiency was more than minor because it was associated with the "Program & Process Procedures" attribute (DOT package limits) of the Public Radiation Safety Cornerstone. The inspectors determined the cornerstone's objective was adversely affected based on the fact that shipment of radioactive material in excess of DOT limits in the public domain is contrary to NRC and DOT regulations. Assurance that the public will not receive unnecessary dose is decreased if packages are not prepared so that dose rates in accessible areas remain below regulatory limits during transit. The finding is of very low safety significance (Green) because there was little to no risk to members of the public.

This finding involved the cross-cutting area of Human Performance with the aspect of conservative decision-making, in that the licensee assumptions failed to ensure that equipment packaged for shipment would not exceed DOT limits during transport. [H.1(b)] (Section 2RS8)

Inspection Report# : [2012004](#) (*pdf*)

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### Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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### Miscellaneous

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