Saint Lucie 1
4Q/2010 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2010
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Inadequate Operations Procedure Results in Loss of 1B 125 v DC Bus
A self-revealing NCV of Technical Specification 6.8.1 was identified for an inadequate operating procedure which resulted in the loss of the 1B Direct Current (DC) vital electrical bus and unplanned entry into Technical Specification Action 3.9.8.2.a. for losing operability of one train of shutdown cooling. Subsequently, the Unit 1 daily shutdown risk assessment changed from a low risk to a high risk condition for electric power availability.

The failure to provide adequate procedural guidance for operating the 125 volt (v) DC vital bus is a performance deficiency. This finding was considered more than minor because it was associated with the Procedure Quality attribute of the Initiating Events cornerstone and adversely affected the objective of limiting the likelihood of a loss of the 125 v DC bus and a loss of shutdown cooling (SDC) event. If left uncorrected, the condition has the potential to become a more significant safety concern such as a loss of SDC while the reactor coolant system is open and the time to boil could be less than 2 hours. This finding was also determined to potentially have greater significance per IMC 06909, Appendix G, Attachment 1, Check List 3 due the increase in the likelihood that a loss of SDC will occur and the licensee's ability to cope with a loss of off-site power was degraded. The phase 1 screening resulted in a need to perform a phase 2 and phase 3 evaluation due to the finding resulting in the loss of mitigating function, specifically the ability to perform decay heat removal. The finding occurred while the plant was shutdown and required entry into IMC-0609 Appendix G. A phase 2 analysis was performed by a regional project engineer and was sent to the regional SRA for review. In accordance with the guidance of NRC Inspection Manual Chapter 0609 Appendix G, the analysis was given to headquarters analysts to perform a detailed phase 3. The significance determination process phase 3 risk evaluation resulted in a risk increase for the finding <1E-6 for core damage frequency (CDF) and <1E-7 for large early release frequency (LERF). The initiators evaluated were loss of inventory (LOI), loss of offsite power (LOOP), and loss of residual heat removal (LORHR). The dominant sequences involved the LOOP initiator, failure of the DC B train resulting in the failure of RHR B, and the failure of the A train to provide a means to perform feed and bleed given the loss of RHR A. The analysis assumed the DC B train was non-recoverable. Due to the short time to boil, gravity feed was not credited. The finding was characterized as of very low safety significance (Green). This characterization was due to the very short exposure time and that the deficiency was evaluated as a condition assessment rather that as an event assessment. This finding was related to the complete procedures aspect of the Resources component in the Human Performance crosscutting area (IMC 0305 aspect H.2.c).

Inspection Report# : 2010003 *(pdf)*

Significance: G Jun 30, 2010
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Untimely Corrective Actions to Resolve Seat Leakage of Containment Spray Valves 2-MV-07-3/4
The inspectors identified a 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 seat leakage past containment spray isolation valves 2-MV-07-3 and 2-MV-07-4 resulting in long standing Reactor Coolant System (RCS) inventory perturbations while in reduced inventory operations and a long term operator workaround.

The finding was more than minor in accordance with Inspection Manual Chapter (IMC) 0612, Power Reactor Inspection Reports, Appendix B, "Issue Screening." Specifically, if left uncorrected the condition has the potential to become a more significant safety concern such as a loss of shutdown cooling while in mid-loop operations when the time to boil could be 15 minutes or less. Using the NRC Manual Chapter 0609, ASignificance Determination

Process,@ Appendix G, “Shutdown Operations Significance Determination Process,” Checklist 3, the finding was determined to be of very low safety significance because Core Heat Removal, Inventory Control, Power Availability, Containment Control, and Reactivity Guidelines were all met. This finding was related to the appropriate and timely corrective actions aspect of the corrective action program (CAP) component in the problem identification and resolution crosscutting area (IMC 0305 Aspect P.1.d). (Section 4OA5.1)

Inspection Report# : 2010003 *(pdf)*

Mitigating Systems

Significance: G Dec 31, 2010
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Identify and Correct a Condition Adverse to Quality that Resulted in the 1C-AFW Pump Being Out ofService for Greater Than Its Allowed Outage Time
A self-revealing Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” was identified for the licensee’s failure to promptly identify and correct a condition adverse to quality (CAQ) that resulted in the 1C Auxiliary Feedwater (AFW) pump being inoperable for greater than its Technical Specifications (TS) allowed outage time (ACT). Specifically, in December 2009, the licensee identified a concern with housekeeping in both Unit 1 and Unit 2 AFW pump areas that could affect the pump motor, bearings, seals, and turbine controls and linkages. Then in June 2010, these same housekeeping issues combined with extended operation of the atmospheric dump valves (ADV5) caused failure of the 1 C AFW pump to reach rated speed during its scheduled surveillance test.

