

# Saint Lucie 1

## 4Q/2012 Plant Inspection Findings

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### Initiating Events

**Significance:**  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 4OA2.4)

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

**Significance:**  Apr 20, 2012

Identified By: NRC

Item Type: FIN Finding

**Failure to perform preventive maintenance on the 1B condensate pump discharge check valve**

An NRC identified finding was identified for the licensee's failure to perform a preventive maintenance (PM) activity within its prescribed frequency on the 1B condensate pump discharge check valve. Consequently, the valve failed after a reactor trip and caused complications. No violations of NRC requirements were identified because the condensate pump discharge valve is non-safety related. The licensee entered this issue in the corrective action program as condition report 1755189. Corrective actions included revising the preventive maintenance procedure to initiate a condition report and require plant management approval prior to rescheduling a late PM.

The finding was more than minor because it affected the equipment reliability attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using NRC manual Chapter 0609.04, Significant 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 contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The finding involved the cross-cutting area of Human Performance with a work control aspect. Specifically, the licensee did not plan work activities to support long-term equipment reliability, and maintenance scheduling was more reactive than preventive. [H.3(b)] (Section 4OA2.a(3)(i))

Inspection Report# : [2012007](#) (pdf)

**Significance:**  Apr 20, 2012

Identified By: Self-Revealing

Item Type: FIN Finding

**Failure to implement timely corrective actions resulted in a plant trip**

A self-revealing finding was identified for the licensee's failure to implement timely corrective actions. Specifically,

after the overheating and failure of a Circulating Water Pump (CWP) motor resulted in an unplanned reactor down power, the licensee failed to implement timely corrective actions to monitor and trend motor stator temperatures using the installed RTDs. Consequently, a second CWP motor failed due to overheating that resulted in a reactor trip. No violations of NRC requirements were identified because the performance deficiency involved non-safely related equipment. The licensee entered this issue in the corrective action program as condition report 1697977. Corrective actions included immediately taking the motor stator RTD temperatures on both Units and using that data to monitor the CWP motors thermal performance for degradation.

The finding was more than minor because it affected the equipment reliability attribute of the Initiating Events Cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using NRC manual Chapter 0609.04, SDP – Phase 1 screening, the finding was determined to be of very low safety significance (Green) because it was a transient initiator, but did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The finding involved the cross-cutting area of Problem Identification and Resolution with a corrective action program aspect. Specifically, the licensee did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. [P.1(d)] (Section 40A2.a(3)(iii))

Inspection Report# : [2012007](#) (*pdf*)

**Significance:**  Apr 20, 2012

Identified By: Self-Revealing

Item Type: FIN Finding

**Failure to Implement Vendor Described Preventive Maintenance on the Circulating Water Pump Motors**

A self-revealing finding was identified for the licensee's failure to implement vendor recommended preventive maintenance requirements to monitor and trend motor stator temperatures using the installed resistance temperature detector (RTDs) for the 1A2 Circulating Water Pump (CWP) motor. As a result of not trending 1A2 CWP motor performance, the pump was allowed to run to failure causing an unplanned reactor power transient. 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. The licensee entered this issue in the corrective action program as condition report 1758355. Corrective actions included revising the circulating pump motor preventive maintenance procedure to include periodic monitoring and trending circulating water pump motor thermal performance using the installed stator Resistance Temperature Detectors (RTDs).

The finding was more than minor because it affected the equipment reliability attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using NRC Manual Chapter 0609.04, SDP – Phase 1 screening, the finding was determined to be of very low safety significance (Green) because it was a transient initiator, but did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current plant performance. (Section 40A2.b(3)(ii))

Inspection Report# : [2012007](#) (*pdf*)

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## Mitigating Systems

**Significance:**  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 4OA2.2)

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

**Significance:**  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)

**Significance:**  Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to follow the design control procedure when removing Unit 1 EDG electrical cabinet seismic bolting**

A Green, NRC identified, non-cited violation (NCV) of Technical Specification (TS) 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, including safety related activities carried out during operation of the reactor plant. The licensee's quality instruction procedure QI-3-PSL-1, Design Control, was not complied with as written when several bolts were removed from 1A and 1B emergency diesel generator (EDG) electrical cabinet doors without any modification evaluation and analysis. The licensee entered this in their corrective action program as condition report 1763000.

The licensee's failure to comply with QI-3-PSL-1, Design Control, on both Unit 1 EDGs is a performance deficiency. The performance deficiency affects the Mitigating Systems Cornerstone and was determined to be more than minor significance because if left uncorrected, the deficiency could lead to a more significant safety concern. The inspectors evaluated the risk of this finding using IMC 0609, Significance Determination Process, Attachment 4, Phase 1 - Initial Screening and Characterization of Findings. The inspectors determined that the finding was of very low safety significance because it did not result in an actual loss of operability or functionality to the EDG System. The finding involved the cross-cutting area of human performance, in the component of work practices and the aspect of procedural compliance (H.4.b), in that, the licensee failed to ensure that personnel followed procedure requirements to prevent plant modifications without adequate evaluation and analysis. (Section 40A2.2)

Inspection Report# : [2012003](#) (pdf)

**Significance:**  Apr 20, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to implement vendor technical manual recommendations to inspect EDG immersion heaters**

A self revealing potentially greater than Green AV of Technical Specification 6.8.1.a was identified for failure to establish adequate maintenance procedures associated with the emergency diesel generator (EDG) system. Specifically, station personnel failed to establish preventative maintenance inspections of diesel immersion heaters in accordance with vendor manual recommendations. As a result, the Unit 1 1A EDG was immediately rendered inoperable for 43.5 hours due to a failed immersion heater that resulted in a leak of the 1A2 EDG jacket water system. The licensee replaced the heater with an onsite spare. The finding was considered more than minor because it impacted the Reactor Safety Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and affected the cornerstone attribute of equipment performance. The issue was placed in the licensee's corrective action program as condition report 1751214.

