

Harris 1

2Q/2015 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Adequately Implement the Equipment Clearance Procedure

The NRC identified a Green non-cited violation (NCV) of Technical Specification (TS) 6.8.1, Procedures and Programs, for the licensee's inadequate implementation of procedure OPS-NGGC-1301, Equipment Clearance, when they failed to identify required compensatory measures for a clearance to support installation of a plant modification. This resulted in an unanalyzed condition with no compensatory measures for internal flooding. The licensee entered this into the corrective action program (CAP) as Action Request (AR) #696331 and AR #726784 and took immediate corrective actions to restore the sump pumps to their design configuration.

The licensee's failure to adequately implement Procedure, OPS-NGGC-1301, Equipment Clearance, Section 9.8, step 3 was a performance deficiency. Specifically, if an internal flood had occurred in the Diesel Fuel Oil Storage Tank (DFOST) building during this period, it could have resulted in both trains of the safety-related fuel oil transfer pumps being inoperable. The performance deficiency was more than minor because it is associated with the Human Performance Attribute of the Mitigating Systems cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Using Manual Chapter 0609, Significance Determination Process, Appendix A, Exhibit 2 – Mitigating Systems Screening Question, Section B, and Exhibit 4, the finding was determined to require a detailed risk evaluation because the loss of this equipment during an internal flooding initiating event would degrade two or more trains of a multi-train system that supports a risk significant system or function. A detailed risk evaluation was performed by a regional senior risk analyst in accordance with the guidance of NRC IMC 0609 Appendix A, using the Shearon Harris Standardized Plant Analysis Risk (SPAR) model. The major analysis assumptions included: A 28-hour exposure period, the finding was modelled as a non-recoverable common cause failure to run of the Emergency Diesel Generators (EDG), pipe failures of fire protection piping was assumed to result in EDG inoperability and pipe failure data was taken from Electric Power Research Institute (EPRI) Pipe Failure Frequencies for Internal Flooding PRAs, Revision 1. The dominant sequence was a station blackout with auxiliary feedwater system failure and no recovery of the EDGs or offsite power leading to loss of core heat removal and core damage. The risk was mitigated by the short exposure period and the low probability of pipe ruptures resulting in EDG inoperability. The analysis determined that the finding led to an increase of core damage frequency of $<1E-6$ /year, a Green finding of very low safety significance. The finding had a cross-cutting aspect of Challenge the Unknown, as described in the area of Human Performance because the licensee allowed the clearance order (CO) to be hung in the plant without properly evaluating and managing the associated risk through the use of compensatory measures (H.11).

Inspection Report# : [2014005](#) (pdf)

Significance: G Jul 25, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Establish Test That Verified Interlock Capability

The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the licensee's failure to establish a test program to assure that the interlocks between the Charging/Safety Injection (CSI) pump alternate miniflow block valves (1CS-745, -753) and the Residual Heat Removal (RHR) to CSI pump "piggyback" valves (1RH-25, -63) would perform satisfactorily in service. In response to this issue, the licensee initiated nuclear condition report 698720 and performed circuit testing of these control system interlocks during the inspection period to verify they remained operable. The licensee also verified that these interlocks had been subject to preoperational testing.

The licensee's failure to establish a test program to assure that the interlocks between the CSI pump alternate miniflow block valves (1CS-745, 1CS-753) and the RHR to CSI pump "piggyback" valves (1RH-25, 1RH-63) would perform satisfactorily in service, as required by 10 CFR Part 50, Appendix B, Criterion XI, was a performance deficiency. The performance deficiency was determined to be more than minor because, it was associated with the mitigating systems cornerstone attribute of design control and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the lack of testing affected the objective because there was no method to determine the capability of the interlocks to perform their function in the event of a postulated single failure during an accident, which could affect the high head safety injection function. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component (SSC), and the SSC maintained its operability. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2014007](#) (*pdf*)

Significance: G Jul 25, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Establish Appropriate Procedural Limitations Based on Design Requirements of the Emergency Diesel Generators

The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to assure that applicable regulatory requirements in technical specification surveillance requirement 4.8.1.1.2.e. were correctly translated into procedural guidance. Specifically, appropriate jacket water (JW) and lube oil (LO) standby temperature limitations, which ensured emergency diesel generator (EDG) capability to meet TS SR 4.8.1.1.2.e. requirements, were not translated into procedures for determining EDG operability. Following identification by the team, the licensee generated nuclear condition report 698245 and established administrative limits to ensure the EDG JW and LO temperatures were not allowed to drop below technically supportable limits.

