

Harris 1

2Q/2014 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2014

Identified By: NRC

Item Type: FIN Finding

Failure to Adequately Implement a Plant Modification

The inspectors identified a finding of very low safety significance (Green) when the licensee did not adequately implement the procedural requirements of ADM-NGGC-0106, "Configuration Management Program Implementation," during the installation of a temporary modification to install temporary air compressors on May 31, 2014. The licensee entered the issue into their Corrective Action Program (CAP) as Action Request (AR) #690371 and revised procedure OP-151.01 several times to address the procedural issues.

The inspectors determined that the failure to adequately implement ADM-NGGC-106 was a performance deficiency. This performance deficiency was determined to be more than minor in accordance with IMC 0612, Appendix B, because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, ADM-NGGC-0106, Section 9.2.39A, was not adequately implemented which resulted in OP-151.01, Attachment 7 being inadequate to implement a temporary modification for the use of three temporary air compressors supplying plant air to equipment and components which can cause plant transients. Using IMC 0609, Significance Determination Process, Appendix A, Exhibit 1- Initiating Events Screening Questions, the inspectors determined this finding to be of very low safety significance (Green) because the finding did not involve the complete or partial loss of a support system that contributes to the likelihood of, or cause an initiating event and affected mitigation equipment. The finding had a cross-cutting aspect of Consistent Process, as described in the Human Performance cross-cutting area because the licensee failed to comply with ADM-NGGC-106 and correct the inadequate operating procedure (H.13).

Inspection Report# : [2014003](#) (*pdf*)

Significance: G Mar 31, 2014

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to prevent recurrence of a significant condition adverse to quality

Green. A self-revealing Green finding was identified for the failure to implement an adequate corrective action to prevent recurrence (CAPR) for a Significant Condition Adverse to Quality (SCAQ) as required by licensee procedure CAP-NGGC-0205, Condition Evaluation and Corrective Action Process, resulting in the failure of the 1D2 transformer on January 18, 2014. Specifically, after the 1E2 transformer failed on August 8, 2013, the licensee determined the event to be a SCAQ, but failed to implement an adequate CAPR to prevent the failure of the 1D2 transformer. The licensee entered this issue into the corrective action program (CAP) as Action Request (AR) #663324. As corrective action, the licensee is replacing the 1D2 transformer and other similar transformers and implemented additional testing to aid in the identification of degradation prior to transformer failure.

The inspectors determined that the failure to implement an adequate CAPR for a SCAQ was a performance deficiency. This finding was more than minor because it was associated with the Initiating Events cornerstone attribute of Equipment Performance, and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operation. Specifically, a

manual reactor trip resulted from the 1D2 failure. Using IMC 0609, Significance Determination Process, Appendix A, Exhibit 1- Initiating Events Screening Questions, the inspectors determined this finding to be of very low safety significance (Green) because the finding did cause a reactor trip but did not result in the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition (e.g., loss of condenser, loss of feedwater). The finding had a cross-cutting aspect of Resolution, as described in the Problem Identification and Resolution cross-cutting area because the licensee did not implement effective corrective actions to address the issue in a timely manner commensurate with their safety significance. Specifically, the licensee's CAPR for the August 8, 2013, event did not resolve the cause for transformer failures. (P.3) (Section 40A2.2)

Inspection Report# : [2014002](#) (*pdf*)

Significance:  Dec 31, 2013

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate transformer preventive maintenance procedure

A self-revealing Green finding was identified for the licensee's failure to adequately establish and implement procedure NGG-PMB-XFM-02, Equipment Reliability Template for Dry-Type Transformers, and implementing procedure PM-E0015, 480 V and 6.9 kV Transformer Electrical and Preventive Maintenance (PM) Check, when the 1E2 transformer failed on August 8, 2013. Specifically, procedure PM-E0015 did not contain steps to identify degradation in the 1E2 transformer windings prior to failure. As corrective action, the licensee replaced the transformer and plans to revise procedure PM-E0015 to incorporate additional testing to aid in the identification of winding degradation prior to transformer failure. The licensee entered these issues into the corrective action program (CAP) as Action Request (AR) #621738.

