

Robinson 2

3Q/2011 Plant Inspection Findings

Initiating Events

Significance: TBD Sep 30, 2011

Identified By: NRC

Item Type: AV Apparent Violation

Water Intrusion into Safety-Related Buildings due to Inadequate Design of Site Storm Water Runoff Drainage System

A self-revealing apparent violation (AV) of 10 CFR 50, Appendix B, Criterion III, "Design Control," was identified for the licensee's failure to consider how the aggregate changes to the site's topography could impact the site's ability to drain storm water runoff and adequately respond to localized flooding during periods of heavy rain. This resulted in the ponding of storm water runoff, the subsequent direction of runoff flow towards the power block, overflowing of the retention basin, backup of the storm drainage system, and ultimately, uncontrolled water intrusion into safety-related equipment rooms in the auxiliary building. The licensee took immediate actions to remove the water from the affected plant buildings and grounds. In addition, within a few weeks of the event, the licensee repaired the washed out area of the berm just to the north of the power block, and performed interim adjustments to site topography to limit ponding near the berm. The licensee plans to perform additional site grade and trench restoration and remediation to permanently prevent site ponding. This issue was entered into the licensee's corrective action program as NCR 468235.

The licensee's failure to consider how the aggregate changes to the site's topography could impact the site's ability to drain storm water runoff and adequately respond to localized flooding during periods of heavy rain as required by procedure EGR-NGGC-0005, "Engineering Change," was a performance deficiency. This performance deficiency was considered more than minor because it was associated with the Initiating Events Cornerstone attributes of the Design Control (plant modifications) and Protection Against External Factors (flood hazard), and adversely 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. Specifically, the failure to consider aggregate changes to the site's topography on the site's ability to drain storm water runoff resulted in uncontrolled water intrusion into safety-related equipment rooms. The inspectors assessed the finding using Inspection Manual Chapter (IMC) 0609, Significance Determination Process (SDP), Att. 4, Phase 1 - Initial Screening and Characterization of Findings, and determined the finding was potentially greater than very low safety significance because the finding increases the likelihood of an external flooding event. As a result, the characterization worksheet for Initiating Events required a Phase 3 analysis using the Individual Plant Examination for External Event Submittal (IPEEE) or other existing plant specific analyses as inputs. The significance of this finding is designated as To Be Determined (TBD) until the safety characterization has been completed by the NRC Senior Reactor Analyst (SRA). The inspectors determined that the cause of this finding was related to the trending and assessment aspect in the Corrective Action Program component of the Problem Identification and Resolution cross-cutting area. (P.1(b))

Inspection Report# : [2011004](#) (pdf)

Significance:  Dec 31, 2010

Identified By: NRC

Item Type: FIN Finding

Failure to Perform 5-year Vendor Manual Specified Reactor Coolant Pump Motor Inspections

The inspectors identified a Green finding for failure to perform vendor recommended inspections of the reactor coolant pump (RCP) motors. Visual inspections of the RCP stator assemblies were not performed at five year intervals in accordance with the vendor technical manual preventive maintenance instructions. Adequate justification for exceeding the five year interval was not provided. Inspection of the stator assembly in accordance with the vendor recommendations at a five year interval is expected to have identified any significant degradation requiring repairs. The licensee failed to conduct these inspections and a motor failure occurred on October 7, 2010. The licensee replaced the failed "C" RCP motor and will evaluate the preventive maintenance inspection interval. The licensee has

entered this issue into the CAP as Nuclear Condition Report (NCR) 438509.

The failure to partially disassemble the RCP motors and perform visual inspections of the rotor and stator assemblies was a performance deficiency that was within the licensee's ability to foresee and correct, and therefore should have been prevented. The finding is more than minor because it adversely impacted the equipment performance attribute of the initiating event cornerstone and its objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the "C" RCP motor failed causing a reactor trip. The finding, screened per Appendix A of IMC 0609, Significance Determination Process, was determined to have very low safety significance (Green) because although the stator failure damaged the number two and number three RCP seals, no damage to number one RCP seal occurred. The number one RCP seal is the primary reactor coolant system pressure boundary. A cross-cutting aspect was not assigned to the finding because the performance deficiency does not represent current performance.