The licensee's failure to assure that applicable regulatory requirements in technical specification surveillance requirement SR 4.8.1.1.2.e. were correctly translated into procedural guidance, as required by 10 CFR Part 50, Appendix B, Criterion III, was a

performance deficiency. The performance deficiency was determined to be more than minor because, it was associated with the mitigating systems cornerstone attribute of equipment performance and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee did not ensure the capability and reliability of the EDGs to respond to a design basis accident at the JW or LO temperature conditions at which they considered the EDGs operable. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component (SSC), and the SSC maintained its operability. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2014007](#) (pdf)

Significance: G Jul 25, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Establish Appropriate Procedural Limitations to Prevent Exceeding TS Limits and Safety Analysis Assumptions

The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to assure that applicable regulatory requirements in technical specification (TS) 3.7.1.1 and design basis inputs in accident analyses were translated into procedural guidance. Specifically, the licensee did not follow their inservice test program guidance to account for surveillance test equipment instrument uncertainty when establishing the acceptability of Main Steam Safety Valve lift setpoints required by TS 3.7.1.1. Following identification by the team, the licensee generated nuclear condition report 697100 and performed an evaluation of the remaining available margin to the overpressure limit in the safety analysis, and discovered that, after potential instrument uncertainty was taken into account, the margin remained positive, but was reduced from approximately 19 psig to approximately 6 psig.

The licensee's failure to assure that applicable regulatory requirements in TS 3.7.1.1 and design basis assumptions in accident analyses were correctly translated into procedural guidance, as required by 10 CFR Part 50, Appendix B, Criterion III, was a performance deficiency. The performance deficiency was determined to be more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, by not accounting for the measurement and test equipment uncertainties as required by the inservice test program, it could have led to the actual lift setpoints exceeding the inputs used in the design basis safety analyses. The team determined the finding to be of very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating structure, system, or component (SSC), and the SSC maintained its operability. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2014007](#) (pdf)

Barrier Integrity

Significance: G Jun 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Adequately Implement the Control Room Area HVAC System Procedure

An NRC-identified Green non-cited violation (NCV) of Technical Specification (TS) 6.8.1, Procedures and Programs, was identified for the licensee's inadequate implementation of procedure OP-173, Control Room Area HVAC System. Specifically, the licensee failed to adequately implement OP-173 Section 8.3, "Placing the Control Room Area HVAC System into Recirculation Manually," and maintain a positive pressure in the main control room (MCR). The licensee entered this issue into the corrective action program (CAP) as action request (AR) 742947, and restored a positive pressure in the MCR. The licensee also revised the associated procedure OWP-RM-01, Control Room OAI [outside air intake] Radiation Monitors, to ensure appropriate actions are taken for the outside air intake supply when radiation monitors are inoperable.

The failure to maintain positive pressure in the MCR in accordance with OP-173 was a performance deficiency. The performance deficiency was determined to be more than minor in accordance with IMC 0612, Appendix B, since it was associated with the procedure quality attribute of the barrier integrity cornerstone and adversely affected the cornerstone objective and, if left uncorrected, the performance deficiency would have the potential for leading to a more significant safety concern. Specifically, the buildup of carbon dioxide (CO₂) would impair operators' performance and actions. The inspectors evaluated the finding using Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 4 and Appendix G (June 19, 2012), "Shutdown Operations Significance Determination Process." The inspectors determined the finding was associated with the barrier integrity cornerstone and required a detailed risk evaluation because the finding involved control room habitability during both normal and accident conditions. A detailed risk evaluation was completed by a regional SRA using the guidance of NRC IMC 0609 Appendix G and Appendix F, "Fire Protection Significance Determination Process." A bounding analysis was performed considering potential demands on MCR habitability due to radiation and smoke effects. The major analysis assumptions included: an eleven day exposure period, recovery credit for MCR door closure, shutdown core damage radiation and fuel pool radiation events were considered. The dominant sequence was a fire impacting the MCR with smoke, failure of operators to isolate the MCR resulting in loss of the operators leading to loss of core heat removal. The risk of the performance deficiency was mitigated by the low initiating event probabilities and the recovery likelihood of MCR door closure. The result of the analysis was an increase in core damage frequency of < 1.0E-6/year, a green finding of very low safety significance. The finding had a cross cutting aspect of Procedure Adherence, as described in the Human Performance cross cutting area because the licensee failed to comply with OP-173. (H.8)

