

Saint Lucie 1

4Q/2009 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Dec 03, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Meet the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 Requirements for the Overpressure Protection for the CCW Surge Tank .

The team identified a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for failure to translate the design basis as specified in the license application into specifications, drawings, procedures, and instructions. The licensee did not ensure that the component cooling water (CCW) surge tank design included adequate overpressure protection for all procedurally allowed configurations as required by the applicable ASME Boiler and Pressure Vessel Code, Section VIII, Division 1. The code requires that no intervening stop valves be between the vessel and its protective device or devices or between the protective devices and the point of discharge. The team concluded that stop valve V6466 was an intervening stop valve for the CCW surge tank vent path to the chemical drain tank (CDT). The issue was entered in the licensee's corrective action program as condition report (CR) 2009-23473. Immediate licensee corrective actions included verification that the valve was in its open position and the implementation of administrative controls to maintain the valve open.

This finding is associated with the Mitigating Systems Cornerstone attribute of Design Control, i.e. initial design, was determined to be more than minor because it impacted the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team determined that if left uncorrected, this design deficiency had the potential to impact the operability of safety-related systems and, thus, become a more significant safety concern in that a closed intervening valve had the potential for overpressurizing the CCW surge tank. The team assessed this finding for significance in accordance with NRC Manual Chapter 0609, Appendix A, Attachment 1, Significance Determination Process (SDP) for Reactor Inspection Findings for At-Power Situations, and determined that it was of very low safety significance (Green), in that no actual loss of safety system function was identified. The team reviewed the finding for cross-cutting aspects and concluded that this finding did not have an associated cross-cutting aspect because the design of the CCW surge tank relief was established in an original plant design, and therefore, was not representative of current licensee performance. [Section 1R21.2.2]

Inspection Report# : [2009006](#) (*pdf*)

Significance:  Dec 03, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Maintain the Safety-Related 125V DC System Design Basis Information Consistent with the Plant Configuration

The inspectors identified a finding involving a violation of 10 CFR 50, Appendix B, Criterion III, Design Control, for the licensee's failure to maintain the safety-related 125V DC system design basis information consistent with the plant configuration. Specifically, a revision to the Unit 1, safety-related 125V DC system analysis incorporated incorrect design input specifications. The issue was entered in the licensee's corrective action program as CR 2009-24517. Licensee corrective actions included incorporating the correct design input and specifications by revising the calculations.

The finding was more than minor because it was associated with the Mitigating Systems Cornerstone attribute of Design Control. It impacted the cornerstone objective because if left uncorrected, it had the potential to lead to a more significant safety concern in that future design activity or operability assessments would assume the lower voltage (100V DC vs. actual 105V DC) value acceptable for assuring the adequacy of voltage to the safety-related inverters. The team assessed this finding for significance in accordance with NRC Manual Chapter 0609, using the Phase I SDP worksheet for mitigating systems and determined that the finding was of very low safety significance (Green) since it was a design deficiency determined not to have resulted in a loss of safety function. This finding has a cross-cutting aspect in the area of human performance because the licensee failed to ensure that procedures (specifically ENG-QI 1.5) were available and adequate to assure nuclear safety (specifically, complete, accurate and up-to-date design documentation): H.2(c). [Section 1R21.2.20]

Inspection Report# : [2009006](#) (pdf)

Significance: TBD Dec 03, 2009

Identified By: NRC

Item Type: AV Apparent Violation

Failure to Translate Design Basis Specifications to Prevent Single Failure of CCW

The team identified an AV of 10 CFR 50, Appendix B, Criterion III, Design Control, for the licensee's failure to identify that the CCW system met its license specifications related to common cause failure vulnerabilities.

Specifically, a non-safety system failure (i.e. waste gas compressor aftercoolers affecting both units, or containment IA compressors affecting Unit 1 only) could result in a common cause failure of both trains of a safety system (i.e. CCW system). The issue was entered into the licensee's corrective action program as CR 2009-22929 with actions to evaluate the past operability of the CCW system during the air intrusion event. Licensee corrective actions included isolating the CCW system from the containment IA compressors.

The finding was determined to be more than minor because if left uncorrected, it could affect the availability, reliability and capability of a safety system to perform its intended safety function. Specifically, with this vulnerability, a failure of the waste gas aftercooler (both units) or a failure of the containment IA compressors (Unit 1 only) could cause air intrusion into the CCW system and lead to a loss of CCW event, therefore, failing to ensure that adequate cooling would be available or maintained to essential equipment used to mitigate design bases accidents. The finding was assessed for significance in accordance with NRC Manual Chapter 0609, using the Phase I and Phase II SDP worksheets for mitigating systems. It was determined that a Phase III analysis was required since this finding represented a potential loss of safety system function for multiple trains which was not addressed by the Phase II pre-solved tables/worksheets. Based on the Phase III SDP, the finding was preliminarily determined to be greater than Green. The team reviewed the finding for cross-cutting aspect and concluded that this finding did not have an associated cross-cutting aspect because the design of the CCW system was established in an original plant design, and therefore, was not representative of current licensee performance. [Section 4OA5]

Inspection Report# : [2009006](#) (pdf)

Significance: TBD Dec 03, 2009

Identified By: NRC

Item Type: AV Apparent Violation

Failure to Identify and Correct a Condition Adverse to Quality such that Non-Safety Related System Could Cause a Common Mode Failure of Both Trains of a Safety-Related System

The team identified an AV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the licensee's failure to implement adequate corrective actions associated with the CCW air intrusion event that occurred in October, 2008. The corrective actions were inadequate in that the licensee failed to identify and correct the cause of air intrusion. The issue was entered in the licensee's corrective action program as CR 2009-25209 to address the ineffective corrective actions for the air intrusion event. Licensee corrective actions included isolating the CCW system from the containment IA compressors.