The cause of this finding was related to the Work Control component of the Human Performance cross-cutting area due to the failure to plan work activities to ensure long term equipment availability. Specifically, maintenance scheduling was more reactive than preventative. [H.3(b)] (Section 40A2.b(3)(i))

A self-revealing non-cited violation (NCV) of Technical Specification 6.8.1.a was identified for failure to establish adequate maintenance procedures associated with the EDG system. Specifically, station personnel failed to establish preventative maintenance inspections of diesel immersion heaters in accordance with vendor manual recommendations. As a result, the Unit 1 1A EDG was immediately rendered inoperable for 43.5 hours due to a failed immersion heater that resulted in a leak of the 1A2 EDG jacket water system.

The failure to conduct inspections of the EDG jacket water immersion heaters in accordance with vendor manual recommendations is a performance deficiency. The finding was considered to be more than minor because it impacted the reactor safety Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. Specifically, the failed immersion heater resulted in a loss of jacket water that caused the 1A EDG to trip during a routine surveillance run. The inspectors performed a Phase 1 evaluation per Inspection Manual Chapter (MC) 0609, Attachment 4 and determined that the finding represented an actual loss of safety function for a single train of equipment, potentially for greater-than its technical specification allowed outage time. Consequently a Phase 2 analysis was performed by the inspectors in accordance with MC 0609, Appendix A,

which indicated the risk significance of the performance deficiency was potentially  $> 1E-6$  (White). A Senior Reactor Analyst subsequently performed a Phase 3 analysis of the risk impact both while at-power and while the unit was shutdown. The analyst determined that the risk significance of the issue was very low (Green). The primary cause of the performance deficiency, as determined by the inspectors, was failure to implement vendor recommendations to periodically inspect the immersion heaters. The inspectors determined that the cause of this finding was related to the Work Control component of the Human Performance cross-cutting area due to the failure to plan work activities to ensure the long term equipment availability [H.3(b)]. (Section 4OA5.2)

Inspection Report# : [2012003](#) (pdf)

Inspection Report# : [2012007](#) (pdf)

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## Barrier Integrity

**Significance:**  Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to perform examinations of reactor pressure vessel supports**

A Green, NRC identified, non-cited violation (NCV) of Code of Federal Regulation (CFR) 10 CFR Part 50.55a, Codes and Standards, involving the licensee's failure to include the reactor pressure vessel supports in the scope of the licensee's inservice inspection (ISI) program. 10 CFR 50.55a requires that licensees develop an ISI program and update that program every 10 years in accordance with the approved edition of American Society of Mechanical Engineers (ASME) Section XI in effect 12 months prior to the beginning of the 10 year interval. The inspectors identified that the nuclear Class 1 reactor pressure vessel supports were not included in the scope of the St Lucie Unit 1 ISI Program for the fourth interval. The Licensee's ISI program was prepared in accordance with the 2001 Edition of the ASME Section XI Code, with addenda through 2003, as modified by 10 CFR 50.55a. As required by Article IWF 1000, Table 2500-1, Examination Category Item Number F1.40, the reactor pressure vessel (RPV) supports are required to be periodically VT-3 visually examined. Also as required by Subsection IWB of Section XI, Table IWB-2500-1, Examination Category B-K, Item No. B10.10, the support integral attachment weld is to be periodically subjected to a surface examination. This issue was entered into the licensee's corrective action program as AR 01716657.

The failure to include the RPV supports in the scope of the ISI program and the failure to conduct the required examinations is a performance deficiency. The performance deficiency was determined to be more than minor significance because failure to conduct the required examinations, if left uncorrected, could have resulted in the potential to allow degradation of the reactor vessel support structure to continue undetected. If left unchecked, any support degradation could have resulted in more significant degradation of the reactor support components and integral attachment welds with subsequent degradation of the primary system pressure boundary. The finding was associated with the design control attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, examinations of the RPV supports provide assurance that the structural boundary of the reactor coolant system (RCS) remains capable of performing its intended safety function. The inspectors used IMC 0609, Significance Determination Process, Attachment 0609.04, Phase 1 – Initial Screening and Characterization of Findings, and determined that the finding was of low safety significance (Green) because it did not represent an actual failure of the RPV supports.

The inspectors identified a cross-cutting aspect in the Human Performance Decision Making cross cutting area, H.1 (b). Specifically, the licensee failed to apply conservative assumptions in decision making and conduct effective reviews of safety significant decisions to verify the validity of assumptions used. (Section 1R08)

Inspection Report# : [2012003](#) (pdf)

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## Emergency Preparedness

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## 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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