Inspection Report# : [2010005](#) (pdf)

Mitigating Systems

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Take Prompt Corrective Actions to Establish Guidance to Monitor and Operate Service Water Strainers Following LOOP

Green. The inspectors identified a Green NCV of Technical Specification (TS) 5.4.1, Administrative Controls, Procedures, for failure to establish procedural guidance to monitor Service Water System (SWS) parameters and operate the SWS strainers following a loss of offsite power (LOOP). Following a LOOP, the operator's ability to recover from a plugged SWS strainer would be impacted due to the loss of the associated control alarm and the lack of procedural guidance to manually operate the SWS strainers. The licensee has revised plant procedures to include additional instructions that will ensure that operators can recover from plugged SWS strainers and preserve the operation of the SWS following a LOOP. This issue was entered into the licensee's corrective action program as NCR 473900.

The failure to establish procedural guidance to locally monitor SWS parameters and manually operate the SWS strainers following a LOOP was a performance deficiency. This issue was more than minor because if left uncorrected this finding would have the potential to lead to a more significant safety concern. Specifically, the inability to clean the service water strainers, following a prolonged LOOP, could impact the operation of the service water system. The SDP Phase 1 screening determined that this finding was within the mitigating systems cornerstone and was potentially risk significant due to a seismic, flooding or severe weather initiating event and therefore required a Phase 3 SDP analysis. An NRC Senior Reactor Analyst (SRA) determined the lack of procedure for a loss of the service water strainers due to an external event (i.e., loss of offsite power removing power to the strainers and causing debris to clog the system) was of very low risk significance i.e., Green. The main contributors to the low risk results were: 1) the low likelihood of a total loss of service water event, and 2) the probability of recovery of the strainers and/or the system despite the lack of procedures. The inspectors determined that the finding has a cross-cutting aspect in the Corrective Action Program component of the Problem Identification and Resolution area, because the licensee failed to thoroughly evaluate the issue such that the resolution addressed the cause and extent of conditions, as necessary. Specifically, licensee's evaluation of the NCR associated with the lack of plant procedures to manually operate the SWS, failed to recognize that the control room indication associated with a plugged SWS strainer would be lost following a LOOP. (P.1(c))

Inspection Report# : [2011004](#) (pdf)

Significance:  Jun 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Seismic Analysis for Installation of Safety Related Cable Trays and Conduit

•Green. The inspectors identified a Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to perform an adequate seismic analysis during the plant modification of the 125VDC Battery Chargers. Specifically, the interface evaluation for installation of the safety-related, Battery Charger, cable tray and conduit failed to consider the seismic interaction with the adjacent air-handling unit structure. Subsequent review and analysis determined that the modification introduced a degraded/nonconforming condition which does not affect operability. The licensee documented the issue in Nuclear Condition Report 458971 and initiated actions for a plant modification.

The failure to perform an adequate seismic analysis for the installation of the safety-related cable trays and conduit is a performance deficiency. This performance deficiency is associated with the design control attribute of the Mitigating System Cornerstone. It is more than minor since it is similar to Inspection Manual Chapter 0612, Appendix E, Example, 3.a, in that the seismic analysis for the cable trays and conduits require revision and modification to the air handling unit structural supports to correctly resolve the seismic concerns. In accordance with IMC 0609 (Table 4a), “Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green) because the finding was not a design or qualification deficiency which resulted in a loss of operability or functionality. The inspectors did not identify a cross-cutting aspect associated with this finding because the performance deficiency occurred in 1991 and does not represent current licensee performance.

Inspection Report# : [2011003](#) (*pdf*)

Significance:  Jun 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Refueling Water Storage Tank Inoperable While On Purification

Green. The inspectors identified a NCV of Technical Specification (TS) 3.5.4 Refueling Water Storage Tank (RWST), which required the RWST to be operable in modes 1 through 4. The licensee failed to comply with the TS Action Statements when the RWST was rendered inoperable by placing the non-seismically qualified purification loop in operation. Upon discovery the licensee promptly restored the RWST to operable status by removing the purification loop from service, put administrative controls in place to prevent use of the purification loop, and initiated Action Request (AR) 452093 to evaluate the event.