The inspectors determined that inadequate testing prescribed by procedure NGG-PMB-XFM-02 and performed under procedure PM-E0015 was a performance deficiency. Specifically, licensee procedure ADM-NGGC-0107, Equipment Reliability Process Guideline, resulted in the determination that the 1E2 transformer was a critical component. Licensee procedure NGG-PMB-XFM-02, Equipment Reliability Template for Dry-Type Transformers, states that critical components are maintained to not allow any failure that would result in a trip, transient, or significant challenge to continued safe operation. However, implementing procedure PM-E0015, failed to contain steps to identify degradation in the 1E2 transformer windings prior to failure. This finding was more than minor because it is associated with the procedure quality attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operation. Specifically, a power transient resulted from the 1E2 failure. Using IMC 0609, Significance Determination Process, Appendix A, Exhibit 1- Initiating Events Screening Questions, the inspectors determined this finding to be of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition (e.g. loss of condenser, loss of feedwater). The finding had a cross-cutting aspect of Long Term Safety, as described in the Resources component of the Human Performance cross-cutting area because the licensee's evaluation of the transformer PM program in March 2012 removed additional testing which might have indicated that the transformer windings had experienced insulation degradation. [H.2(a)] (Section 40A2.4)

Inspection Report# : [2013005](#) (*pdf*)

Mitigating Systems

Significance:  May 09, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Evaluate All Targets Within the Zone of Influence of Ignition Sources

An NRC-identified non-cited violation of 10 CFR 50.48 (c) and National Fire Protection Association Standard (NFPA) 805 Section 2.4.3.2 was identified for the licensee's failure to address in the Fire Probabilistic Risk Assessment (Fire PRA) the risk contribution associated with all potentially risk significant fire scenarios for a given fire compartment/fire area. The licensee did not identify and evaluate all targets that were within the zone of influence (ZOI) of ignition sources for selected fire scenarios which could potentially contribute to the risk for the fire scenarios. The licensee entered the issue in the corrective action program as Nuclear Condition Reports 682633 and 685355 and established an hourly roving fire watch as compensatory measures.

The licensee's failure to comply with the requirements of 10 CFR 50.48(c) and NFPA 805 was a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the reactor safety mitigating systems cornerstone attribute of protection against external factors (i.e., fire) 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. The missed targets in the ZOI for the selected fire scenarios had the potential to impact the ability to achieve safe and stable conditions. The finding was screened in accordance with NRC IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," which determined that an IMC 0609, Appendix F, "Fire Protection Significance Determination Process," review was required as the finding affected post-fire SSD. Using IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," the finding was screened as Green in step 1.6.1 "Screen by Licensee PRA-Based Safety Evaluation." An SDP Phase 3 analysis was performed to document the review of the risk determination of the missed ignition source-target interactions using the licensee's Fire PRA model. A senior reactor analyst performed the Phase 3 SDP analysis in accordance with the guidance in IMC 0609 Appendix F and NUREG/CR-6850 Revisions 0 and 1. The evaluation determined that the missed ignition source-target interactions resulted in a CDF increase of $5.91E-8$ /year, a Green finding of very low safety significance. There was no cross cutting aspect assigned to this finding because it was not indicative of current licensee performance since the original ignition source and target walkdowns were performed in 2006 and 2007.

Inspection Report# : [2014008](#) (pdf)

G

Significance: Mar 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately perform the new fuel oil surveillance requirement

Green. The inspectors identified a Green non-cited violation (NCV) of Technical Specification (TS) 6.8.1.a, Procedures and Programs, for the licensee's failure to have an adequate surveillance test to implement the requirements of SR 4.8.1.1.2.c, as required by Regulatory Guide (RG) 1.33, Quality Assurance Program Requirements, Appendix A, Section 8.b. Specifically, licensee procedure RST-209, Technical Specification Surveillance of New Diesel Fuel Oil (DFO), did not adequately ensure a representative sample of the DFO to confirm the required properties prior to addition to the "B" diesel fuel oil storage tank (DFOST). This created the potential for DFO of an unacceptable quality to be introduced to the "B" emergency diesel generator (EDG) on December 4, and 6, 2013. The licensee took corrective action by testing the fuel oil in the "A" and "B" DFOSTs and EDG day tanks to verify that the DFO met the required properties as outlined in TS. Additionally, the licensee planned to revise RST-209 and established interim actions to prevent adding new fuel oil prior to obtaining a representative sample.