The finding was determined to be more than minor because it affected the availability, reliability and capability of a safety system to perform its intended safety function. Specifically, without knowing the leak path from the containment IA compressors to the CCW system, the licensee could not ensure that adequate cooling would be available or maintained to essential equipment used to mitigate design bases accidents. The finding was assessed for

significance in accordance with NRC Manual Chapter 0609, using the Phase I and Phase II SDP worksheets for mitigating systems. It was determined that a Phase III analysis was required since this finding represented a loss of safety system function for multiple trains which was not addressed by the Phase II pre-solved tables/worksheets. Based on the Phase III SDP, the finding was preliminarily determined to be greater than Green. This finding was determined to have a cross-cutting aspect in the area of Human Performance, Decision Making, specifically H.1(a). [Section 40A5]

Inspection Report# : [2009006](#) (pdf)

Significance:  Sep 30, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Take Timely and Effective Corrective Actions to Prevent Recurrence of EDG Day Tank Level Switch Failures

A self-revealing Non-Cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, was identified for failure of the licensee to take timely and effective corrective actions to prevent recurrence of Unit 1 emergency diesel generator (EDG) day tank level switch failures following identification of Murphy® switch reliability issues and issuance of NRC NCV 05000335/2009002-02. Specifically, on July 19, 2009, during functional testing of the 1B EDG day tank level switches, both the low and low-low level Murphy® switches failed.

The finding is more than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone. The finding was previously determined to have very low safety significance based on an SDP Phase 3 analysis. The analysis determined that the risk was less than 1E-6/year. This finding was related to the corrective action attribute of the problem identification and resolution cross-cutting area in the aspect of appropriate and timely corrective actions (IMC 0305 aspect P.1.d).

Inspection Report# : [2009004](#) (pdf)

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Risk Assessment When Performing Weekly Pump Venting

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

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

Inspection Report# : [2009003](#) (pdf)

Significance: **G** Apr 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correct Conditions Adverse to Quality

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

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

Inspection Report# : [2009007](#) (pdf)

Significance: **G** Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform a Required TS Surveillance

The inspectors identified a Green noncited violation of Technical Specifications 3.8.1, "AC Sources," for failure to perform a required monthly surveillance test in its entirety. Specifically, the inspectors identified that St. Lucie has not performed Unit 1 Emergency Diesel Generator (EDG) technical specification (TS) surveillance requirement 4.8.1.1.2 as written to verify the fuel oil transfer pumps will transfer fuel from the storage tank to the engine mounted day tanks at least every 31 days to demonstrate operability. The licensee entered the finding in their CAP as CR 2009-4976.

The finding is more than minor in accordance with Inspection Manual Chapter (IMC) 0612, Power Reactor Inspection Reports, "Appendix B, Issue Screening." Specifically, it impacts the mitigating systems cornerstone objective in that it affects the operability, availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, this finding was determined to be of very low safety significance since it did not represent an actual loss of a safety function. The inspectors determined that the cause of this finding has a crosscutting aspect in the area of human performance associated with the resources attribute, in that the operators did not have adequate procedural guidance available to completely test the fuel oil transfer system as required by technical specifications. (IMC 0305 aspect H.2.c). (Section 1R22)

Inspection Report# : [2009002](#) (pdf)

Significance: **G** Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Take Timely and Effective Corrective Actions for EDG Day Tank Level Switch Failure

The inspectors identified a Non Cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for failure of the licensee to take timely and effective corrective actions to prevent recurrence of Unit 1 emergency diesel generator (EDG) day tank low level switch failures starting in 2007. Specifically, in June 2007, the licensee performed an apparent cause evaluation of "sticking" level switches and determined that a manufacturing defect

associated with the packing gland of the float's pivot shaft caused some restricted movement. The licensee also determined that extended shelf life contributed to the failures of these level switches. However, other than replacing the switches with new ones, the only corrective action(s) that resulted from this evaluation were to ensure that switches manufactured before 2000 were not used for plant applications. Subsequently, in October 2008, the 1A-EDG day tank low level switch failed during the 24 hour EDG run and again failed during maintenance activities in February 2009.

The finding is more than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone. The finding was determined to have very low safety significance because an SDP Phase 3 analysis determined that the risk was less than 1E-6/year. This finding was related to the corrective action attribute of the problem identification and resolution cross-cutting area in the aspect of appropriate and timely corrective actions (IMC 0305 aspect P.1.d).

Inspection Report# : [2009002](#) (*pdf*)

Significance:  Mar 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform an Adequate Post Maintenance Test on the 1A-EDG Fuel Oil Day Tank Low Level Switch

The inspectors identified a NCV of TS 6.8.1.a and Regulatory Guide (RG) 1.33, for the licensee failing to specify and ensure an appropriate post maintenance test (PMT) was performed as required by administrative procedure ADM-78.01, "Post Maintenance Testing." Specifically, the inspectors identified that after replacement of an emergency diesel generator (EDG) fuel oil day tank low level instrument, an inadequate PMT was performed because the instrument switch mechanism was not demonstrated functional by actual lowering of the fuel oil level within the tank to actuate the float assembly. The licensee entered the finding in their CAP as CR 2008-32722.

The finding is more than minor because it is associated with the equipment performance attribute of the mitigating systems cornerstone. The finding was determined to have very low safety significance because it did not result in an actual loss of safety system function. This finding was related to the coordination of work activities attribute of the human performance cross-cutting area in the aspect of work control (IMC 0305 aspect H.3.b).

Inspection Report# : [2009002](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings

pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

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