The finding was determined to be more than minor because it is similar to Example 4.f in IMC 0612, Appendix E, in that the failure to adequately correct a CAQ affected the 1C-AFW pump’s operability and affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capacity of systems that respond to initiating events to prevent undesirable consequences. The finding was evaluated in accordance with IMC 0609.04, Significance Determination Process (SDP) Phase 1 screening worksheets. Because it represented an actual loss of safety function of a single train for greater than its TS ACT, SDP Phase 2 worksheets were evaluated. The phase 2 notebook produced an overly conservative result for a short exposure time (less than 2 week duration), and consequently a phase 3 SDP evaluation was performed. The resultant core damage frequency (CDF) was <1E-6 Green. The inspectors determined that the cause of this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because 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 (IMC 0310 Aspect P.1 .d). (Section 40A2.2)
Inspection Report# : 2010005 *(pdf)*

Significance: G Sep 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Procedure for Restoration of Non-Essential CCW Flow Following SIAS
An NRC-identified NCV of very low safety significance involving Technical Specification 6.8.1, for failure of the licensee to provide adequate procedures for restoration of non-essential component cooling water (CCW) following a Safety Injection Actuation Signal (SIAS). Specifically, emergency operating procedure, 1-EOP-99, Appendix A, “Sampling Steam Generators” and Appendix J, “Restoration of CCW and CBO to the RCPs”, Rev. 38, did not address the potential adverse impact on essential cooling flow required to mitigate a LOCA when the non-essential CCW was

restored. This issue was entered into the CAP as CR 2009-22623

The finding was more than minor in accordance with IMC 0612, Appendix B, “Issue Screening”, because it was associated with the procedure quality attribute of the mitigating systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and operability of the control room air conditioning system to perform its intended safety function during a design basis event. The inspectors determined that the finding was of very low safety significance because it did not result in an actual loss of operability to the component. This finding was reviewed for cross-cutting aspects and none were identified.

Inspection Report# : 2010004 *(pdf)*

Significance: G Sep 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to adequately monitor performance of the 2B EDG and 1C AFW pump as required by 10 CFR 50.65
The inspectors identified a non-cited violation of 10 CFR 50.65 (a)(2) for failure to demonstrate that the performance of the 2B Emergency Diesel Generator (EDG) and 1C Auxiliary Feedwater Pump (AFW) systems was effectively controlled by preventative maintenance (PM) such that these systems remained capable of performing their intended functions. The 2B EDG and the 1C AFW pump exceeded Maintenance Rule (a)(2) performance criteria since February 27 and May 30, 2010, respectively, and the goal setting and monitoring plans were not established as required by paragraph (a)(1) of the Maintenance Rule. This issue was entered into the licensee’s corrective action program as AR 581307.

The finding was determined to be of greater than minor significance because it was associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective of ensuring availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. More specifically, the licensee failed to demonstrate that the performance of the 2B EDG and the 1C AFW pump was effectively controlled through appropriate PM. According to NRC Inspection Manual Chapter 0609, Attachment 4, Phase I, Initial Screening and Characterization of Findings, this finding was determined to be of very low safety significance because it did not lead to an actual loss of a safety system function or screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The cause of this finding was directly related to the cross-cutting aspect of Human Performance H.4(b) for the failure to follow the maintenance rule procedural requirements which resulted in the goal setting and monitoring plan not being established in a timely manner per 10 CFR part 50.65.

Inspection Report# : 2010009 *(pdf)*

Significance: G Mar 19, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to promptly correct a condition adverse to quality associated with degraded intake cooling water pump discharge check valves.
The NRC identified a Green Non-cited Violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, for the licensee’s failure to promptly correct a condition adverse to quality that being degraded check valves on the intake cooling water system affecting both units. The failure to implement corrective actions after identifying that the valves were degraded in an inspection in 2005 resulted in a reduction in system reliability and a burden to plant operators. The issue was documented in the corrective action program as CR 2010-7380, and the license intends to replace the check valves at the next availability.

The finding was more than minor because it is associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone in that it adversely affected the reliability of the intake cooling system to respond to initiating events to prevent undesirable consequences. The finding was screened using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," and was determined to have a very low safety significance (Green) because the system remained operable and capable of meeting its design function with no loss of safety function of any train of intake cooling water. The cross-cutting aspect of H.3(b) was applicable because the licensee

did not plan work activities to support long term equipment reliability to limit operator workarounds and reliance on manual actions. (4OA2)

Inspection Report# : 2010006 *(pdf)*

Barrier Integrity

Significance: G Dec 31, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Take Timely and Effective Corrective Actions for ECCS Fan Damper Failures
The inspectors identified a NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee failing to take timely and effective corrective actions for Emergency Core Cooling System (ECCS) area exhaust fan damper louver failures resulting in TS Limiting Conditions for Operation (LCO) entries for an inoperable ECCS area exhaust air filter train. Specifically, multiple damper failures occurred over at least a two year period where the root cause of the failures was not identified and corrected to prevent recurrence.