Use of the non-seismically qualified Spent Fuel Pool Demineralizer System for purification of the Refueling Water Storage Tank was determined to be a performance deficiency. This action rendered the RWST inoperable and the licensee failed to comply with the required action statement for an inoperable RWST. The finding is more than minor because if left uncorrected, the performance deficiency has the potential to lead to a more significant safety concern. Specifically, during a seismic event the purification piping could break and cause a loss of inventory in the RWST. Significance Determination Process (SDP) Phase 1 screening determined that this finding was within the mitigating systems cornerstone and was potentially risk significant due to a seismic external event and therefore required a Phase 3 SDP analysis. A phase 3 risk assessment was performed by a regional SRA using the NRC SPAR model. An exposure period of 213 days was utilized as this represented the worst case one year exposure period determined using the RWST purification history data. No recovery credit was assumed in the analysis. The non-seismic RWST purification piping and the dedicated shutdown diesel generator were assumed to fail at the same seismic input as that assumed for a loss of offsite power. The dominant sequence was a seismically induced loss of offsite power leading to a station blackout with failure of the emergency power system and failure to recover offsite power or the emergency diesel generators. Subsequent battery depletion and operator failure to control the turbine driven auxiliary feedwater pump would lead to core damage. The risk was mitigated by the low probability of a seismic event and the failure probability of the emergency diesel generators. The analysis determined that the risk increase of the performance deficiency was an increase in core damage frequency less than 1E-6/year a GREEN finding of very low safety significance.

The cause of the finding was directly related to the conservative assumptions aspect in the Decision Making component of the Human Performance area because during a previous review of this evolution the licensee did not demonstrate the proposed action was safe in order to proceed. Instead the licensee could not find a requirement to show it was unsafe and concluded placing the RWST on purification was acceptable (H.1(b))

Inspection Report# : [2011003](#) (*pdf*)

Significance: **G** Mar 31, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

Two of Six Operating Crew Failures on the Simulator Operational Evaluation Portion of the 2011 Annual Requalification Operating Test

Green: A self-revealing Green finding associated with operating crew performance on the simulator during facility-administered requalification examination was identified. Two of the six crews evaluated failed to pass their simulator examinations. As immediate corrective action, the failed operating crews were remediated (i.e., the operating crews were re-trained and successfully retested) prior to returning to shift. The licensee has entered this issue into the corrective action program as non-conformance report (NCR) 444843.

The inspectors determined that the crew failures constituted a performance deficiency based on the fact that licensed operators are expected to operate the plant with acceptable standards of knowledge and abilities demonstrated through periodic testing as required by 10 CFR 55.59(a)(2). Two out of six crews of licensed operators failed to demonstrate a satisfactory understanding of the required actions and mitigating strategies required to safely operate the facility under normal, abnormal, and emergency conditions. The finding is more than minor because the performance deficiency potentially affects the Human Performance attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the finding reflected the potential inability of the crew to take appropriate safety-related action in response to actual abnormal and emergency conditions (loss of cooling to the RCP seals). The perceived risk associated with the number of crews failing the annual operating test is provided in the Simulator Operational Evaluation matrix of NRC Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)." The finding is of very low safety significance (Green) because less than 34 percent of the operating crews failed, the failed operating crews were remediated (i.e., the operating crews were re-trained and successfully retested) prior to returning to shift, and because there were no operating crew failures the previous year. The cause of this finding was directly related to the cross-cutting aspect of personnel training and qualifications in the Resources component of the Human Performance area, in that the licensee failed to ensure the adequacy of the training provided to operators to assure nuclear safety. (H.2(b))

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

Significance: **SL-IV** Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Update the Updated Final Safety Analysis Report Contributed to Insufficient Emergency Diesel Generator Lube Oil Inventory

Green. The inspectors identified a Severity Level IV (SL-IV) non-cited violation (NCV) for failure to update the Updated Final Safety Analysis Report (UFSAR), as required by 10 CFR 50.71(e), to include the minimum required inventory of lube oil for operation of the emergency diesel generators, following the conversion to improved standard technical specifications (ISTS). The inspectors determined that the failure to include this information contributed to the licensee falling below the minimum lube oil inventory required for the Emergency Diesel Generators to meet their seven day mission time. The licensee took immediate corrective actions to obtain sufficient lube oil and entered the issue into the corrective action program as nuclear condition report (NCR) 452251.