Inspection Report# : [2015002](#) (*pdf*)

Significance: G Jun 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Post Modification Testing of 1CZ-1 and 1CZ-2 HMCP Breakers

An NRC-identified Green NCV of TS 6.8.1, Procedures and Programs, was identified for the licensee's failure to perform adequate post modification tests (PMTs) on Motor Circuit Protectors (HMCP) breakers for dampers 1CZ-1 and 1CZ-2 as required by procedure AD EG ALL-1155, Plant Modification Testing. The licensee entered this issue into the CAP as AR 741781. The licensee took immediate corrective action to manually close 1CZ-1 and 1CZ-2 to isolate the MCR boundary. The licensee also changed the setpoint, and revised the PMT to include the direction reversal.

The licensee's failure to perform adequate PMTs on HMCP breakers for 1CZ-1 and 1CZ-2 as required by procedure AD-EG-ALL-1155 was a performance deficiency. The performance deficiency was more than minor because it was

associated with the Procedure Quality Attribute of the Barrier Integrity Cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee failed to test the highest instantaneous current the HMCP breakers would be expected to experience. This would be during the damper's direction reversal, during the PMT. Therefore, the HMCP breakers for 1CZ-1 and 1CZ-2 had the potential to trip open during a control room isolation signal (CRIS), causing unfiltered in-leakage into the MCR envelope in the event of a radiological emergency. Using IMC 0609.04, "Initial Characterization of Findings," issued on June 19, 2012, and IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," issued on June 19, 2012; the inspectors concluded that a detailed risk evaluation was required since the finding represented a degradation of the barrier function of the control room against smoke and the radiological barrier function provided for the control room. This conclusion was based upon the potential of the HMCP breakers tripping due to a high instantaneous current, during an event that would cause a CRIS such as a high radiation signal at the normal intake or emergency intakes, or smoke detection at the normal intake. A detailed risk evaluation was performed in accordance with the guidance of NRC IMC 0609 Appendix A. A bounding analysis was performed considering potential demands on MCR habitability due to radiation and smoke effects. The major analysis assumptions included: a 94-day exposure period, recovery credit for manual closure of either 1CZ-1 or 1CZ-2, at power core damage probability radiation impact determined from the NRC SPAR model, fuel pool radiation impact from NUREG-1738, and fire risk from IMC 0609 Appendix F. The dominant sequence was a fire impacting the MCR with smoke, failure of operators to isolate the MCR dampers resulting in loss of the operators leading to loss of core heat removal. The risk of the performance deficiency was mitigated by the low initiating event probabilities and the recovery likelihood of MCR damper closure. The result of the analysis was an increase in core damage frequency of $< 1.0E-6$ /year a GREEN finding of very low safety significance. The finding was assigned to the cross-cutting aspect of Work Management in the Human Performance cross-cutting area because the licensee's work management processes failed to develop and implement a PMT that adequately tested the breakers to their designed performance. (H.5)

Inspection Report# : [2015002](#) (pdf)

Significance:  Jul 25, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Categorization of Valves in Potential Release Paths During Accidents

The team identified a Green non-cited violation of 10 CFR Part 50.55a, "Codes and Standards," for the licensee's failure to categorize valves that were subject to a specific maximum leakage amount while in the closed position as Category A, as required by their American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code of record. Specifically, the team determined that the licensee failed to correctly categorize six valves that could allow emergency core cooling system (ECCS) leakage into the refueling water storage tank above the water level during ECCS post-accident recirculation operation. During the inspection period, the licensee generated nuclear condition report 699708, and performed an evaluation of the affected valves that verified the valves' ability to meet leakage limits based on other monitoring that was in place.