The finding was more than minor because it is similar to Example 4.f in IMC 0612, Appendix E, in that the failure to adequately correct a condition adverse to quality affected the 1-HVE-9A ECCS area exhaust fan's operability. The finding was evaluated in accordance with IMC 0609.04, Significance Determination Process (SDP) Phase 1 screening worksheets and determined to be of very low safety significance because the finding did not represent a degradation of the radiological barrier function provided for the auxiliary building, or represent a degradation of the control room barrier function, or an actual open pathway of containment, or a reduction in function of containment hydrogen ignitors. The inspectors determined that this finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because the licensee did not thoroughly evaluate the problem such that the resolution addressed causes, as necessary (IMC 0310 Aspect P.1.c). (Section 40A2.3).
Inspection Report# : 2010005 *(pdf)*

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

Significance: N/A Sep 30, 2010
Identified By: NRC
Item Type: FIN Finding
95002 Supplemental Inspection Results
The NRC staff performed this supplemental inspection in accordance with IP 95002, "Inspection for One Degraded Cornerstone or any Three White Inputs in a Strategic Performance Area," to assess the licensee's evaluation associated with air intrusion into Unit 1 component cooling water (CCW) system in 2008 and 2009. The NRC staff previously characterized this issue as having Yellow safety significance, as documented in NRC IR 05000335/2010007 and 05000389/2010007.

The inspectors determined that the St. Lucie staff performed a comprehensive evaluation of the subject Yellow finding associated with the CCW system air intrusion event. The St. Lucie staff's evaluation identified root causes of the issue to be: (1) decision making by the organization was insufficient due to inadequate knowledge and skills related to risk significant decisions, conservative assumptions and timely communication between departments, (2) the organization missed several opportunities to promptly identify, fully analyze and resolve in a timely manner the air intrusion event, (3) inadequate fleet/site procedures resulted in the failure to recognize the condition and significance of the event in a timely manner, (4) management did not effectively implement policies and procedures, which resulted in a reluctance to challenge issues and recognize the significance of the 2008 event and a repeat of the event in 2009, (5) less than adequate design of containment air compressor system resulted in recurrent air intrusion events, and (6) less than adequate maintenance resulted in a similar 2009 air intrusion event.

The inspectors determined that the root cause evaluations for the CCW system air intrusion events were thorough and broad in scope. The evaluation appropriately determined the root and contributing causes, addressed the extent of condition and extent of cause, determined if safety culture contributed to the issue, and established and scheduled corrective actions that were sufficient to address the causes and prevent recurrence of the air intrusion event.

The inspection team performed an independent extent of condition and extent of cause review and a focused review utilizing a safety culture expert as it related to the root cause evaluations. Overall, the team concluded that the licensee's root cause evaluation and corrective actions, completed and planned, were sufficient to prevent recurrence. The root cause evaluation appropriately considered safety culture. The team did not identify any concerns associated with the safety conscious work environment at St. Lucie.
As a result of the NRC conclusion that the licensee appropriately addressed the above issues, the Yellow finding associated with air intrusion into Unit 1 CCW system will be considered in assessing plant performance for a total of four quarters in accordance with the guidance in IMC 0305, " Operating Reactor Assessment Program."

Inspection Report# : 2010009 *(pdf)*

Significance: N/A Mar 19, 2010
Identified By: NRC
Item Type: FIN Finding
PI&R
The team concluded that, in general, problems were properly identified, evaluated, prioritized, and corrected. The threshold for initiating condition reports (CRs) was appropriately low, as evidenced by the types of problems identified and the number of CRs entered annually into the Corrective Action Program (CAP). Employees were encouraged by management to initiate CRs. However, several examples of problems related to CAP administration were identified by the team, including minor equipment issues that had not been identified by the licensee and entered into the corrective action program, a few minor examples of corrective actions closed where the specified action had not been completed, and some minor problems with sustainability of corrective actions to prevent recurrence (CAPRs). When identified, the licensee entered these issues into the CAP. In the weeks prior to the inspection, a licensee self-assessment team found similar minor issues with CAP administration and had entered these items into the CAP. Corrective actions were planned but not fully implemented in the licensee identified cases, and an

assessment of the sustainability of the corrective actions could not be accomplished.

The team found problems with deferral of preventive maintenance on risk significant equipment, including the intake cooling water check valves. The team found examples of deferral of critical preventive maintenance activities that were not based on engineering evaluation, but rather scheduling concerns or management discretion. However, there was no evidence that failures had occurred because of deferred maintenance. The licensee had identified deferred maintenance as a problem in 2009 and had undertaken comprehensive evaluation and actions to remedy the problem. These activities were in progress and the timetable to correct deficient conditions was appropriate.

The team determined that, overall, audits and self-assessments were adequate in identifying deficiencies and areas for improvement in the CAP, and in most cases, appropriate corrective actions were developed to address the issues identified. Operating experience usage was found to be generally acceptable and integrated into the licensee's processes for performing and managing work and plant operations.
Based on discussions and interviews conducted with plant employees from various departments, the inspectors determined that personnel felt free to raise safety concerns to management and use the CAP to resolve those concerns. However, internal surveys of work and safety culture issues identified a declining trend in worker satisfaction in 2008, and actions have been initiated to improve the work and safety culture environments throughout the corporation.

Inspection Report# : 2010006 *(pdf)*

Last modified : March 03, 2011