This issue was considered as traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. This issue is more than minor because not having an updated portion of the UFSAR hinders the licensee's ability to perform adequate 10 CFR 50.59 evaluations and can impact the NRC's ability to perform adequate regulatory reviews for license amendments and inspections. Consequently, it can have a material impact on licensed activities. This issue was determined to meet the criteria for a severity level IV violation in the NRC Enforcement Policy because the information was not used to make an unacceptable change to the facility or procedures. No cross-cutting aspect was assigned because cross-cutting aspects are not assigned to violations being dispositioned through the traditional enforcement process.

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

Significance: **SL-IV** Mar 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate 10 CFR 50.59 evaluation results in Emergency Core Cooling System Inoperability

Green. The inspectors identified a Severity Level IV (SL-IV) non-cited violation (NCV) of 10 CFR 50.59 for the licensee's failure to perform an adequate safety evaluation documenting why implementing a procedure change for the Emergency Core Cooling System (ECCS) Residual Heat Removal (RHR) injection sub-system did not present a more than minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the updated safety analysis report (UFSAR). The licensee erroneously referenced a vendor analysis which was not part of the licensing basis to support the safety evaluation. The procedure change was used by Operations and resulted in a violation of Technical Specification (TS) 3.5.3 ECCS – Shutdown for the required RHR injection sub-train being inoperable in Mode 4 and the associated action statement was not complied with. After the fact and upon discovery, the licensee established administrative controls to ensure compliance with TS in the future. The issue was entered into the corrective action program as NCR 425136.

The licensee's use of an unapproved vendor evaluation of LOCA response as justification to support a 10 CFR 50.59 safety evaluation was a performance deficiency. The traditional enforcement review of the performance deficiency is more than minor because plant procedures were changed without prior NRC review and approval, which impacted the regulatory process. Violations of 10 CFR 50.59 are dispositioned using the Traditional Enforcement process instead of the SDP because they are considered to be violations that could potentially impede or impact the regulatory process. However, if possible, the underlying technical issue is evaluated under the SDP to determine the severity of the violation. In this case, the inspectors determined the finding could be evaluated under the SDP because the ECCS RHR injection subsystem became inoperable because of an inadequate safety evaluation and procedure change resulting in a violation of TS 3.5.3, ECCS-Shutdown. The finding was evaluated using IMC 0609.04, Significance Determination Process (SDP) Phase 1 screening worksheets. This finding adversely impacted the Mitigating Systems cornerstone objective to ensure the availability of systems that respond to initiating events to prevent undesirable consequences. Because it represented an actual loss of safety function of both trains of RHR, an SDP Phase 2 analysis was required. The inspectors determined that the finding could not be adequately assessed using the Phase 2 process; therefore, a SDP Phase 3 analysis was performed for the deficiency using an at-power (vice a shutdown evaluation) because the performance deficiency would manifest itself immediately after shutting down the unit or immediately preceding returning to power. The NRC's risk model was modified to reflect the total loss of RHR injection capability due to either voiding of the pump suction or the associated waterhammer event. The resulting analysis, including the risk contribution due to external sources, was less than 1E-6/year and the finding is Green. The dominant cutsets were medium and small break loss of coolant accidents that proceed immediately to core damage due to the lack of low pressure injection. In accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation is categorized as Severity Level IV because the resulting changes were evaluated by the SDP as having very low safety significance (Green). The inspectors determined the cause of the finding was directly related to verification of underlying assumptions aspect in the decision making component of the Human Performance area because the licensee did not validate whether the vendor analysis was part of the licensee's licensing basis (H.1(b)).

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

Significance:  Dec 31, 2010

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Procedure violation for overriding feedwater isolation safety function in Mode 3

A self-revealing Green NCV of Technical Specification (TS) 5.4.1, Procedures, was identified when the licensee bypassed the feedwater isolation safety function, in Mode 3, a condition prohibited by TS and an action contrary to procedural requirements. On October 7, 2010, Unit 2 was in Mode 3 after a reactor trip that occurred earlier in the day. Steam generator feedwater was being supplied by the auxiliary feedwater (AFW) system and the main feedwater system was not running because of an automatic feedwater isolation, which occurred shortly after the reactor trip due to high 'C' S/G water level. Contrary to procedure OP-403, Feedwater System, control room operators overrode the feedwater isolation safety function by placing the feedwater logic switches in "Override/Reset," and leaving them in that position for three hours and twenty minutes. Upon realization of the error, licensee operators isolated S/G feed flow, placed the feedwater isolation logic switches in the "Normal" position, and restarted S/G feed flow with the AFW system. This issue was entered into the licensee's CAP as AR 425643.