The inspectors determined that the failure to have an adequate surveillance test to implement the requirements of SR 4.8.1.1.2.c. on December 4, and 6, 2013 was a performance deficiency. Specifically, this created the potential for fuel oil of an unacceptable quality to be introduced to the "B" EDG. This finding was more than minor because, if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern in that it could

have affected operability of the EDGs. Using IMC 0609, Significance Determination Process, Appendix A, Exhibit 2 – Mitigating Systems Screening Questions, the inspectors determined this finding to be of very low safety significance (Green) because the finding is not a deficiency affecting the design or qualification and does not represent an actual loss of system and/or function. The finding had a cross-cutting aspect of Resources, as described in the Human Performance cross-cutting area because the licensee failed to ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. Specifically, procedure RST-209 Revision 23 inappropriately permitted the use of data from a sample that was 20 months old to meet SR 4.8.1.1.2.c. (H.1) (Section 1R22)

Inspection Report# : [2014002](#) (*pdf*)

Significance:  Mar 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to comply with Technical Specification 3.11.5.2

Green. The inspectors identified a Green NCV of TS 3.11.2.5, Explosive Gas Mixture, for the failure to implement the actions of the limiting condition for operation (LCO). Specifically, during shutdown plant operations in November 2013, the licensee identified oxygen concentrations in the gaseous radwaste treatment system (GRTS) of greater than two percent oxygen, with hydrogen concentration greater than four percent and did not enter nor take the actions of TS LCO 3.11.2.5. The licensee entered the issue into their CAP as AR #651188 and reduced the oxygen concentration to less than two percent on December 11, 2013.

The licensee's failure to enter and implement the actions of TS LCO 3.11.2.5, once oxygen concentrations exceeded two percent, with hydrogen concentrations greater than four percent within the GRTS was a performance deficiency. The performance deficiency was determined to be more than minor in accordance with IMC 0612, Appendix B, because if left uncorrected, it would have the potential to lead to a more significant safety concern such as an explosive gas mixture. Specifically, on November 11, 2013, SR 4.11.2.5 was performed unsatisfactorily; Operations was unaware of the results and did not implement the actions of TS LCO 11.2.5. Using IMC 0609, SDP, Appendix A, Exhibit 2-External Event Mitigation Systems Screening Questions, the inspectors determined this finding to be of very low safety significance (Green) because it was a deficiency that did not result in a degradation or loss of system function. 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 RST-202, Hydrogen and Oxygen Surveillance of the GRTS, and notify Operations of the unsatisfactory test result. (H.8) (Section 4OA2.3)

Inspection Report# : [2014002](#) (*pdf*)

Significance: N/A Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Submit a License Amendment Request for a Digital Modification to the Solid State Protection System

The inspectors identified a SL IV Green NCV of 10 CFR 50.59, "Changes, Tests, and Experiments," for the licensee's failure to obtain a license amendment before implementing a change that created the possibility of a malfunction of a system, structure, or component important to safety with a different result than previously evaluated. The licensee did not follow guidance in Nuclear Energy Institute document NEI 01-01, "Guidelines on Licensing Digital Upgrades," Rev. 1, (referenced in licensee Procedure EGR-NGGC-0157, "Engineering of Plant Digital Systems and Components," Rev. 7), which resulted in the licensee implementing a change that created the possibility of common cause software malfunctions of the reactor protection system and engineered safety features actuation systems not previously evaluated in the Updated Final Safety Analysis Report. This failure to follow NEI guidance when implementing a change was a performance deficiency. The licensee entered

this issue into their corrective action program, performed an evaluation that provided a reasonable expectation of operability, and initiated development of a license amendment request.

The performance deficiency was determined to be more than minor because it was associated with the design control attribute of the Mitigating Systems cornerstone and 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). Additionally, in accordance with the guidance in the NRC Enforcement Manual, the 10 CFR 50.59 violation was more than minor because there was reasonable likelihood that the change would require NRC approval prior to implementation. The inspectors evaluated the significance of the finding using IMC 0609, "The Significance Determination Process," and determined the finding was of very low safety significance (Green). In accordance with the Enforcement Policy, the violation of 10 CFR 50.59 was determined to be a SL IV violation because it resulted in a condition evaluated as having very low safety significance (i.e., Green) by the SDP. The finding had a cross-cutting aspect in the "Decision Making" component of the "Human Performance" area because the most significant causal factor of the performance deficiency was that the licensee failed to oversee the work activities of vendors such that nuclear safety was supported [H.4(c)].

