

Saint Lucie 1

1Q/2011 Plant Inspection Findings

Initiating Events

Significance:  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 than 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:  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 40A5.1)

Inspection Report# : [2010003](#) (pdf)

Mitigating Systems

Significance:  Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Procedures and Guidelines to ensure RAB Doors are Completely Dogged Closed

A NRC identified NCV of Technical Specification (TS) 6.8.1, which requires that written procedures be established, implemented, and maintained covering the activities in NRC Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Appendix A, for the licensee's failure to follow posted and published guidelines per ADM-17.25, "Plant Barrier Control" and 0-NOP-99.02, "Watchstation General Inspection Guidelines," Rev. 13A was identified. The failure to follow posted and published guidelines per ADM-17.25, "Plant Barrier Control," and 0-NOP-99.02, "Watchstation General Inspection Guidelines," Rev. 13A, is a performance deficiency.

The finding was determined to be of more than minor significance because it affected the mitigating systems cornerstone attribute of equipment performance to ensure the availability and reliability of the ECCS ventilation system to perform its intended safety function during a design basis event; and closely parallels IMC 0612, Appendix E, Example 3.j, in that there was reasonable doubt regarding the capability of the system to perform its intended function pending reanalysis (i.e. testing). Specifically, not fully securing the RAB doors via the dog latches could adversely affect the operability of the ECCS ventilation system to perform its safety functions. 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 to the ECCS ventilation system. The finding involved the cross-cutting area of human performance, the component of work practices and the aspect of human prevention techniques and peer checking (H.4.a), in that, the licensee failed to practice their human prevention techniques specifically, peer checking to ensure that personnel followed procedures and postings which required the RAB doors to be completely dogged closed. (Section 40A5)

Inspection Report# : [2011002](#) (pdf)

Significance:  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 of Service 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:  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:  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*)

Barrier Integrity

Significance:  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

Significance:  Mar 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to perform adequate surveys to identify potential radiological hazards during valve repair in the 1B WGDT room (

A self-revealing non-cited violation (NCV) of 10 CFR Part 20.1501(a) was identified for failure to perform adequate

surveys to verify radiological conditions within the Unit 1 “B” Waste Gas Decay Tank (WGDT) room prior to allowing workers to enter the area. This resulted in workers unknowingly entering an area with general area dose rates exceeding High Radiation Area (HRA) conditions, i.e., dose rates exceeding 100 millirem per hour (mrem/hr) at 30 centimeters (cm). Because of the potential for changing radiological conditions resulting from normal operation, radiation protection staff established controls for access to all WGDT rooms through administrative postings and locked entry doors to ensure monitoring and establishment of appropriate radiological controls prior to worker entry into the areas. However, on October 4, 2010, two maintenance workers were allowed access to the 1B WGDT room without a Radiation Protection Technician (RPT) performing a survey prior to entry. One worker subsequently received a dose rate alarm on their Electronic Dosimeter (ED), maximum dose rate measurement of 77.5 mrem/hr which exceeded the ED dose rate alarm setpoint of 75 mrem/hr. Both workers exited the room and contacted the assigned RPT. Subsequent surveys measured HRA conditions adjacent to the 1B WGDT, maximum general area dose rates of 250 mrem/hr, resulting from operations venting gas to the subject tank several hours before the workers entered the room. Room postings and access controls were upgraded immediately for the identified HRA conditions. The licensee entered the issue into their corrective action program (CAP) as condition report (CR) number AR 585076.

This finding is greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of Program and Process (Monitoring and RP Controls) and adversely affects the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The finding was evaluated using the Occupational Radiation Safety Significance Determination Process (SDP) and was determined to be of very low safety significance (Green) because it was not related to As Low As Reasonably Achievable (ALARA) Planning and the ability to assess dose was not compromised. In addition, it did not involve overexposure or substantial potential for overexposure because the maximum exposure rate within the 1B WGDT were not estimated to exceed Locked High Radiation Area (LHRA) conditions, WGDT room doors are administratively locked, keys only issued to RP personnel, and the entrances are posted “Radiation Area, Contact RP Prior to Entry.” The cause of this finding was directly related to the cross-cutting aspect of Conservative Assumptions in the Decision Making component of the Human Performance area because the RPT assumed that radiological conditions in the 1B WGDT room had not changed, even though additional administrative controls were in place due specifically to the identified potential for changing radiological conditions in the area when venting gas to the WGDT. [H.1(b)]. (Section 2RS1)

Inspection Report# : [2011002](#) (*pdf*)

Significance: SL-IV Feb 26, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to conduct and document RCA routine radiological surveys

The NRC identified a non-cited violation of Technical Specification 6.8.1 requirements when it was determined that two St. Lucie Plant Radiation Protection Technician staff willfully failed to follow established Health Physics Procedures. As a result, between July 1, 2008, and September 30, 2009, 16 required Radiologically Controlled Area routine radiation surveys were not conducted, and subsequently were falsely documented as being completed. After the issue was identified by the licensee, it was entered into the licensee’s corrective action program for action and final resolution. Licensee actions included a determination of the impact of the missed surveys on occupational radiation safety, the extent of condition, and development of additional oversight of for future completed surveys.

This issue was dispositioned using traditional enforcement due to the willful aspects of the performance deficiency. In accordance with the NRC Enforcement Policy, Section 6.7 (d), this failure to maintain procedurally established surveillance activities over licensed material in an area posted as containing radioactive materials despite a functional program to monitor licensed material including training and staff awareness of procedural and 10 CFR Part 20 Code requirements was identified as a Severity Level IV violation. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the NRC Enforcement Policy.

Inspection Report# : [2011008](#) (*pdf*)

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*)

Last modified : June 07, 2011