The failure to operate the feedwater isolation logic switches in accordance with plant procedures is a performance deficiency. The finding is more than minor because it affects the human performance attribute of the Mitigating Systems cornerstone and the objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the finding affected the ability for the feedwater isolation (FWIS) to isolate the S/Gs and prevent overfeeding/overcooling events. The inspectors evaluated this finding using IMC 0609, Significance Determination Process Phase 1 screening and determined that the finding represented a complete loss of the FWIS function which required further evaluation under SDP Phase 2. The Robinson Phase 2 Pre-Solved SDP Worksheet and Phase 2 SDP Notebook did not include the FWIS function therefore a phase 3 SDP analysis was performed by a regional Senior Regional Analyst (SRA) in accordance with NRC IMC 0609. The plant was already shutdown prior to the performance deficiency so Anticipated Transients Without Scram scenarios would not be valid. The impact of the loss of the FWIS function would be that the S/Gs would not be isolated on Hi-Hi S/G water level and plant overfeed scenarios could result in Safety Injection initiation on low Reactor Coolant System (RCS) pressure and potential overflow/moisture carryover scenarios could overspeed the turbine driven AFW pump. The phase 3 analysis considered a potential overcooling and safety injection scenario using the licensee's full scope Robinson Probabilistic Risk Assessment (PRA) model data and a potential moisture carryover induced overfeed scenario causing a loss of the turbine driven AFW pump on overspeed using the NRC Robinson Standardized Plant Analysis Risk (SPAR) model and data. The core damage frequency increase for both scenarios was $<1E-6$ per year. The risk was mitigated by the short exposure period. The finding is characterized as Green, a finding of very low safety significance. The finding has a cross-cutting aspect in the Human Performance area, Decision Making component because the licensee failed to make a safety-significant or risk-significant decision using a systematic process to ensure safety was maintained when faced with uncertain or unexpected plant conditions. Specifically, the licensee intentionally bypassed the safety function of feedwater isolation instrumentation while it was required with the reactor plant in Mode 3. (H.1(a)) (Section 40A5.02)

Inspection Report# : [2010012](#) (pdf)

Significance: G Dec 31, 2010

Identified By: NRC

Item Type: FIN Finding

Operator transient response adversely affected by uncorrected, known plant deficiency

The inspectors identified a Green finding for failure to correct a known equipment deficiency which adversely affected the operators' ability to respond to reactor trip transients. Contrary to the licensee's corrective action program, as described in procedure CAP-NGGC-0200, the licensee failed to address and correct an abnormal or unexpected equipment condition that affected and complicated plant events. The turbine building lubrication oil (lube oil) area fire protection detectors were known to actuate the turbine building lube oil deluge system after reactor trips when the 6A and 6B feedwater heater relief valves lifted. After the October 7, 2010, reactor trip, steam from the relief valves drifted to the area of the turbine building fire detectors, causing them to actuate the turbine building lube oil deluge system. This actuation caused distractions in the main control room because of several fire protection alarms sprayed fire protection water in the turbine building, and required the diversion of field operators to isolate the spuriously actuated deluge system. As an immediate corrective action after the October 7, 2010, reactor trip, the licensee directed the steam relief valve discharges from the 6A and 6B feedwater heaters and the 1A and 1B moisture separator drain tanks to an area outside the turbine building (NCR 425437).