Inspection Report# : [2013009](#) (*pdf*)

Significance:  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to maintain environmental qualification for electric equipment

The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50.49 for the failure to adequately implement the environmental qualification (EQ) program for electric equipment important to safety. Specifically, between September 2013 and November 2013, multiple EQ program deficiencies were identified including design documentation and the qualification of electric equipment installed in the plant. The licensee took corrective action to repair or schedule repair for all of the identified issues. The licensee entered these issues into the CAP as AR #663071.

The inspectors determined that the failure to completely implement the EQ program as required by 10 CFR 50.49 was a performance deficiency. Specifically, between September 2013 and November 2013, multiple EQ program deficiencies were identified including design documentation and the qualification of electric equipment installed in the plant. This finding was more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern if the functions of other components in the EQ program are challenged. Using IMC 0609, Significance Determination Process, Appendix A, Exhibit 2- Mitigating Systems Screening Questions, the inspectors determined this finding to be of very low safety significance (Green) because it was a deficiency affecting the design or qualification of equipment. The finding had a cross-cutting aspect of Conducts Self-Assessments, as described in the Self and Independent Assessments component of the Problem Identification and Resolution cross-cutting area because the licensee failed to identify these issues during their recent self-assessments. [P.3(a)] (Section 1R18)

Inspection Report# : [2013005](#) (*pdf*)

Significance:  Sep 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to compensate for a blocked open fire door

The inspectors identified a Green non-cited violation (NCV) of the Shearon Harris Nuclear Power Plant Operating License NPF-63 condition 2.F, Fire Protection Program, and 10 CFR 50.48(c), National Fire Protection Association (NFPA) Standard 805, for failing to implement required compensatory measures per licensee procedure FPP-013, Fire

Protection. Specifically, the licensee failed to establish an hourly fire watch and stage backup fire suppression equipment for a blocked open fire door (FD-241) between the “A” and “B” safety related switchgear rooms on September 9, 2013. The licensee took corrective action by restoring the fire door to functional. The licensee entered this into the corrective action program (CAP) as Action Request (AR) #627493.

The failure to implement fire compensatory measures in accordance with licensee procedure FPP-013, Fire Protection during the two hour exposure period when the fire door between Switchgear Rooms A and B was propped open was determined to be a performance deficiency. The performance deficiency was determined to be more than minor because it was associated with the protection against external factors (fire) attribute of the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this failure inadvertently bypassed a three hour fire barrier and created the potential for a fire to affect both safety related switchgear rooms. The finding was screened in accordance with NRC Inspection Manual Chapter (IMC) 0609 attachment 4 which determined that an evaluation using NRC IMC 0609 Appendix F (Fire SDP) was required. The propped open door constituted a high degradation condition per NRC IMC 0609 appendix F Attachment 2 which required a detailed risk evaluation. A bounding phase 3 risk analysis was done by a regional SRA using a hand calculation and guidance from NRC IMC 0609 Appendix F. The major analysis assumptions included a duration factor of 2 hours, an ignition frequency of $2E-2$ /year, a base case conditional core damage probability (CCDP) of 0.1 (assumed large single SWGR room fire would require alternate safe shutdown), a non-conforming case CCDP of 1.0 (assumed a dual SWGR fire scenario would result in core damage), and a probability of non-suppression (PNS) of $1E-3$. The dominant sequence was a challenging SWGR room fire which remained unsuppressed long enough to develop into a damaging hot gas layer scenario which would fail SSD equipment in both SWGR rooms A and B due to the open fire door and result in core damage. The licensee’s fire PRA produced similar results. The short exposure period, ability to close the fire door, and the low PNS mitigated the risk. The analysis result was an increase in core damage of $< 1E-6$ /year, a finding of very low safety significance (Green). The finding had a cross-cutting aspect of Work Planning, as described in the Work Control component of the Human Performance cross-cutting area because the licensee failed to identify the need for a compensatory action due to the blocked open fire door. [H.3(a)] (Section 1R05)

Inspection Report# : [2013004](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

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 29, 2014