The licensee's failure to categorize valves that were subject to a specific maximum leakage amount while in the closed position as Category A, as required by their ASME OM Code of record, was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the SSC and barrier performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the reliability of the physical design barrier of the leak-tightness of valves in the release paths was not assured

since leak testing was not performed due to inaccurate categorization. The team determined the finding to be of very low safety significance (Green) because the finding did not represent an actual open pathway in the physical integrity of reactor containment and did not involve an actual reduction in function of the hydrogen igniters in reactor containment. The team determined that no cross-cutting aspect was applicable because the finding was not indicative of current licensee performance.

Inspection Report# : [2014007](#) (*pdf*)

Emergency Preparedness

Significance:  Jun 30, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Maintain Emergency Assessment Capability

An NRC-identified Green NCV of 10 CFR 50.54(q)(2) was identified for the licensee's failure to maintain adequate equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition as required by 10 CFR 50.47(b)(9). Specifically, the data logger for the onsite primary meteorological tower (MET) periodically provided inaccurate meteorological information to the Emergency Response Facility Information System (ERFIS) displays in the MCR and the Emergency Operations Facility (EOF).

The inspectors determined that the failure to maintain emergency assessment capability was a performance deficiency. The finding was more than minor because it adversely affected the Emergency Preparedness Cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, between March 30 and April 28, 2015, the data logger unit on the onsite primary meteorological tower used for dose assessment and dose projections, malfunctioned at least five times. On these occasions, the 15-minute average MET data read by ERFIS was locked and did not update. During these periods, the dose projection process was challenged to provide adequate and timely estimates of radioactive releases, onsite and offsite dose assessment, as well as projected offsite doses. Equipment or systems necessary for dose projection were not functional for longer than 24 hours from the time of discovery and no compensatory measures were implemented until after the inspectors questioned the licensee. The finding was assessed for significance in accordance with NRC IMC 0609, Appendix B, Emergency Preparedness SDP, Attachment 2, and determined to be a very low safety significance finding (Green). The finding has a cross-cutting aspect of evaluation, as described in the area of problem identification and resolution, because the organization did not thoroughly evaluate or address the causes and extent of conditions commensurate with the safety significance of not having accurate MET data for radioactive material releases to the environment or projected offsite doses. (P.2)

Inspection Report# : [2015002](#) (*pdf*)

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Loss of Emergency Planning Sirens

The NRC identified a Green NCV associated with emergency preparedness planning standard 10 CFR 50.47(b)(5), which requires in part, that the means to provide alert and notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone (EPZ) have been established. Specifically, on April 3, 2014, the licensee unintentionally initiated a complete loss of sirens while responding to a siren system alarm. The licensee entered this issue into the corrective action program (CAP) as Action Request (AR) #679984. As

corrective action, the licensee replaced a failed circuit card and restored functionality of the siren system.

The licensee's failure to comply with WCP-NGGC-0300, Work Request Initiation, Screening, Prioritization and Classification, was a performance deficiency. Specifically, this failure combined with the circuit card failure caused a complete loss of siren functionality for approximately two hours. This finding was more than minor because if left uncorrected, loss of Alert Notification System function has the potential to lead to a more significant safety concern and is associated with the emergency preparedness cornerstone attribute of Facilities and Equipment (Availability of ANS). This ANS unavailability affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Using Manual Chapter 0609 Appendix B, Emergency Preparedness Significance Determination Process (Section 5.5) – Failure to Comply with 10 CFR 50.47(b)(5), the inspectors determined this finding to be of very low safety significance (Green) because the loss of siren function was of short duration and did not reach the “Degraded RSPS” threshold. The finding had a cross-cutting aspect of Procedure Adherence, as described in the Human Performance cross-cutting area because the EPTs failed to comply with the procedural guidance of WCP-NGGC-0300 (H.8).

Inspection Report# : [2014004](#) (*pdf*)

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : August 07, 2015