The failure to correct a long-standing deficiency that adversely affected operator response to reactor trips is a performance deficiency. The finding is more than minor because it is associated with the mitigating systems cornerstone attribute of human performance in that the performance of operators was adversely affected by the fire protection actuation after the reactor trip. This adverse effect included diverting operator attention and resources away from initiating event response. Using the Inspection Manual 0609, Significance Determination Process Phase 1 Worksheet, the inspectors concluded that the finding is of very low safety significance (Green) because it is not a design or qualification deficiency, does not represent a loss of safety function, does not represent the loss of safety function of a single train of TS equipment, does not represent the loss of risk-significant equipment, and is not potentially risk significant due to an external events. The cause of this finding is directly related to the corrective action

program component of the problem identification and resolution cross cutting area because appropriate and timely

corrective actions were not taken for a known adverse condition. (P.1(d)) (Section 40A5.08)

Inspection Report# : [2010012](#) (pdf)

Significance: **W** Dec 31, 2010

Identified By: NRC

Item Type: VIO Violation

Failure to Comply with Conduct of Operations Procedure

The inspectors identified a problem associated with the failure to implement requirements and standards of the fleet conduct of operations procedure, which involves an AV and four related violations for failure to meet Technical Specification (TS) 5.4.1, "Procedures". Specifically, the licensee's failure to adequately implement operational oversight functions including: command and control, supervision, and independent assessment which contributed to an uncontrolled cooldown of the Reactor Coolant System (RCS) and subsequent safety injection, actions that increased the likelihood of Reactor Coolant Pump (RCP) seal failure, and the initiation of a preventable plant fire that resulted in an Alert emergency classification being declared. Furthermore, the four related violations of TS 5.4.1, "Procedures" mentioned above were identified for failure to follow procedures: APP-003-E3, "VCT Hi/Lo Level"; EPP-4, "Reactor Trip Response", APP-009-B6, "Aux Transfer Fault Trip"; and Emergency Operating Procedure, Path 1. As corrective actions, the licensee enhanced the licensed operator training material, re-trained and evaluated all control room operators, performed procedure enhancements, crew reconstitution to enhance performance, and personnel and management changes. This finding was entered into the licensee's CAP as NCRs 390095 and 423246.

Failure to adequately implement the requirements contained in OPS-NGGC-1000, Fleet Conduct of Operations, was a performance deficiency. The finding was determined to be more than minor because it was associated with the Mitigating Systems Cornerstone in that it affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to adequately implement requirements contained in OPS-NGGC-1000, Fleet Conduct of Operations, contributed to a complete loss of charging system flow, an increase in the likelihood of RCP seal failure and initiation of a fire on March 28, 2010. A Phase 3 SDP analysis using the NRC's Robinson SPAR model and input from the licensee's full scope model resulted in this finding being characterized as preliminarily White, a finding of low to moderate safety significance. The cause of this finding had a cross-cutting aspect of supervisory and management oversight of work activities such that nuclear safety is supported, in the Work Practices component of the Human Performance cross-cutting area, because plant supervisors failed to enforce proper communications methods at the job site and failed to properly supervise workers executing procedure steps. (H.4(c)) (Section 40A5.01)

Inspection Report# : [2010013](#) (pdf)

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

Inspection Report# : [2011010](#) (pdf)

Significance: **G** Nov 15, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish Proper In-service Testing Acceptance Criteria to Prevent Reverse Rotation of the SDAFW Pump

The team identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the licensee's failure to ensure the in-service testing (IST) of the discharge check valve of the Auxiliary Feedwater (AFW) steam driven pump applied an acceptance criterion that is in accordance with the limits established in design documents. The licensee revised the IST procedure during the inspection and is tracking further action in the corrective action program under NCR 419768.

The failure to establish proper acceptance criteria for the Steam Driven (SD) AFW discharge check valve was a performance deficiency. This finding was more than minor because it affected the mitigating systems cornerstone attribute of procedure quality to ensure the availability, reliability, and capability of safety systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to incorporate the proper acceptance criteria could result in a failure of the test to identify a check valve degraded to a condition where its back leakage will cause reverse rotation of the SD AFW pump. This finding was of very low safety significance because it was not a test issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in

exceeding the TS allowed outage time, and did not affect external event mitigation. The team determined that no cross cutting aspect was applicable to this performance deficiency because the failure to establish a proper acceptance criteria for the discharge check valve of the SDAFW pump was determined to not be indicative of current licensee performance. (Section 1R21.2.1)

Inspection Report# : [2010011](#) (pdf)

Significance:  Nov 15, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure To Ensure that the Full Range of Emergency Diesel Generator Frequency is Accounted for in the Safety Analyses

The team identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to account for the high range of Emergency Diesel Generator (EDG) frequency allowed by technical specifications (TS) in the safety analysis. While no immediate operability issues were identified, the licensee entered this issue into the corrective action program as NCR 420058.

The failure to evaluate the effect of high EDG frequency was a performance deficiency. This finding was a more than minor because it affected the mitigating systems cornerstone attribute of design control to ensure the availability, reliability, and capability of safety systems that respond to initiating events to prevent undesirable consequences. This finding also closely parallels IMC 0612, Appendix E, Example 3.j, "Not Minor: If the engineering calculation error results in a condition where there is now a reasonable doubt on the operability of a system or component, or if significant programmatic deficiencies were identified with the issue that could lead to worse errors if uncorrected." Specifically, failure to account for an allowable diesel frequency of 61.2 Hz (60 +2%) for all safety related pumps may result in operating at a higher flow rate and a higher developed suction head. This finding was of very low safety significance because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding the TS allowed outage time, and did not affect external event mitigation. The team also evaluated the finding for cross-cutting aspects and determined it to involve the area of Problem Identification and Resolution associated with Operating Experience for the licensee's failure thoroughly evaluate NRC Information Notice 2008-02, which specifically identified high diesel frequency as a potential problem for AC motor-operated pumps [P.2(a)]. (Section 1R21.2.1)

Inspection Report# : [2010011](#) (pdf)

Significance:  Nov 15, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Demonstrate the Capability of the Fuel Oil Storage Tank and the Service Water Pumps to Fulfill Their Safety Functions Under All Conditions

The team a Green NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to have calculations supporting the design bases of safety related components, specifically for the EDG fuel oil storage tank with respect to tornado wind loadings, and the net positive suction head (NPSH) of the service water pumps. No immediate operability issues were identified and the licensee entered this issue into the corrective action program as NCR 422985 and NCR 423985.

The failure to demonstrate the adequacy of the design for safety related components, specifically regarding the capability of the fuel oil storage tank to withstand tornado wind loading and the failure to demonstrate that the NPSH available to the service water pumps was greater than the required NPSH, was a performance deficiency. This finding was more than minor because it affected the mitigating systems cornerstone attribute of design control to ensure the availability, reliability, and capability of safety systems that respond to initiating events to prevent undesirable consequences. This finding was of very low safety significance because the licensee performed a simplified evaluation indicating that this condition was not a design issue resulting in loss of function, it did not represent an actual loss of a system safety function, did not result in exceeding the TS allowed outage time, and did not affect external event mitigation. The team determined that no cross cutting aspect was applicable to this performance deficiency because the failure to demonstrate the adequacy of the design was determined to not be indicative of current licensee

performance. (Section 1R21.2.4)

Inspection Report# : [2010011](#) (pdf)

Significance:  Nov 15, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correctly Translate EDG Starting Air System Design Requirements into TS

The team identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to correctly translate the design basis of the EDG air start system into specifications. Specifically, the licensee did not properly translate the lowest air pressure for the EDG air start receiver that would provide a single EDG start into the TS (150 psig). The licensee reviewed the low pressure alarm history of the EDGs and did find any instance where they failed to declare the EDG inoperable based on the new operability setpoint. Further actions are being tracked in the corrective action program under NCR 423776.

The licensee's failure to correctly translate the design basis of the EDG air start system into the TS was determined to be a performance deficiency. The finding was more than minor because if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern. Specifically, the EDG starting air receiver pressure could fall below 150 psig, but the TS would not direct the licensee to declare the EDG inoperable. The finding is of very low safety significance as it was determined not to have resulted in the loss of operability or functionality. The team determined that no cross cutting aspect was applicable to this performance deficiency because the failure was determined to not be indicative of current licensee performance. (Section 1R21.2.5)

Inspection Report# : [2010011](#) (pdf)

Significance:  Nov 15, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Criteria to Prevent Spurious Actuation of Amptector Trip Devices

The team identified a Green NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," in that the licensee failed to verify the adequacy of the design for Amptector trip devices installed on safety related 480V circuit breakers. The licensee reviewed the latest calibration records and contacted the vendor for further guidance and additional information. Further actions are being tracked in the corrective action program under NCR 423795.

The team determined that the failure to establish an adequate minimum setting for Amptector trip devices was a performance deficiency. The finding was more than minor because it was associated with the design control attribute of the mitigating systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Also, this finding closely parallels NRC IMC 0612, Appendix E, Example 3.j in that the condition resulted in reasonable doubt of the operability of the safety related 480V system pending re-analysis. Specifically, the licensee failed to evaluate margins needed to prevent spurious tripping during accident loading conditions. The team determined the finding was of very low safety significance because it was a design deficiency that did not result in a loss of operability or functionality. The team also evaluated the finding for cross-cutting aspects and determined it to involve the area of Human Performance, because this condition is related to the component of resources which requires complete, accurate and up-to-date design documentation, specifically calculations, to assure nuclear safety [H.2(c)]. (Section 1R21.2.11)

Inspection Report# : [2010011](#) (pdf)

Significance:  Nov 15, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Translate Vendor Recommendations Into Procedures for 480V Circuit Breakers

The team identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Procedures, Instructions and Drawings,"

for failure to follow procedure EGR-NGGC-006, Vendor Manuals, which requires performance of reviews to determine technical accuracy and potential changes to procedures, processes or equipment; specifically for safety related 480V Breakers and reactor trip breakers. The licensee performed a gap analysis, reviewed the discrepancies, and concluded that they did not impede the ability of the breakers from performing their associated function. Further actions are being tracked in the corrective action program under NCRs 422184 and 422976.

The team concluded that the failure to perform reviews to determine technical accuracy and potential changes to procedures for circuit breaker vendor manual changes was a performance deficiency. This finding is more than minor because it affects the mitigating systems cornerstone objective to ensure the reliability, availability, and capability of systems that respond to initiating events and is associated with the attribute of procedure quality, in that procedure inconsistencies were identified in procedures MST-012-1, Maintenance and Testing of "A" Reactor Trip Breaker, and PM-466, Westinghouse Type 50DH350E 1200 Amp 4160V Air Circuit Breaker Maintenance. This finding also closely parallels IMC 0612, Appendix E, Example 4.a., in that the procedure discrepancies indicate that the licensee routinely failed to perform reviews EGR-NGGC-006, Vendor Manuals, which requires performance of reviews to determine technical accuracy and potential changes to procedures, processes or equipment. The team determined the finding was of very low safety significance because it was a design deficiency that did not result in a loss of operability or functionality. The team also evaluated the finding for cross-cutting aspects and determined it to involve the area of Problem Identification and Resolution associated with Operating Experience for the licensee's failure to thoroughly evaluate vendor recommendations, as well as NRC Information Notice 2008-02 which identified an issue relating to improper maintenance of circuit breakers involving failure to follow vendor maintenance recommendations [P.2(b)]. (Section 1R21.2.11)

Inspection Report# : [2010011](#) (pdf)

Barrier Integrity

Significance:  Nov 15, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement Adequate Post Maintenance Test of Residual Heat Removal Valve Interlock Function

The team identified a finding having very low safety significance (Green) involving the failure to perform a post maintenance test to verify functionality of valve position permissive interlocks associated with the reactor coolant system (RCS) hot leg loop isolation valves. The licensee performed a visual inspection to verify that the associated contacts for the valve position permissive interlock function were in their expected open position, and is tracking further actions in the corrective action program under NCR 422032.

The failure to perform a post maintenance test to verify functionality of the permissive interlock associated with the RCS hot leg loop isolation valves following replacement of relays which affected that function was a performance deficiency. The finding was more than minor because it adversely affected the RCS and barrier performance attribute of the barrier integrity cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to verify functionality of the permissive interlocks for the RCS hot leg loop isolation valves following intrusive maintenance, challenged the assurance that the interlock's design function would be available to prevent opening of the RCS hot leg isolation valves with a flow path established to the RWST and; therefore, prevent a loss of RCS water inventory to the RWST. The finding was determined to be of very low safety significance because the finding would not have likely affected other mitigation systems resulting in a total loss of their safety function. Further, this finding did not constitute a violation of NRC requirements since the interlock function and associated components the licensee failed to test were not safety-related. The finding is assigned a cross-cutting aspect in the resources component of the human performance area in that complete, accurate, and up-to-date work packages were not provided [H.2(c)]. (Section 1R21.3)

Inspection Report# : [2010011](#) (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

Last modified : January 04, 2012